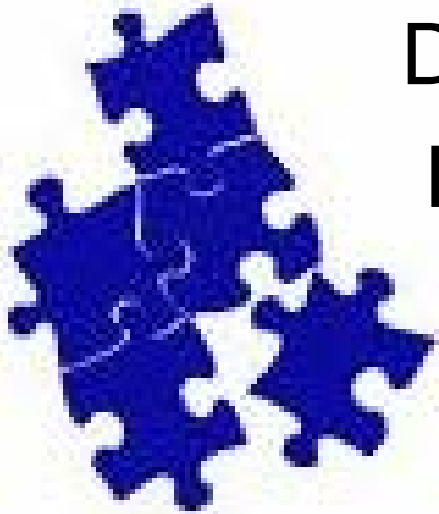


# How Does It All Come Together?

Derek Graham, Section Chief  
DPI Transportation Services



# Pieces of the Puzzle

- Efficiency
- Funding
- TD TIMS / Audit
- TIMS Data
- Routing
- Service Indicators

# A Requirement for Efficiency

- Funding Formula
- State Board of Education Policy
- N.C. General Statutes

# 1989 Legislative Action

“The Department of Public Instruction shall implement the Pupil Transportation Operational Study.... The Department shall also report its final recommendations for achieving improved efficiency and economy in the pupil transportation system to the 1990 Session of the General Assembly. These recommendations shall included incentives for encouraging cost-effective operations in local school administrative units....

– Senate Bill 44, Sec. 55

# Ernst & Young Study Results - Jan. 1991

- Allot funds in a way that will provide incentives for the LEAs to provide pupil transportation service as efficiently as possible.
- Structure the funding process to maximize the LEAs' discretion in deciding how pupil transportation objectives are to be met and to hold them accountable for the results of those decisions relative to meeting the dual objectives of service quality and economy.
- Provide information that helps each LEA to identify the source of any inefficiencies.

# State Board of Education Policy

- **Administrative Procedures Act (APA) Reference Number and Category: 16 NCAC 6B .0004**
- **(a) Superintendents shall plan bus routes in a way designed to conserve fuel and to use buses efficiently.**
- **(b) A route may not deviate from a general path of direction for a distance of less than one-half mile and then return to the original path except for groups of 10 or more pupils, unescorted pupils in grades K-3 or special education pupils.**

- **(c) Unless safety factors require otherwise, superintendents may not plan bus stops closer together than 0.2 miles. Each student must be at the designated stop at the time of the bus's arrival.**
- **(d) Except in an emergency, regular and substitute drivers will transfer a bus at the school.**

- **(e) Drivers shall park buses at night and on weekends in locations which lessen opportunities for persons to steal fuel and commit vandalism.**
- **(f) Service personnel shall maintain buses to ensure greatest fuel economy.**

# State Law

115c-240(e) The State Board of Education shall allocate to ...local boards of education funds ...for the purpose of providing transportation to the pupils enrolled in the public schools within this State. Such funds shall be allocated by the State Board of Education in accordance with the number of pupils to be transported, the length of bus routes, road conditions and all other circumstances affecting the cost of the transportation of pupils by school bus to the end that the funds so appropriated may be allocated on a fair and equitable basis, according to the needs of the respective local school administrative units and so as to provide the most efficient use of such funds. ... If there is evidence of inequitable or inefficient use of funds, the State Board of Education shall be empowered to review school bus routes established by local boards pursuant to G.S. 115C-246 as well as other factors affecting the cost of the transportation of pupils by school bus.

# State Law

§ 115C-246. School bus routes.

- (a) The superintendent of the local school administrative unit shall, prior to the commencement of each regular school year, prepare a plan for a definite route, including stops for receiving and discharging pupils, for each school bus so as to assure the most efficient use of such bus and the safety and convenience of the pupils assigned thereto.

