DOCUMENT RESUME

ED 451 985 RC 022 910

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TITLE The Relationship of Rurality and Education Accountability Outcomes.
PUB DATE 2001-04-00
NOTE 19p.; Paper presented at the Annual Meeting of the American Educational Research Association (Seattle, WA, April 10-14, 2001).
PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Academic Achievement; Accountability; *Educational Equity (Finance); Elementary Secondary Education; Rural Schools; *Rural Urban Differences; School District Size; School District Spending; *School Districts
IDENTIFIERS *Tennessee

ABSTRACT

This paper examines accountability outcomes of Tennessee school districts, comparing rural versus urban districts and litigant versus nonlitigant districts from a 1993 fiscal equity lawsuit. School districts were assigned a measure of rurality using the Cleland Rurality Index, and comparisons were made among the 29 low-rurality districts, 66 moderate-rurality districts, and 43 high-rurality districts. The variables examined were drawn from the Tennessee Accountability Index and included per pupil expenditures, property taxes collected, local-option tax revenues, regular teacher salaries as a percentage of total instructional expenses, average daily membership, and K-5 district achievement in reading and math and value-added achievement. The most-rural districts consistently performed worst on most variables examined. Although litigant districts achieved greater equalization of state funding for local education, their average level of rurality predicted the Accountability Index performance of these districts as a group. Appendices list measures, goals, and weights in the Tennessee Performance Model; present a map depicting rurality of Tennessee counties; and outline 2000 accountability results. (SV)

The Relationship of Rurality and Education Accountability Outcomes

A Paper Presentation
Rural SIG

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American Education Research Association
Annual Conference

Seattle, Washington
April 10-14, 2001

The Relationship between Rurality and Education Accountability Outcomes

Introduction

In his work "Rural Education: Institutionalization of Disadvantage", Kern Alexander summarized the plight of rural education. According to Alexander, "Generally in America, rural as contrasted to urban living may be characterized as having poorer health care, fewer conveniences, lower income, poorer property and less political power. The problem of rural living though is nowhere more obvious than in the underfinanced local school systems that are found in every state of the nation. Rural schools in all states have less money and poorer educational programs than their more wealthy neighbors in urban areas."(Alexander 1990) The conditional plight of rural school districts as described by Alexander, in the past decade may have been exacerbated by the implementation of statewide accountability programs. Although these programs have stemmed from various national agenda and have been widely accepted, they measure variables that have traditionally eluded students and educators in many rural schools.

Many states have been enmeshed in litigation that has pit city and rural school districts against their wealthier suburban counterparts over scarce education dollars. Accountability related issues such as standardized test outcomes and class size have dominated education headlines, but the method of funding underpins them all. In many states, the equitable and adequate funding of public education remains the biggest unresolved issue.

It is the intent of this paper to report initial research conducted on the accountability outcomes of school districts in the state of Tennessee, based on the districts' level of rurality. A secondary purpose is to analyze the accountability outcomes of rural districts that were litigants in fiscal equity litigation as compared to their counterparts that were not litigants.

Background

A theme that prevails among education researchers is the difficulty of defining the concept of "rural" (Kannapel & DeYoung 1999). Much of the definition in extant literature utilizes the single variable of population of a geographic locality. The United States Census Bureau defines rural and urban areas every ten years after each decennial census. The Bureau defines urban as consisting of "urbanized" areas (UAs) of fifty thousand or more population as well as places of at least 2,500 inhabitants that are not located within a UA. A UA consist of a central place and the densely settled surrounding incorporated and unincorporated territory that has a density of at least 1,000 persons per square mile. All territory not defined as urban is considered rural. The Census Bureau's urban/rural classification is "census block" based. The bureau analyses population densities for census blocks and aggregates blocks to form UAs. The Bureau does not define counties as either urban or rural however, using the Bureau definition, most counties contain both urban and rural territory. The bureau began delineating UAs with the 1950 census. In prior census urban generally consisted of all incorporated places with populations of at least 2,500. This threshold was adopted in 1910 although it had been used since 1790. (Ratcliffe, Michael. e-mail correspondence July 15, 1998) Other Federal agencies use different thresholds

in defining urban/rural. The U.S. Department of Transportation uses 5,000, the Federal Communication Commission uses 10,000 and the National Center for Education Statistics uses seven classifications of population to define an area and indicate there is no single definition of "rural" applicable to all situations. (Sietsema, John. e-mail correspondence 1998)

