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ABSTRACT
              In order to investigate the relationship between 7
school system characteristics and student achievement test scores in
the 45 metropolitan and 82 nonmetropolitan Alabama school systems,
1979 California Achievement Test combined battery scores for 8th and
12th grade students attending each system in the state were analyzed.
For both metropolitan and nonmetropolitan systems the most
significant structural factors accounting for the variation in
metropolitan-nonmetropolitan student achievement test scores were the
percentage of black enrollment, which had a negative effect on
scores, and the type of school system (city or county). Students in
independent city school systems attained higher average test scores.
In nonmetropolitan systems, a weak positive relationship was shown
between per pupil expenditure and 8th grade scores and between
average daily attendance and 12 grade scores. For metropolitan
systems a positive relationship was shown between per pupil
expenditure and teacher-student ratio and 8th grade scores.
Enrollment, average high school teacher salary, and average daily
attendance had no effect on student achievement. This study was
different in that it concentrated on the structural characteristics
of the schools, and in that it controlled for the socio-economic
differences that exist between metropolitan and nonmetropolitan
areas. (SB)

Nonmetro - Metro Differences in Student

Achievement Scores

by

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NONMETRO - METRO DIFFERENCES IN STUDENT ACHIEVEMENT SCORES*

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In the last fifteen years, there has been much interest in improving

the educational opportunities of racial minorities and the poor (Coleman

1966, Guthrie, et. al. 1971, Jenks 1972, Durant and Knowlton 1978). From

this has evolved a seires of federally sponsored intervention programs such

as Head Start, school breakfasts, and expanded vocational education (Sher

1977a). But only recently has attention again focused on the special prob-

lems of nonmetro school systems and their role in problems associated with

poverty and ruralness. Traditionally, educational standards and policies

have been determined primarily by and for metropolitan schools (Sher 1978)

even though a large proportion of the school age population attends schools

located in nonmetro areas. Sher (1978) points out the unique problems of

rural schools associated with their sparsity of population and geographic

isolation, such as relatively high overhead and a smaller tax base. Often

the result is a lower quality of educational opportunity provided rural youth

(Dillman and Tremblay 1977).

One manifestation of this difference is seen in the fact that nonmetro

school children score significantly lower than the U.S. average in almost

every subject area on standardized tests (Coleman, 1966). Ultimately, the

cost of this lower level of educational achievement is born both by the young

and by their communities. Many rural students are deprived of a quality

education, one that will developed their abilities and talents, while their

communities are handicapped by not having the best trained citizenry for

productive employment and leadership statuses. The Presidents National

Advisory Commission on Rural Poverty (1967:41) noted this state of affairs:

> "rural adults and youth are a product of an educational
> system that has historically short changed rural people.
> The extent to which rural people have been denied equality
> of educational opportunity is evident from both the pro-
> ducts of the educational system and the resources that
> gc into that system. On both counts the quality of rural
> education ranks low."

The Problem

Documentation of nonmetro and metro differences in educational quality

as they effect young people is often difficult to determine. Standardized

measures of attainment are seldom available in a form compatable with indicators

of educational quality. However, a recent administration of the California

Achievement Test throughout Alabama provides a unique opportunity to focus

on student achievement using school systems as units of analysis.

The system represents the level of school organization at which community-

wide decisions are made effecting the operation of the individual school units.

Obvious functional goals of the system and school involves the delivery of

knowledge to the individuals comprising the student clientel. Bidwell and

Kasarda (1975) indicate that a school system is confronted by a number of

short-run factors that influence effective knowledge delivery. These represent

environmental conditions largely beyond the system's control such as "in-

structional technology, the size and composition of the school-age popula-

tion, the level of fiscal input, community and parental preferences, about

schooling and laws and public policies concerning education" (Bidwell and Kasarda 1975:57). Given the constraints the system attempts to attain its·objectives through mobilization and organization of the available resources, staff, technology, and community values.

Nonmetro school systems are assumed almost universally to be of lessor quality and effectiveness in knowledge delivery than metro systems. The purpose of this analysis is to investigate the relationship between school system characteristics and student achievement test scores for nonmetro and metro systems. We will attempt to show the extent to which these systems differ with regards to variability in the organization of educational "resources" and the attainments of the students produced.

Student Achievement Studies

The predominant trend in attainment studies for the last ten years has been of a social-psychological nature emphasizing the attainment of occupational status. Considerable concern has been given to the impact of peer group, family, race, and socio-economic status upon achievement among youth and young adults.