# LEA Funding

1. Allotment
2. Budget Rating
3. Efficiency Rating
4. Level Playing Field

# LEA Funding

1. This Year's State Transportation Funding =

Last Year's (State+Local) Expenditures  
x Budget Rating

2. Budget Rating = Efficiency Rating +10%

3. Efficiency Rating: Based on  
Cost/Student Transportated  
# Buses/100 Students Transported

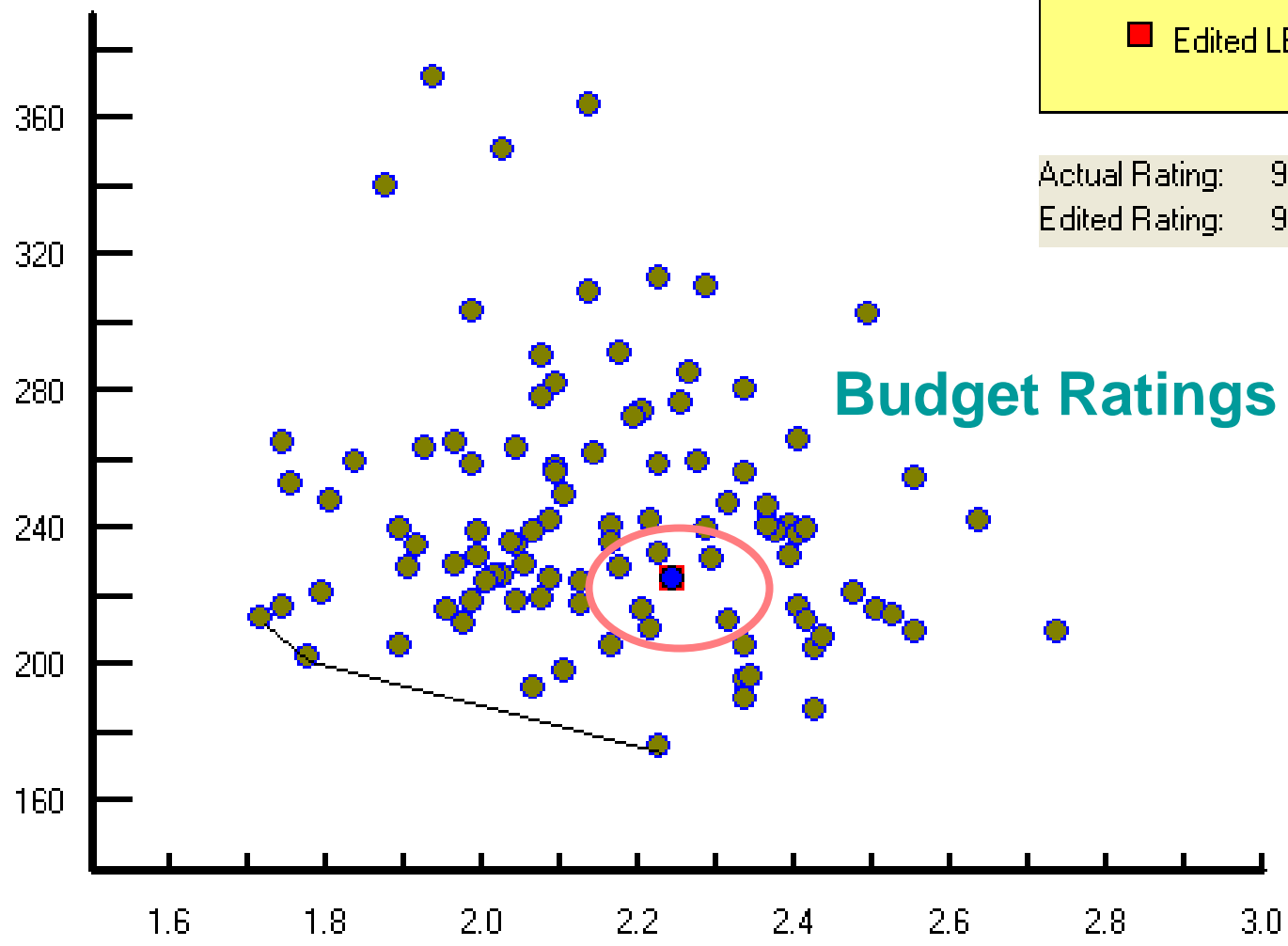
4. Linear Regression to Level the Playing Field

2007-2008

● Actual LEA  
■ Edited LEA

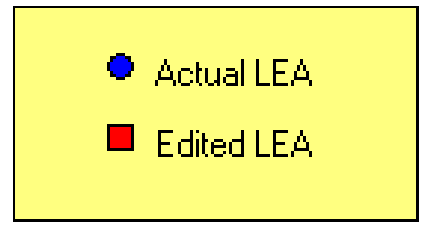
Actual Rating: 95.69 %  
Edited Rating: 95.69 %

Cost/Cost  
Adj. Stu.



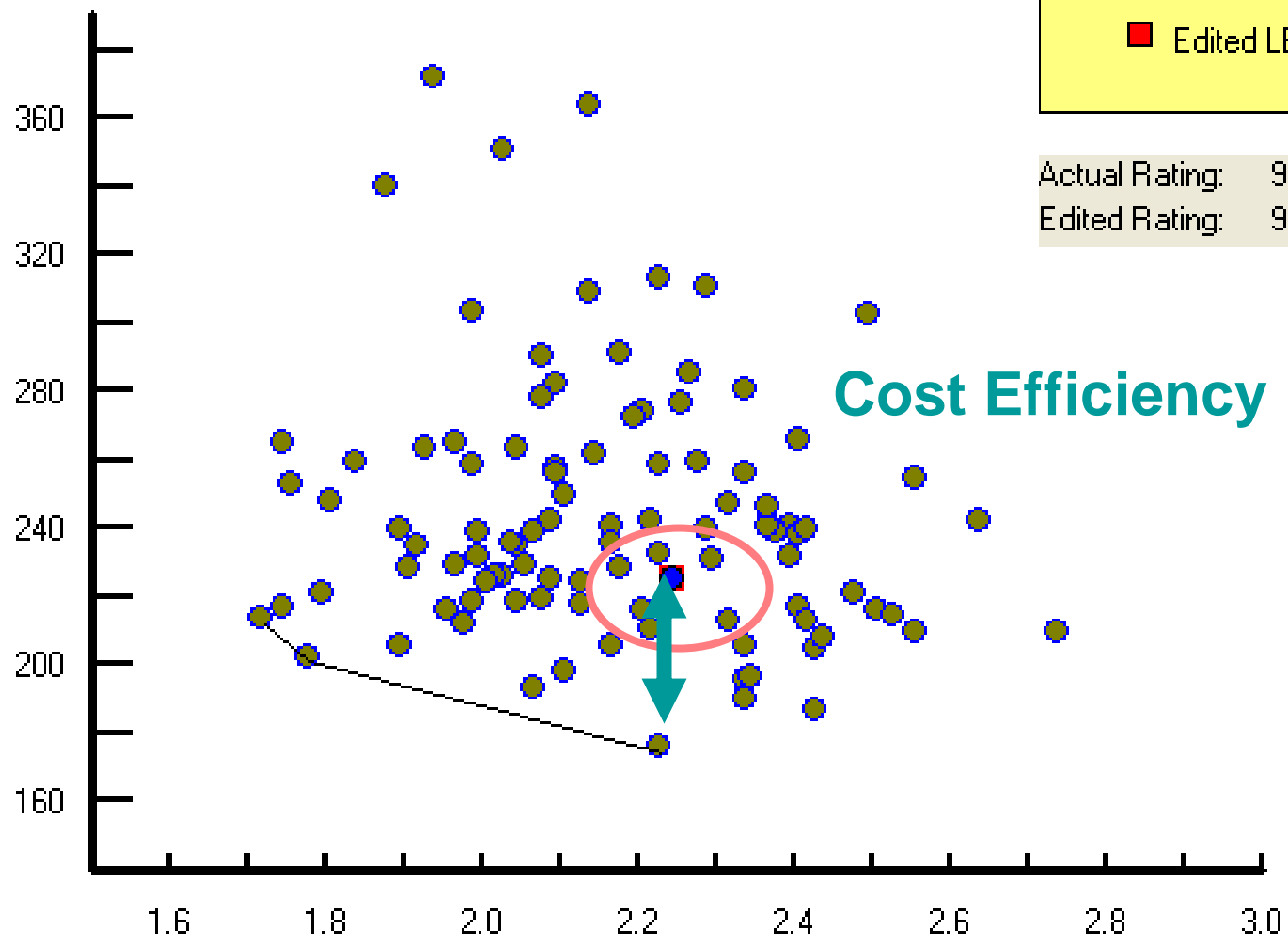
Buses /100 Bus Adj.Stu.