One of the major, continuing issues found by educators is that most research data suggests that the rural poverty rate remained virtually unchanged in the period of the mid to late 1990's. (RC&T, Vol. 9, No. 2-81). Additionally, while no surprise, poverty rates are highest for rural minorities with rates nearly three times those of whites and substantially higher than those for urban minorities. (RC&T, Vol. 9, No. 2)

While the general belief would be that increased educational attainment would positively effect economic output, results of at least one study – Pitman, McGinty, and Gerstl - Pepin – suggest that educational improvement follows economic improvement. However, the more rural the state is, the less likely the relationship is to be strong and it just may be that some states and some regions use winners and some are losers. (Journal of Research in Rural Education, Vol. 15, No. 1., p. 28-29)

Rural sociologist Charles Cleland indicates there has been little systematic thought as to what "rural" means and that the U.S. Census Bureau goes to great length to define urban areas but then makes rural a wastebasket category. (Johns 1996) During his analysis of structural and organizational change in rural counties of the south, Cleland and his colleagues sought to determine the extent to which rural residents were tied into the complex system of organizations and associations that are designed to assist in the resolution of problems related to efforts to bring about desired change. A research committee selected seven broad categories of what might be considered the essential areas of life that influence the quality of living in any locale. The categories with their composite makeup were physical, institutional, political, financial, informational, population density and a measure of adequate access to needed resources. (Cleland 1994) The study standardized a numerical index by county, ranging from one ("least" Rural) to twenty ("most" Rural) which Cleland termed the Rurality Index (Cleland 1995).

Using the Census Bureau's latest (1990) population description to define geographic areas of Tennessee one finds that of the 95 counties within the state, 80% (N=76) have a majority rural population. Twenty-four counties (26%) are designated as having 100% rural population. While no county is 100% urban, the lowest rural population in a county is 1%. However only 39% of the total population of the state resides in rural designated areas. (Cunningham, Vickie. e-mail correspondence July 21, 1998)

AEL's Craig Howley raises an intriguing issue when he compares what he calls "cosmopolitan commitments" which are applied to rural education with "rural commitments" applied to rural education. The "cosmopolitan" concerns as they apply to rural education:

How to:

- Increase the level of students' aspirations,
- Overcome resistance to consolidation and school closure,
- Overcome the disadvantages of students' backgrounds,
- Implement state and national reforms,
- Offer a broad and deep high school curriculum, insulate the school from local politics,
- Implement "best practice and programs, and" (i.e., nationally validated methods)
- Change the local culture.

Rural circumstances include items that better capture issues of the real circumstances:

- Senses of and attachment to rural places,
- The relationship between school and community sustain ability,
- Proper aims for an education committed to rural community,
- Rural pathways to rural adulthoods,
- Community engagement in rural schools,
- Rural community and educational stewardship,
- Curricula to sustain rural places,
- Small-scale organization in rural schooling and community, and
- Cultivation of appropriate local meanings, knowledge, and commitments.

Since Serrano v. Priest (1971), federal and state Supreme Court opinions have discussed the unique concerns of rural schools in funding cases. Many of the more recent cases prominently illustrate what may be an escalating legal battle between rural and metropolitan area schools over financial resources. These cases often have used per pupil expenditures as their base point – related to the fact that many local entities fund above the state minimum foundations program; thereby disadvantaging substantial number of pupils without access to these funds. Several recent legal actions have keyed on the same type of differences based on teacher salary supplements with the argument that many students are disadvantaged by the fact that better pay attracts better teachers causing lower paying districts to have lower paid (therefore lower quality) teachers. If the fiscal situation of rural schools continues to deteriorate, and if state lawmakers fail to provide adequate remedies, the option of choice for rural districts to obtain relief may be continued litigation efforts. Equalization and adequacy issues could cause major economic concerns for both "rich" and "poor" school districts.