The Wisconsin model of educational and occupational status attainment developed by Sewell and Houser (1972, 1975) includes academic performance, interpersonal influences of significant others, academic ability, and educational and occupational aspirations as variables intervening between socio-economic origins and educational and occupational attainments. Structural characteristics of schools have seldom been incorporated into such analyses and, when considered, have shown little influence on individual attainments. The part generally assigned to structural factors is merely as a functional means for transmission of parental socio-economic status to their children,

espaecially among white, males (Hauser 1972, Sewell and Hauser, 1975). The model considers as "school process variables" (DeBord et. al, 1977) academic ability, academic performance, three types of significant others influences and educational plans. Each of these variables is seen to intervene between parental socio-economic status and occupational attainment. Yet the learning context of the educational institution on student attainment is not considered.

The Coleman Report in 1966 emphasized the importance of socio-economic factors and social organization on academic achievement and attainment. At the same time, the report made several exceptions when discussing the South and, particularly, disadvantaged minority students. The average white student was reported as being less effected by any strength or weakness of a school's facilities than was a minority student. In the South 20 percent of the variation in achievement scores for blacks was found to be associated with the schools they attended, whereas among whites only 5 to 10 percent of the variation was attributed to differences between schools (Coleman 1966, Tweeton 1975). Coleman concluded that improvements in school quality will have an impact on disadvantaged and minority students but little effect on white students.

There is a continuing socio-economic differential between nonmetro and metro areas (Tweeton 1979). The uneven distribution of wealth further aggravates this differential because nonmetro school systems lack the resources necessary to provide the quality of schooling needed for students to meet full learning and employment potentials. Comparable systematic information is rarely available for assessing attainment differentials. Moreover, there is a lack of agreement about what measures serve as adequate indicators of the

school's performance of its educational function.[1] Two indicators of student achievement - school grades and standardized test results- are possibilities but both possess limitations. Either they are not widely used or they lack standardization. Thus, although differences in academic achievement between schools is assumed, it is difficult to determine the contributing factors involved. The family and social environments of the students as well as the school environment appear interrelated in effecting student achievement (Brookover 1975).

One of the few research efforts to use standardized achievement test scores to measure student academic attainment was conducted by Bidwell and Kasarda (1975) for school districts in Colorado. The measures of student attainment or achievement were determined using either of three standardized test[2] and normed "by the national distribution of performance by grade cn the particular test" (1975:60). Both the reading and mathematics scores on these tests were analyzed relative to five measures of the social environment of the students and four attributes of school district organization. The former conditions included school district size, fiscal resources, percent of disadvantaged students, parent's education and percent nonwhite; while the latter were pupil-teacher ratio, administrative intensity ratio (administrators. per classroom teachers), professional support ratio and staff qualification (percent with masters degrees).

A causal model was employed which placed school district organizational

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[1]Typical of this dilemma is the Colorado battle over the minority rights of Mexican-American children for a quality education. The rural-urban distribution of minority students is a critical factor. (Un 'Nuero Dia 1980).

[2]The standardized tests used included the Stanford Achievement Test, the Iowa Test of Education Development or the Iowa Test of Academic Progress.

attributes as intervening between the anticedent social environment and

achievement test scores. The major finding relative to school system

attributes was that median levels of students' attainments were depressed

by pupil-teacher and administrative intensity ratios and fostered by staff

qualifications. Among the characteristics of the social environment con-

sidered, only the percent nonwhite[3] had a direct effect on attainment, al-

though all environmental characteristics displayed an indirect effect through

the organizational structure.

Following the general analytic approach employed by Bidwell and Kasarda

(1975), this study concentrates on the school system as the unit of analysis

with the nonmetro and metro nature of the school system and its service area

as the key environmental condition. In effect, this design controls for the

socio-economic differences between nonmetro and metro areas and the school

systems that serve them. Using student achievement test scores as a measure

of a system's efficiency in serving its student population, selected indicators

of system characteristics are studied, for the two types of school systems.

As a general focus, attention is given first to the hypothesis that non-

metro school systems have lower student achievement scores than do metro

school systems. Because a sizeable proportion of nonmetro students are eco-

nomically disadvantaged there is reason to believe that structural characteris-

tics of school systems play an important part in shaping student achievement

scores and eventual occupational attainment. As a result the following

specific hypotheses are put forth: 1) the higher the average dollar expenditure

per student the higher are student achievement scores; 2) the higher the

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[3]This use of percent nonwhite was criticized by Hannan, et al (1976) because
it masks the Mexican-American minority which is defined as white in the
dichotomized white-nonwhite variable used.

teacher-student ratio the higher are student achievement scores; 3) the

higher the average daily attendance the higher are achievement scores; 4) the

higher the average high school teacher's salary the higher are achievement

scores; 5) the larger the student enrollment the higher are student achieve-

ment scores; 6) city school systems have higher mean student achievement

scores than county systems within both metro and nonmetro areas; and 7) the

larger the proportion of black students enrolled the lower are student

achievement scores.