2007-2008



Actual Rating: 95.69 %  
Edited Rating: 95.69 %

Cost/Cost  
Adj. Stu.



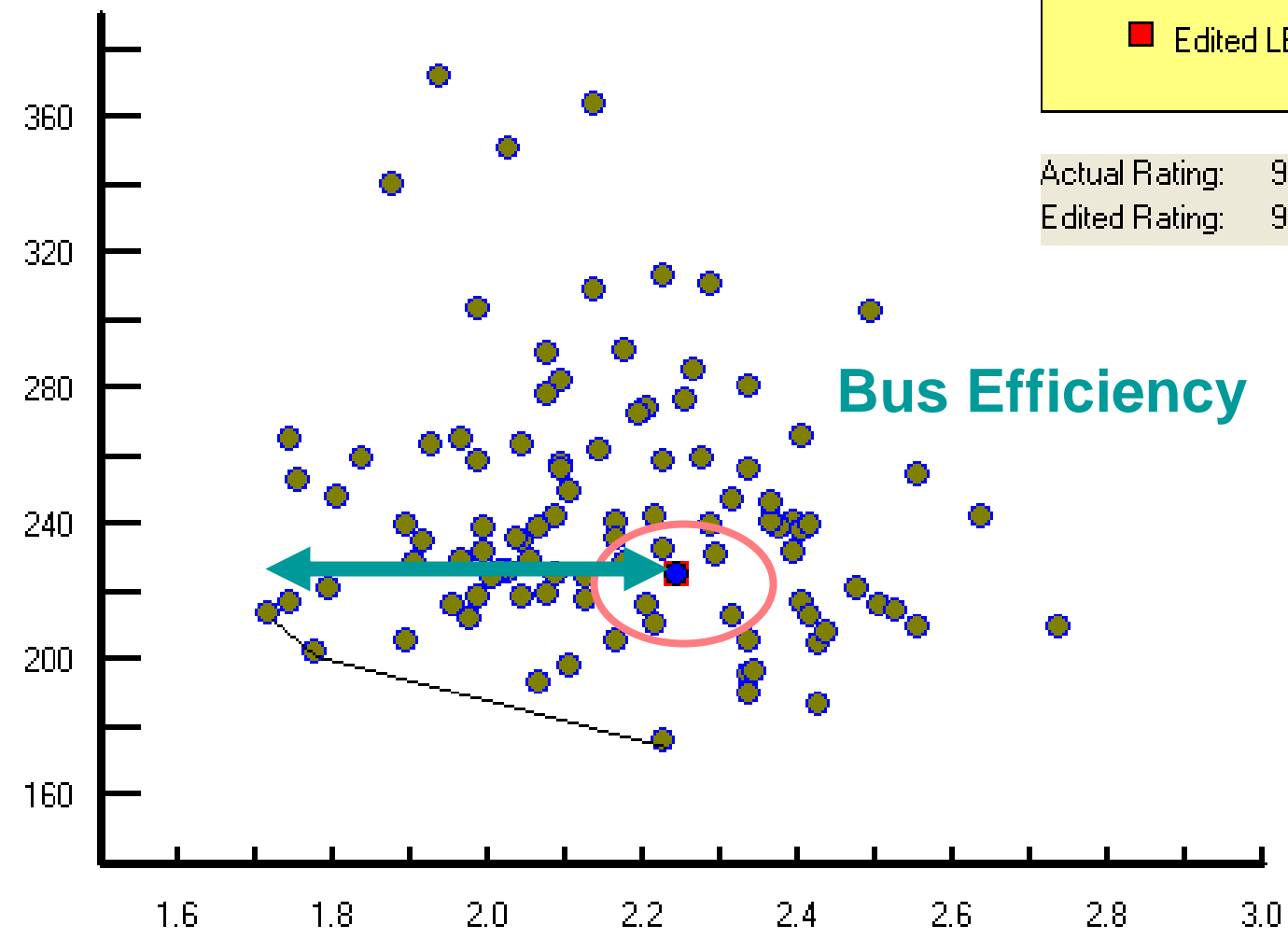
Buses /100 Bus Adj.Stu.