Thirty-eight states' highest courts have ruled on constitutional challenges to their states' funding systems. Many of these courts reviewed state constitutional debates concerning the adoption of public education provisions. A review of these debates indicates that constitutional delegates recognized that significant human potential would be wasted by failing to provide adequate educational opportunities for all children, regardless of their place of residence or the wealth of their families and local communities. Further, they recognized that inadequate education would have serious consequences for individuals, communities, the state, and the nation.

Tennessee Accountability Index (Performance Model)

In 1999 the Tennessee State Board of Education adopted policy to provide measures of accountability of performance for local school districts. The policy contained measures of both academic and non-academic benchmarks. The policy was constructed to have multiple measures that were related to the initiatives in the Master Plan of the State Board for local school districts. The items and measures are displayed in Attachment 1.

Methodology

For the purpose of this study the authors selected the Cleland Rurality Index as a measure of the rurality of the locale of school districts within the state. The comparison also utilized the Accountability Index formula adopted by the Tennessee State Board of Education. The Accountability Index utilizes district average outcomes in the areas of student attendance, dropout rates, promotion rates, value added test results, elementary and middle school writing exam scores as well as comprehensive exam scores and results of college entrance exams. The study includes a comparison of the outcomes based on levels of rurality and Accountability Index for those school districts that were litigants in the Tennessee small school systems fiscal equity lawsuit, (Tennessee Small School Systems v. McWherter, 851 S.W.2d 139, 141 [Tenn. 1993]) with those districts that were non-plaintiffs.

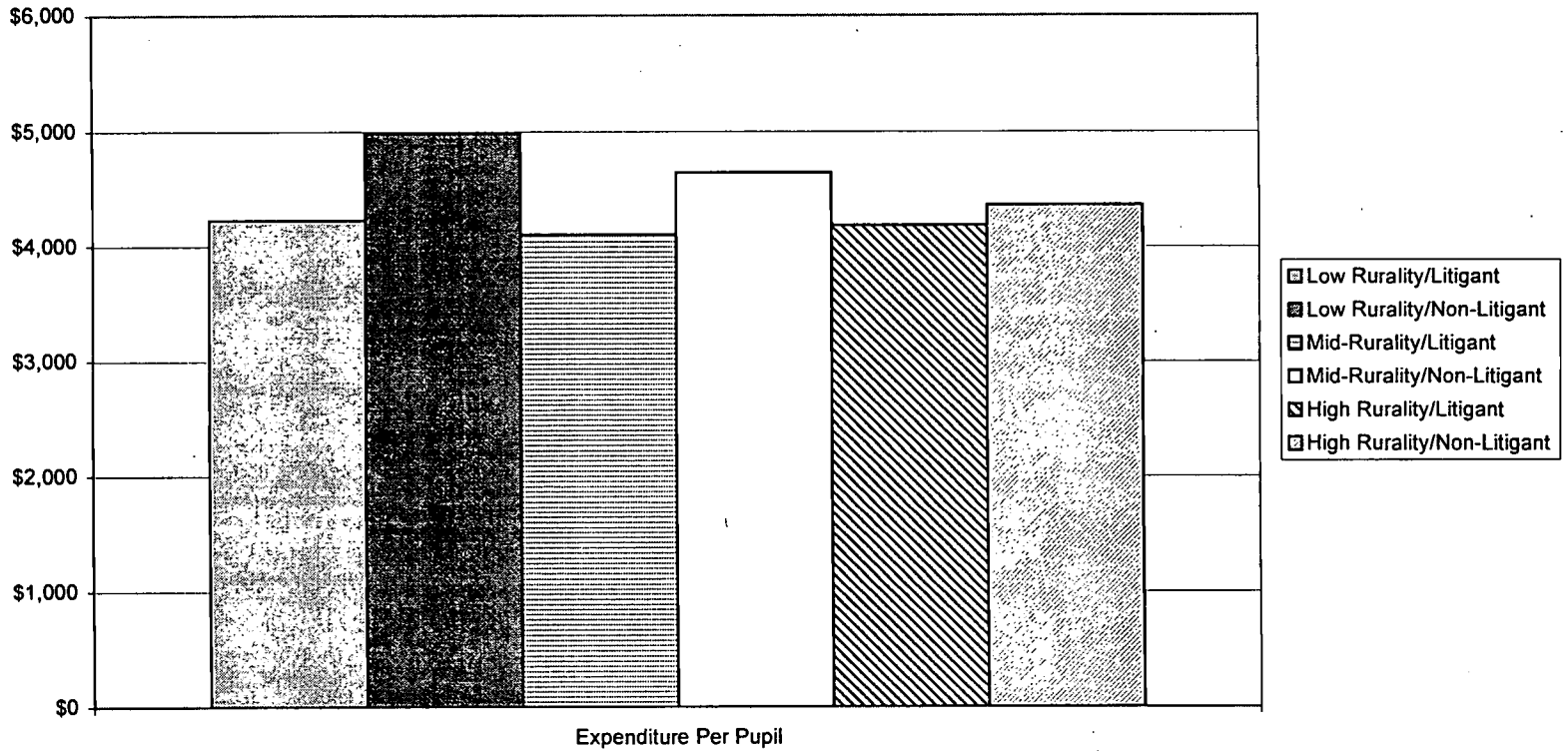
To determine an appropriate grouping of schools reflecting a substantial difference in degree of rurality, the authors compared school system groups 1-6 (low rurality) with school systems 7-12 (moderate rurality) and 11-16 (high rurality). By eliminating the "middle" group (7-10) from the analysis, the researchers can key on differences from the two extremes without the influences of data from counties that cluster around the area. This grouping also reflected the measure of the litigant / non-litigant school districts involved in the finance equity action within the state. All systems within a county were included when rurality was determined inasmuch as this reflected Cleland's methodology of using all areas of a county to determine the levels of rurality.

