


Service Indicators

Understanding Issues
Diagnosing and Fixing
Problems

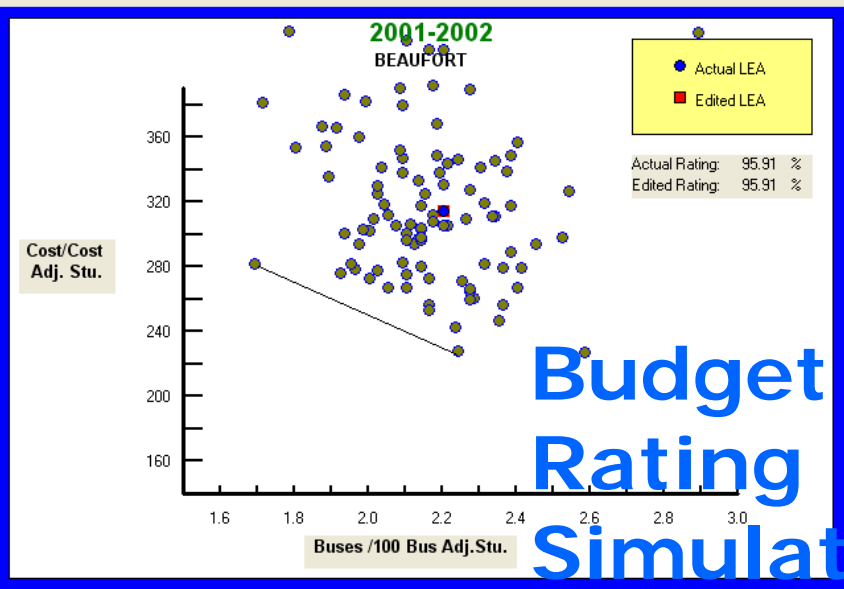
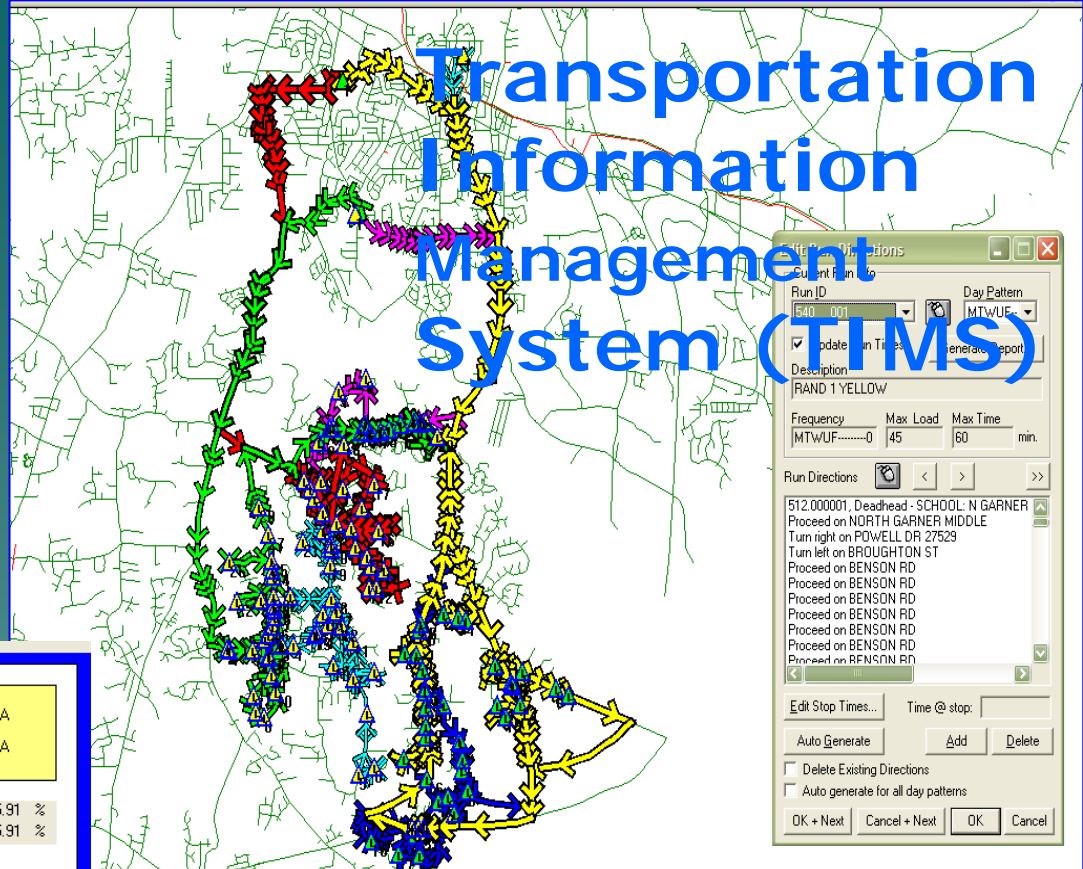