2007-2008

● Actual LEA  
■ Edited LEA

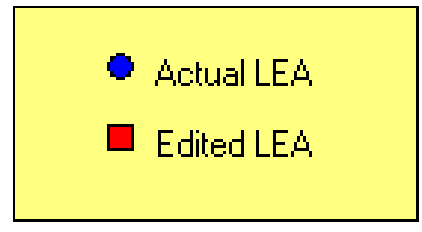
Actual Rating: 95.69 %  
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Cost/Cost  
Adj. Stu.



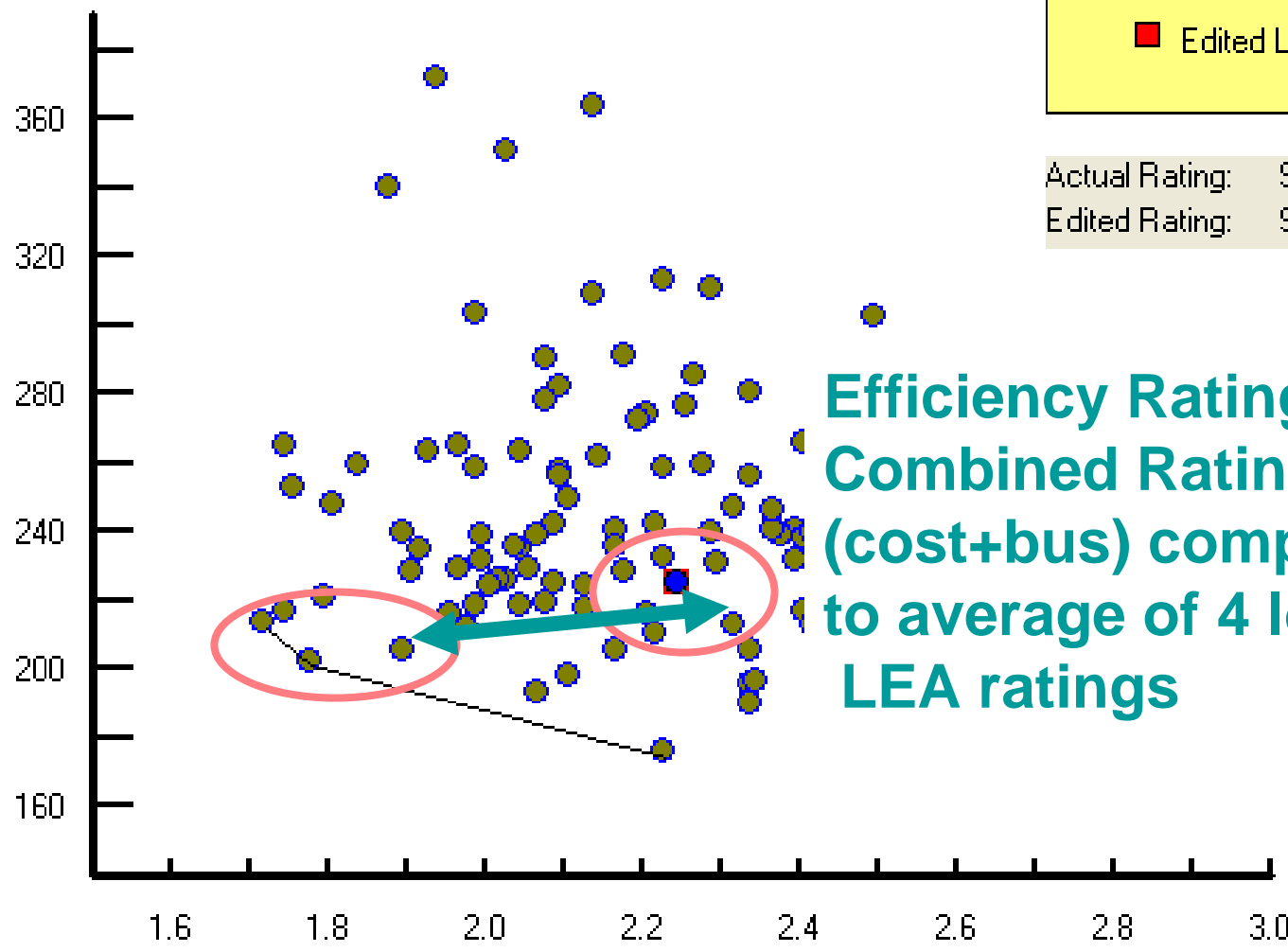
Buses /100 Bus Adj.Stu.

2007-2008



Actual Rating: 95.69 %  
Edited Rating: 95.69 %

Cost/Cost  
Adj. Stu.