Outcomes

Initially, means were computed for the two groups. There were 29 low rurality school districts, 66 moderate rurality districts and 43 high rurality districts. Multiple academic and fiscal variables including value added achievement scores, comprehensive examination scores, per pupil expenditure and salary means were identified and obtained. Initially means were compared for key indicators among the three groups – expense per pupil, instructional expense and expenditures for regular teacher salaries. Since rurality is believed to have some impact on educational outcomes, the factor of cost becomes a major item. For the 29 schools in Rurality Category 1-6, $4,961 was spent per pupil. Similar dollar values for Rurality Group 7-12 was $4,304 and for Rurality Group 13-18 was $4,231. When examined by litigant–non-litigant categories, the figures for Rurality Group 1-6 were $4,231 and $4,987; for Group 7-2, $4,105 and $4,645 and for Group 13-18, $4,187 and $4,361. It is necessary to remind the reader that there was only one (1) school district in the litigant set of schools for Rurality Group 1-6.

These data, without the litigant - non-litigant paradigm show rural school districts spend approximately 85% of what the less rural districts spend per pupil per year. When rurality is not considered, litigant schools as a group spent an average of $4,142 per pupil while the non-litigant schools spent $4,747 per pupil. A small number of statistical data points also show a similar pattern in amount of property taxes collected – $22.0 M, $3.3 M, and $1.6 M for the three groups. The litigant - non-litigant numbers are $2.0 M for litigants and $12.4 M for non-litigants. Local option tax revenues show a parallel set of figures with $18.9 M, $2.4 M and $0.9M by rurality category and $1.1 M and $10.5 M for litigant / non-litigant. Figure 1 shows mean expenditure by rurality index groupings with litigant status also provided.

Figure 1 - Mean Per Pupil Expidenture by Rurality Index Groupings and Litigant/Non-Litigant Status



Regular teacher salaries, as a function of total instructional expenses, show the 1-6 group spent approximately 54% of its instructional dollar on regular teacher salaries while the other two groups spent 58% and 57% in the same manner. Both litigants and non-litigants spent approximately 53% of instructional dollars on regular teacher salaries.