Background: Current Funding Formula Origin

◆ 1989 Legislative Session

“...the Department shall report its final recommendations for achieving improved **efficiency and economy** in pupil transportation operations to the 1990 Session of the General Assembly. These recommendations shall include incentives for **encouraging cost-effective operations** in local school administrative units as provided in the General Statutes.”

Efficiency Tools Provided



Budget Rating Simulator

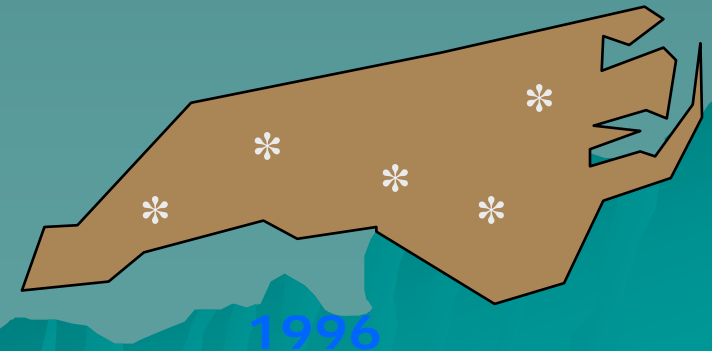
General Assembly Actions 1995

- ◆ Review of Transportation Funding
- ◆ Study of transportation and funding in Caswell, Chatham and Cumberland Counties
- ◆ Regional Discussion Sessions for Superintendents, Finance Officers, Transportation Directors
 - What Works? / What Doesn't?

Regional Discussion Sessions

◆ RESULTS:

- Formula Does Promote Efficiency
- Modifications to formula math to improve equity of funding allocation



2005 General Assembly Action

- * DPI shall contract for a study of the current allotment formula for school transportation. The study shall be conducted by an independent consultant.

Contract for Study of the Transportation Formula

Management Partnership Services (MD)
TransTech Management (NC)

Project team included:

- ◆ Staff with transportation fleet/funding expertise, but not with the NC funding formula
- ◆ Staff familiar with the development and mathematics of the existing formula
- ◆ Staff dedicated to gathering LEA input

First Recommendation: Retain Funding Mechanism

- Funding allocation process influences behavior:
 - Resulted in improved efficiency
 - Provided for an effective statewide student transportation system

Concern: Service Delivery Losing out to Efficiency

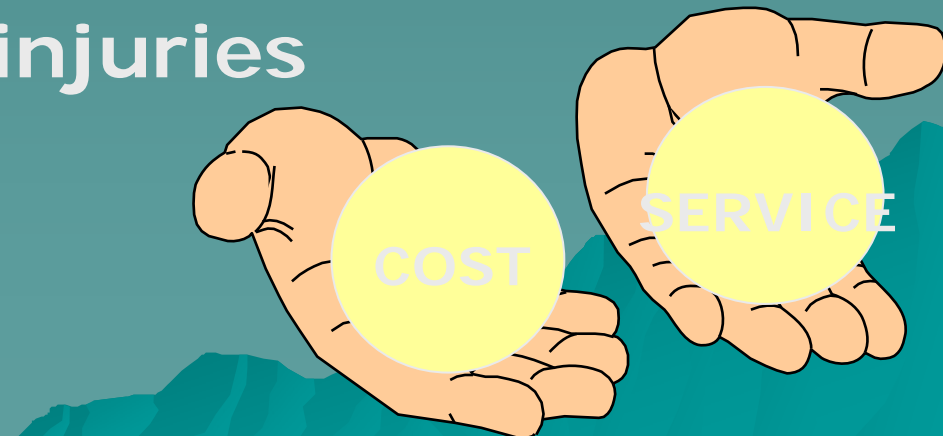
- ❑ *REALITY:*
STUDENTS ARE RIDING THE BUS LONGER THAN IN THE PAST
- ❑ New schools located further from students?
- ❑ Buses being filled more → efficiency
- ❑ More school assignments further from home?
 - ❑ Special Needs
 - ❑ Magnets