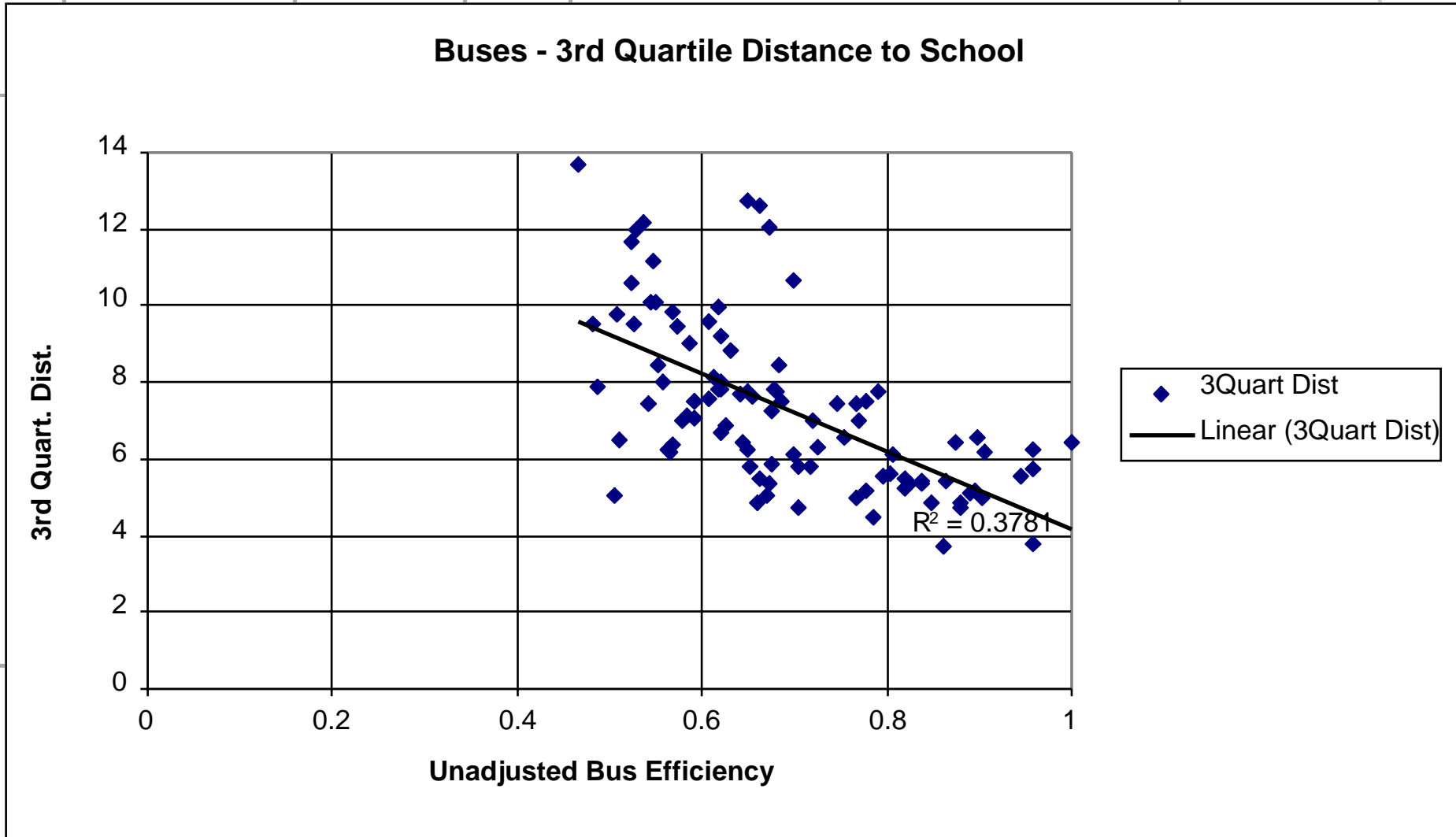
Efficiency Rating =  
Combined Rating  
(cost+bus) compared  
to average of 4 lowest  
LEA ratings

Buses /100 Bus Adj.Stu.