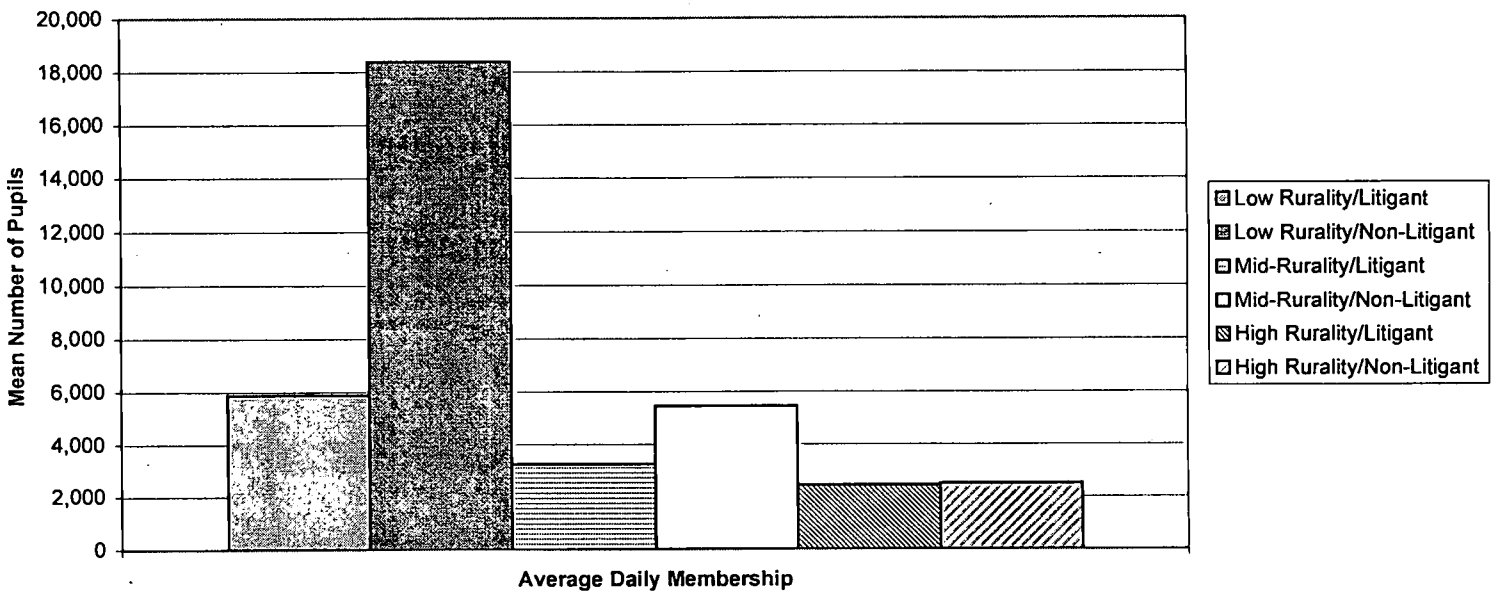
Figure 2 shows mean daily membership by rurality groupings and litigant – non-litigant status. These data, do not meet great surprise, since the vast majority of Tennessee students are in the non-litigant, low rurality school districts.

The majority of state funds and federal funds flow to the more urban districts; but these districts also provide the bulk of property taxes and collect the largest amount of local option tax revenues. Because of their ability the 1-6 group had a local option tax collection nine (9) times the 7-12 group and more than eighteen (18) times the 13-18 group. General property tax revenues followed the same pattern with the differences between 1-6 and 7-12 at approximately seven (7) times and the difference between 1-6 and 13-18 at approximately eleven (11) times. Table 1 presents these figures.

Table 1
Amount of Property and Local Option Taxes by Rurality Indexes

	1-6	7-12	13-18
Property Tax (M-$)	**22.0**	**3.3**	**1.6**
Local Option Tax (M-$)	**18.9**	**2.4**	**0.9**

Figure 2 - Mean Daily Membership by Rurality Index and Litigant/Non-Litigant Status



Accountability and Achievement Levels

The following information shows the results of K-5 District Achievement in Reading and Math and K-5 District Value-Added data for the three major rurality divisions. Table 3 shows the State grade distinction of A-F compared with the Reading Achievement results and thus the same comparisons for K-5 value-added data. Multiple measures can be used and are available for comparison, but Reading scores are a good across-the-board measure.