Second Recommendation: Emphasize Good Service & Safety

Publish performance results by LEA

- ❑ Ride time distribution
- ❑ Earliest pickup, latest (PM) drop-off
- ❑ Bus accidents per thousand miles
- ❑ Traffic citations per driver
- ❑ Annual fatalities/ injuries



TIMS Data were made Key

- ◆ Since there is a legislative requirement to implement TIMS: Expectation that all LEAs have good data
- ◆ Publish that data so that superintendents and school boards have info needed to make appropriate policy decisions

Current Set of Service Indicators

- ◆ Average Ridetime (AM)
 - Includes all the time a student is on a bus.
 - ◆ Sums the time on legs of transfers.
- ◆ In a supporting role:
 - Average Distance to School, Riders Only
 - Average Distance to School, All Students

Current Set of Service Indicators

- ◆ Average of Longest 5% of Ridetimes (AM)
- ◆ Average of Longest 5% of Distances to School, Riders Only

Current Set of Service Indicators

- ◆ Average Student-to-Stop Distance

Current Set of Service Indicators

- ◆ Percent of Routes w/ Multiple Runs to Same School (PM)
- ◆ Average # Runs per Route (PM)
- ◆ % Routes > 1 run (PM)

Current Set of Service Indicators

- ◆ Range of AM School Starting Times
 - Doesn't consider bell times associated with programs
 - Large ranges may result when mid-day runs and runs associated with programs that have special bell times are not managed properly.

Current Set of Service Indicators

- ◆ Earliest Morning Pickup
 - Time that run arrives at school

TIMS Reports for Service Indicators

◆ Minmax Report

- earliest AM stop time
- latest PM stop time
- Earliest and latest bell times, AM and PM

Service Indicators and Data Accuracy

- ◆ Accuracy in TIMS more important than ever
- ◆ TDTIMS looks at four, summary numbers that can hide a multitude of sins.
 - As long as summary numbers were within bounds (at least 90%), errors in individual records didn't matter.
- ◆ Service indicators reveal problems in individual records.

Indicators Most Sensitive to Data Problems

- ◆ Measures dependent upon single data records
 - Range of AM School Starting Times
 - Earliest AM Stop
 - Latest PM Stop
- ◆ Averages
 - Average Ridetimes

TIMS Reports for Service Indicators

◆ Archive Reports

ClusArch – schools, bell times

SchArch – bell times, grades

SrvStpArch – runs, loads, times, locations,

RunRteArch – times, miles, frequencies

StuArch – student data received from NCWISE

StuTrnArch – students' transportation data

TIMS Management Issues That Affect the Quality of Service Indicators

- ◆ Missing District Ids
 - Common in EC databases or in districts that rely upon manual entry of students into TIMS

TIMS Management Issues That Affect the Quality of Service Indicators

- ◆ Failure to use Programs for transportation requiring special bell times

Programs

- ◆ When a school is created, a Default program for the school is created along with it.
- ◆ Bell times are associated with Programs, not directly with schools
- ◆ The TIMS Program feature allows you to accommodate educational programs that result in a school having more than one set of bell times.

Programs

- ◆ The Minmax Report (report of stop and bell times) reports by Program.
- ◆ The Service Indicator “Range of AM Starting Times” only considers the bell times for schools’ Default Programs.
- ◆ Failure to create programs in TIMS to represent LEA programs with special bell times results in inaccurate bell times and misleading bell time ranges.

Programs: Example

- ◆ All schools have 8:00 am bell, arrival window 7:30 to 7:55.
 - Range of school starting times is 0.
- ◆ At one school, new program requires that some students arrive at 1:00 pm.

Programs: Example

- ◆ Wrong way to handle
 - Move bell time on default program to 1:00 pm and make arrival window stretch from 7:30 to 12:55.
 - ◆ If earliest bell time in district is still 8:00 am, range of opening times is now 300 minutes.