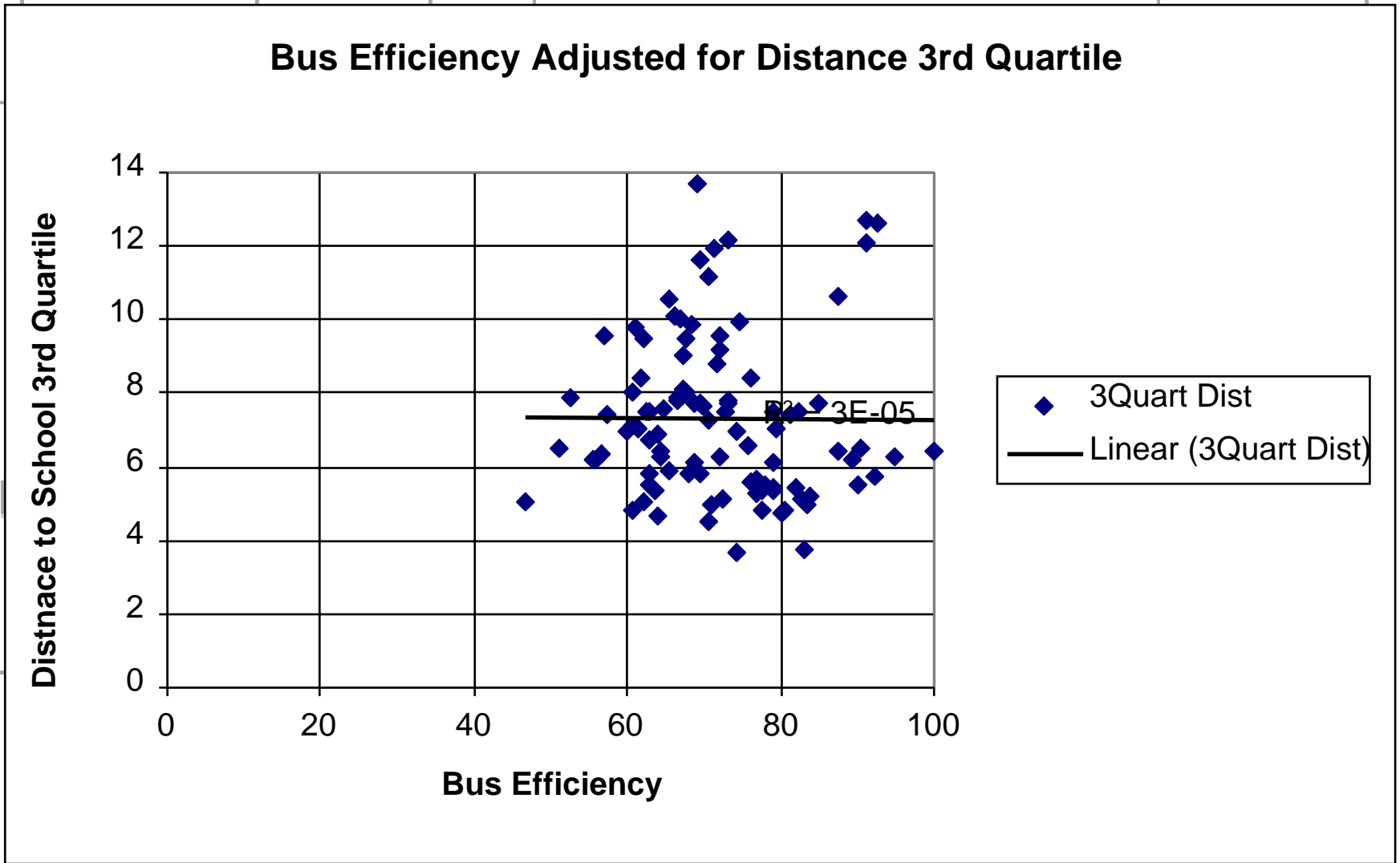
# Level the Playing Field

- Consider site characteristics beyond the control of the LEA transportation department
  - Distance of students to school
  - How many students per mile of road
  - % students transported on “EC” buses
- Linear Regression

# Unadjusted Bus Efficiency



# Bus Efficiency Adjusted for Distance to School 3rd Quartile



# TD TIMS / Audit

§ 115C-240. Authority and duties of State Board of Education.

(d)...The State Board shall also require local boards to **implement** the Transportation Information Management System or an equivalent system approved by the State Board of Education, no later than September 1, 1992...

# “To Implement”

- **to fulfill; perform; carry out**
- **to put into effect according to or by means of a definite plan or procedure.**

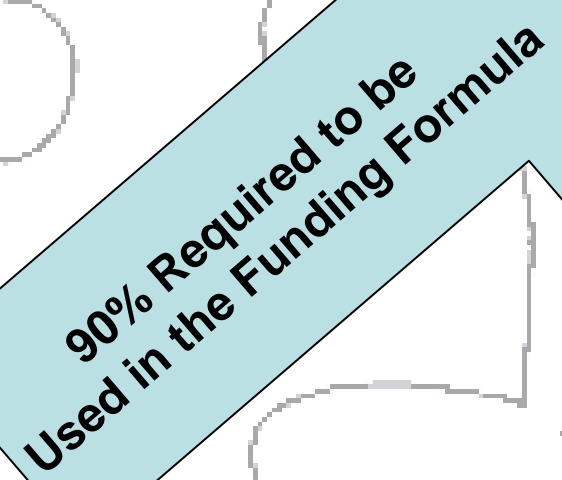
– [www.dictionary.com](http://www.dictionary.com)

# TD TIMS

- Report to ensure fulfillment of state law
- Current Year Data
  - (route changes ***required*** within 10 days)
- Ensure valid data for leveling the playing field
  - Student distance to school
  - Pupil Density - # Road Miles

# TD TIMS - Audit

	Students Transported	Total Bus Miles	Total Driver Hours*	# Buses Operated
A. TD TIMS DATA	6,773	6,465	293	110
B. TD-2/TD-2R DATA	7,014	6,916	412	110
C. Difference (A-B)	-241	-451	-118	0
D. TIMS as % of TD-2/TD-2R	96.6%	93.5%	71.3%	100.0%



90% Required to be  
Used in the Funding Formula

# TD TIMS - Audit

	Students Transported	Total Bus Miles	Total Driver Hours*	# Buses Operated
A. TD TIMS DATA	6,773	6,465	293	110
B. TD-2/TD-2R DATA	7,014	6,916	412	110
C. Difference (A-B)	-241	-451	-118	0
D. TIMS as % of TD-2/TD-2R	96.6%	93.5%	71.3%	100.0%