TABLE 3
K-5 Reading Achievement and Value Added Achievement by Rurality Group

Achievement	1-6 No/Percent	7-12 No/Percent	13-18 No/Percent
A	3/2.2	1/0.1	1/0.1
B	9/6.6	16/11.7	16/11.7
C	11/8.0	37/27.0	18/13.1
D	4/2.9	9/6.6	7/5.1
F	1/1.1	3/2.2	1/0.1
TOTAL (137)	28	66	43

Value Added	1-6 No/Percent	7-12 No/Percent	13-18 No/Percent
A	12/8.8	20/14.6	11/8.0
B	7/5.1	23/16.8	14/10.2
C	2/1.4	11/8.0	11/8.0
D	5/3.6	6/4.4	4/2.9
F	2/1.4	6/4.4	3/2.2
TOTAL (137)	28	66	43

These data show that in each rurality category the Grade of C is the mark predominately earned by the school districts in Reading Achievement. B Grades were earned by 11.7 percent of Rurality categories 2 and 3 while 6.6 percent were in Category 1. The most A Grades were earned by school districts in Group 3 with 4 while Category 1 had three (3) school districts

which received an A. The number of failing grades were the same for Groups 1 and 3 while Group 2 had the largest number of failing schools (3). The reader should note that five (5) districts or 3.6 percent of the school districts received a grade of F from a total of 137 districts. When similar analyses are made for the Tennessee Value Added data set, substantially more schools received a Grade of F. (See Value Added portion of Table 1). The percentage of schools reviewing grades of A or B favored rurality groups 7-12 and 13-18 with 31 percent of the total number of schools in Rurality Category 7-12 and 18.2 percent in rurality Category 13-18.

Overall value added scores support the idea that schools are making progress and the pattern of success as a function of rurality is not always strongly different in the area of reading.

The data from Language Arts Value Added Test results show a substantial number of F Grades for all three (3) categories with more than a 50 percent failure rate for Rurality Groups 1- 6 and 13-18 (within the group). These results are in contrast to Value Added scores for the 6-8 grade. In this cluster more than 95 percent of each group received an A Grade. Mathematics cluster patterns are the same for Achievement and Value Added scores as were the Reading results. The Achievement and Value Added scores for K-5 were basically the same. The results of 6-8 Achievement Scores were slightly higher than those for the Value Added results.

Final Notes

It was observed in the comparisons that groups of districts having the highest average level of outcome on the Rurality Index consistently performed less well on most measures of the Tennessee State Board of Education Accountability Index. Although the litigant districts achieved greater equalization of state funding for local education, their average level of rurality can predict the Accountability Index performance of these districts as a group. Relying on the premise of the Rurality Index, it is possible that school districts in Tennessee with high levels of rurality are not well connected to a system of organizations and associations that can assist in the resolution of this problem. School districts with high levels of rurality have needs in addition to the equalization of fiscal resources in order to bring about positive change in the outcome of those areas of the education endeavor in which they are being held accountable.

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Attachment 1

Tennessee Performance Model

Non-Academic	Grade Level	Measure	Goal	Weight
Student Attendance	K-6	Percent	95%	4%
Student Attendance	7-12	Percent	93%	4%
Dropout Rate	9-12	Percent	10%	6%
Promotion Rate	K-8	Percent	97%	4%

Academic,/	Elem & Middle /	Grade Level/	Measure /	Goal /	Weight
Value Added Academic Growth /		4-8 /	% of Expected Performance	100%/	25%

Academic Attainment /– Elem Reading and Math/ 3 %/ at or above National Average Range / 100% /4%