Programs: Example

- ◆ Right way to handle
 - Create a program for 1:00 pm students at their school.
 - Default Program still has 0 minute spread on bell times
 - New program is reported separately.

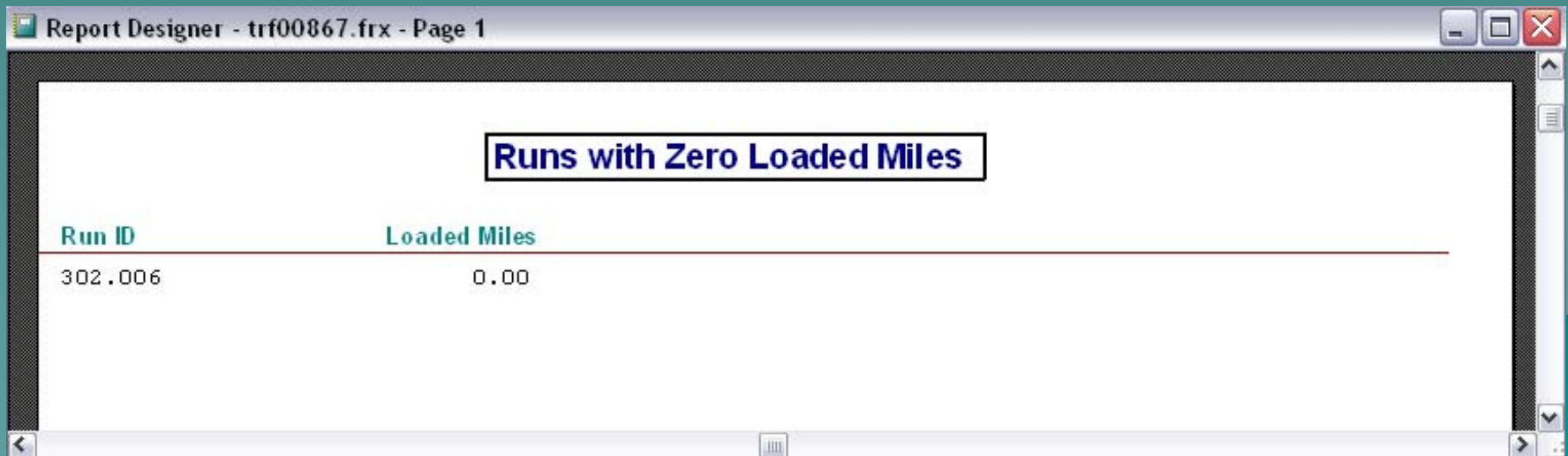
EC/SN Databases Containing Regular Students

- ◆ Secondary databases should contain only the students that really belong in that database.
- ◆ At the least, only the EC/SN students should be assigned.

Reports to Help You Find Problems

User-Defined Reports Stops, Runs, Routes

- ◆ Runs zero loaded miles (no run directions)



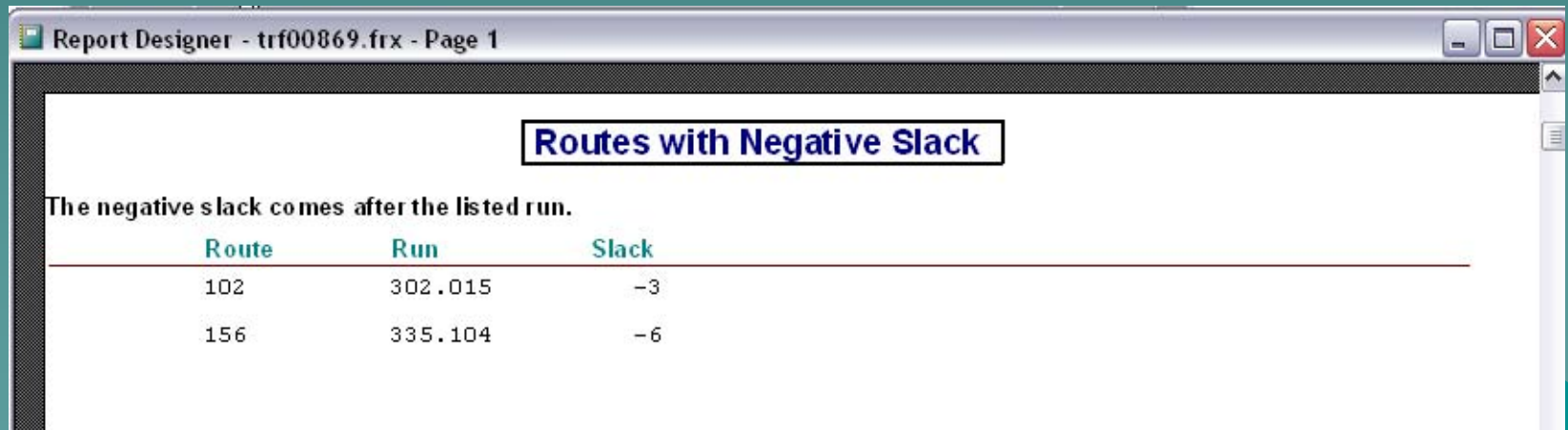
The screenshot shows a window titled "Report Designer - trf00867.frx - Page 1". The report content is as follows:

Run ID	Loaded Miles
302.006	0.00

Reports to Help You Find Problems

Stops, Runs, Routes

◆ Negative Slack between Runs



The screenshot shows a window titled "Report Designer - trf00869.frx - Page 1". The report content is titled "Routes with Negative Slack" and includes a text block stating "The negative slack comes after the listed run." followed by a table with three columns: Route, Run, and Slack.

Route	Run	Slack
102	302.015	-3
156	335.104	-6

Reports to Help You Find Problems

Stops, Runs, Routes

- ◆ Stop Times after before 6:00 am, after 5:00 pm

Pickup Times Before 6:00 AM							
Time at Stop	Stop ID	Run ID	Route	Run End	Bell	Assigned	Headcount
5:38 AM	328.113	328.001	4	7:50 AM	8:00 AM	2	
5:38 AM	328.112	328.001	4	7:50 AM	8:00 AM	2	
5:40 AM	328.114	328.001	4	7:50 AM	8:00 AM	1	
5:42 AM	320.003	322.904	265	7:50 AM	8:00 AM	1	

- ◆ This report includes a record for every stop.
- ◆ However, shows record only for stops with time < 6:00 pm.
- ◆ If you wish to print, send to Excel spreadsheet and print only records of interest.

Reports to Help You Find Problems

Bus Passes

- ◆ Route Riders Schdst = 0
- ◆ Students, Stop not on Route

Students on Stops not on Routes							
945 student records were found with stops not on routes.							
	EduLog ID	AM Stop	AM Run	AM Route	PM Stop	PM Run	PM Route
School	302	19	302.788001	302.006	160	302.788002	
		20	302.788001	302.006	160	302.788002	
		26	302.744001	302.014	102	302.744002	
		47	302.780001	302.006	160	302.780002	
		70	302.472001		302.472002	302.113	175
		128	302.135001	335.005	158	302.135002	

Reports to Help You Find Problems

Student Ridetime Report

03/06/2007

STUDENT RIDE TIMES

Student id	Student Name	School	Grade	Program	Days	AM Ride Time	PM Ride Time	Total Ride Time
2	BARBOZA VIVES, BRANDON	328	02		MTWUF--	8	145	153
5	BOND, CALEY	328	02		MTWUF--	90	64	154
7	GRAINGER, LUCAS	328	01		MTWUF--	78	76	154
9	BOSWORTH, DAKOTA	328	01		MTWUF--	47	32	79
10	ABBOTT, KARI	328	KI		MTWUF--	71	7	78
11	ACOSTA, DANIELA JADE	362	03		MTWUF--	0	112	112
14	BRENES, ABRAHAM	328	01		MTWUF--	6	148	154
15	LAMB, AUSTIN	328	03		MTWUF--	2	49	51
16	BRIGGS, ZACKARY	328	01		MTWUF--	76	78	154
17	BROWNING, MACKENZIE	328	01		MTWUF--	78	76	154
18	BURRELL, HAILEY	328	KI		MTWUF--	86	68	154

- ◆ Export to excel, open and sort on Ride Time column.

Reports to Help You Find Problems

Stops, Runs, Routes

Runs Reversed Stop Order

(Needs to be renamed)

Stops Requiring Reverse Travel		
RunID	Stop ID	Mileage
335.004	335.056	-0.2687