Miles should be close to 100% when TIMS properly implemented

# TD TIMS - Audit

	Students Transported	Total Bus Miles	Total Driver Hours*	# Buses Operated
A. TD TIMS DATA	6,773	6,465	293	110
B. TD-2/TD-2R DATA	7,014	6,916	412	110
C. Difference (A-B)	-241	-451	-118	0
D. TIMS as % of TD-2/TD-2R	96.6%	93.5%	71.3%	100.0%

If TIMS reflects much less in Hours than actually paid, there are likely \$\$ to be saved

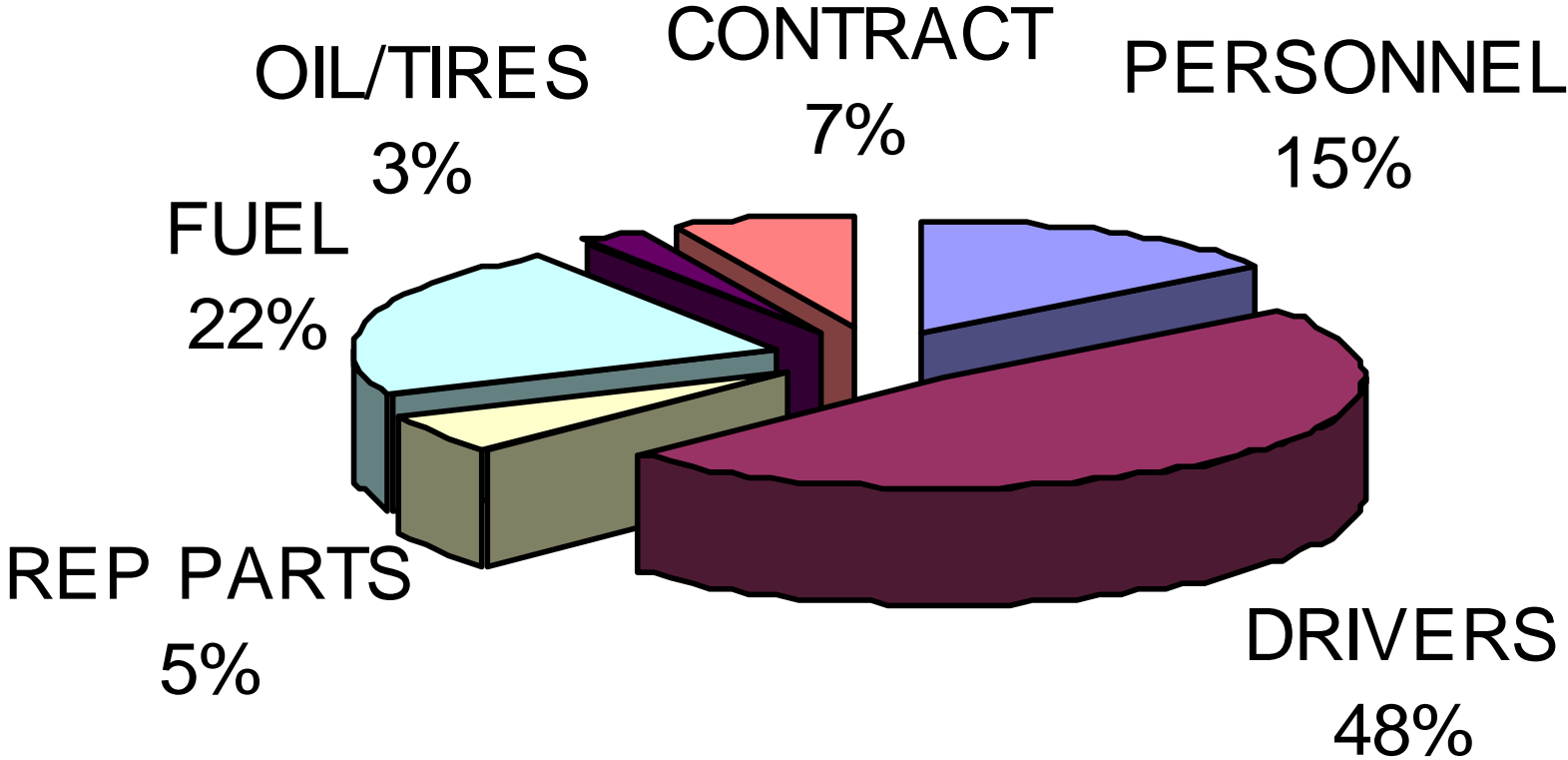
# Routing and Scheduling

- Transportation Information Management System (TIMS)
- Statewide License
  - Provided free to LEAs because of the potential for saving fuel
  - Funded by the State Energy Office

# Routing and Scheduling

- Direct expenses associated with routing:
  - Driver Salaries
  - Fuel
- Equity among drivers
- Optimization