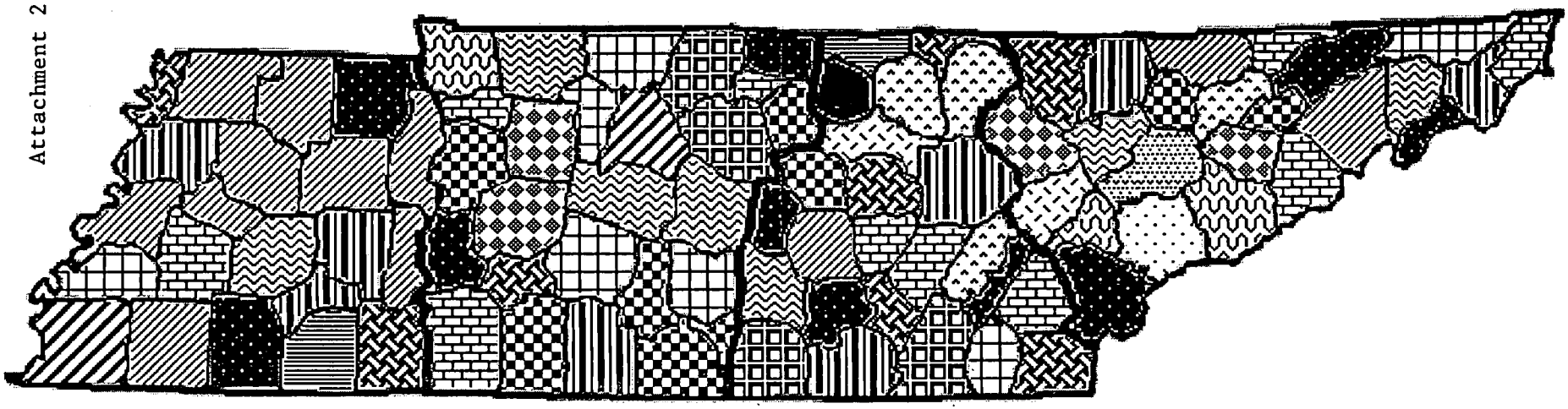
Academic Attainment/ – Elem & Middle 5, 8 Avg. Performance Level/ 4 8%

Elem & Middle Writing Assessment 4, 7 Avg. Performance/ 4 8%

Academic,	High School Grade Level	Measure	Goal	Weight
Gateway Tests – Algebra I, English II, Biology	When Completed	% Passing 1st Time	To be Determined	8%
Academic Attainment – 10 Determined	High School End- of-Course	When Completed	To be Determined	To be 10%
Value Added – Avg. Performance	10 High School End-of- Course	When Completed	% of Expected 100%	10%
High School Writing	11	Avg. Performance Level	4	4%
ACT, SAT Attainment	When Completed	% at level for full admission into TN Institutions of Higher Education	To be Determined	2.5%
Value Added, ACT, SAT	When Completed	% of Expected Performance	100%	2.5%

RURALITY MEASURES OF TENNESSEE COUNTIES

Attachment 2



- Rurality 1 (Least Rural)
- Rurality 2
- Rurality 3
- Rurality 4
- Rurality 5
- Rurality 6
- Rurality 7
- Rurality 8
- Rurality 9
- Rurality 10
- Rurality 11
- Rurality 12
- Rurality 13
- Rurality 14
- Rurality 15
- Rurality 16
- Rurality 17
- Rurality 18 (Most Rural)

2000 Accountability Results

	Litigant Districts	Non-litigant Districts
Value Added Elem	X	
Value Added HS		X
Promotion Rate		X
Attainment 8th		X
Attendance 7th		X
Comprehensive Exam		X
ACT / SAT / Work Keys	X	
Middle Gr. Writing	X	
Elem. Writing		X
Dropout		X
Max. Salary		X
Min. Salary		X
Current Expend		X
Fund Increase	X	

	Rurality < 7	Rurality >6 & <13	Rurality >12
Value Added Elem		X	
Value Added HS	X		
Promotion Rate	X		
Attainment 8th	X		
Attendance 7th		X	
Comprehensive Exam	X		
ACT / SAT / Wrk Kys	X		
Middle Gr. Writing	X		
Elem. Writing	X		
Dropout			X
Max. Salary	X		
Min. Salary			X (Lowest)
Current Expend	X		
Fund Increase		X	

X = Highest Mean Score etc. by variable.

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