# Statewide Transportation Costs



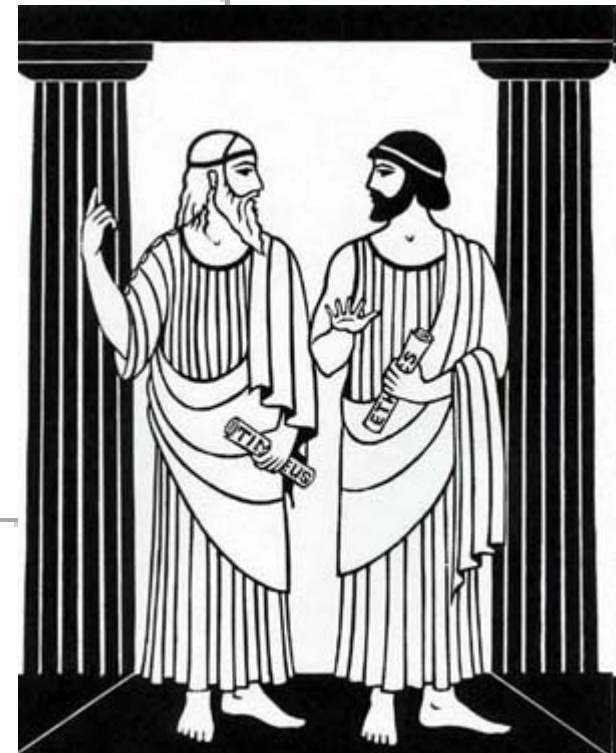
\$356 Million (State & Local)  
2007-2008

# SIMULATION

- Simulation mode in TIMS
- Optimization
- Budget Rating Simulator

# Age – old question posed by an ancient philosopher:

“If you are not simulating alternate routing and scheduling scenarios, then how do you know that you can’t improve efficiency and / or service levels?”



# TIMS Service Indicators

AM Stop Early:	5:43 AM
PM Stop Late:	5:13 PM

Special needs a

---

AM Bell Early:	7:40 AM
AM Bell Late:	8:25 AM

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PM Bell Early:	2:15 PM
PM Bell Late:	3:10 PM



*Transportation  
Information  
Management  
System*

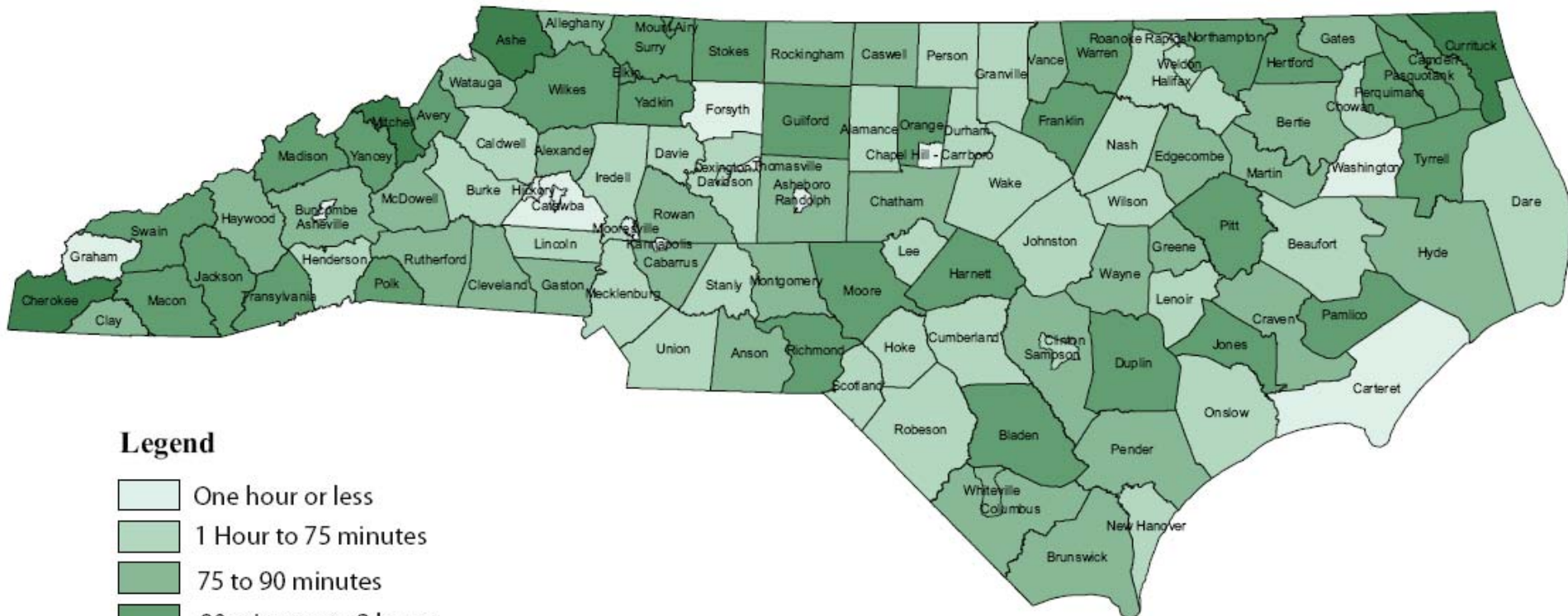
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2007-2008  
TIMS Service Indicators Report

July 2008

# Length of Ride => Ridership

*Average of Longest 5% Student Ride Times*



## Legend

- One hour or less
- 1 Hour to 75 minutes
- 75 to 90 minutes
- 90 minutes to 2 hours
- Over 2 hours

Source: North Carolina LEAs 2007-2008

# Service vs. Efficiency

- Efficiency rating depends on ridership
- Service levels impact ridership
- Appropriate balance is needed
- Safety first and foremost!

# Pieces of the Puzzle

- Efficiency
- Funding
- TD TIMS / Audit
- TIMS Data
- Routing
- Service Indicators

So...Just Make Sure It  
All Comes Together!