Methods

The California Test of Achievement, 1977 edition, was administered by

the State Department of Education in February, 1979 to public school students

throughout Alabama. A summary report providing test score means by grade for

each school system was prepared and, released to the public. Scores were

reported for reading, spelling, math and the combined battery. Only the

battery scores are considered here.[4] Also, published annually by the State

Department of Education are a wide variety of statistics for each school

system. The most recent report available was for 1977.

This analysis will be limited to the Achievement Test scores for only

two grades, eight and twelve. Grade eight was selected because of transi-

tion from elementary to high school. Similarly, grade twelve is the culmina-

tion point at which the product of the educational system can be summarily

assessed.

Due to the nature of the available data this analysis considers only

the mean achievement scores for students attending each of the 127 school

systems in Alabama. These systems have been grouped as nonmetro and metro

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[4]Bidwell and Kasarda used both reading and mathematics median grade-
standardized (nationally normed) scores as measures of student achievement.

on the basis of Metropolitan Statistical Areas. Forty-five school systems
are located in MSA's and 82 in nonmetro counties.

Variables used to represent the structural features of the school
systems cover a variety of contextural conditions relating to educational
output. No attempt is made here to measure and test organizational attri-
butes of the systems in which local policies find impact (Bidwell and
Kasarda 1975). The seven independent variables and their operationaliza-
tions are:

1) Expenditure per Student - total expendent revenue during 1977
   divided by the total student enrollment during 1977.

2) System Size - total student enrollment during 1977.

3) Average Daily Attendance - daily attendance averaged across
   175 days in school year.

4) Student-Teacher Ratio - total student enrollment in 1977
   divided by the number of fulltime equivalent teachers employed
   in 1977.

5) System Type - classification of school system as a county-
   wide or local city system, dummy coded as 0 for county and
   1 for city systems.

6) Average High School Teacher Salary - total revenue disbursed
   for teacher's salaries in 1977 divided by the total number
   of fulltime equivalent teachers employed in 1977.

7) Percent Black Students - total number of black students
   enrolled in the school system divided by the total enrollment.

T-tests are used to determine the extent of variation in mean achieve-
ment test scores between metro and nonmetro school systems. Correlation

coefficients are employed to determine the relationship between test mean scores and selected structural characteristics reflecting the quality of education provided by the school system. Finally, multiple regression analysis is used to determine the effects of this set of independent variables on the dependent variable of student achievement scores across two broad groups of school systems, metro and nonmetro.

Findings

As a prelude to this analysis, attention was first focused on the hypothesis that students attending non-metro schools display lower mean achievement scores than those attending metro schools. For this relationship we considered test results for all grades. Our purpose was to assure that any rural-urban differences occurring for eighth and twelfth grade students were not unique to these grades. True non-metro and metro differences should theoretically permeate all grades.

Table 1 shows the composite or achievement battery scores for each of the twelve grades by non-metro and metro school systems. Beginning with first grade, students attending metro school systems have higher scores. This gap tends to increase throughout the schooling process. Moreover, standard deviations among the scores is greater for metro than for non-metro students through the ninth grade. Beginning with the tenth grade this pattern reverses with greater variability observed among non-metro school systems. Results of the t-tests indicated that the differences in cumulative mean scores for metro and nonmetro schools were significant at the .01 level for all grades above the third grade.

Table 2 shows the means, standard deviations and zero-order correlations of grades eight and twelve for nonmetro and metro school systems on selected system characteristics. The mean values for nonmetro systems are lower on the independent characteristics than those for metro systems, except for average daily attendance, student-teacher ratio and percent black students. Several of these mean differences were highly visible. Achievement test scores averaged a full grade level lower for nonmetro twelfth graders. Similarly, expenditures per student was $47.00 less and average high school teacher salaries were $355.00 less. Most critical, however, was the higher proportion of black students enrolled in nonmetro school systems, a difference of 12 percent. The negative correlation indicates that the test scores are inverse to the proportion of black students.

The two measures of school system size were the only variables failing consistently to correlate with either achievement scores or with the other independent variables. All other variables correlated significantly with achievement for eighth grade students in both nonmetro and metro school systems. The same was not true for twelfth grade students. At this level, expenditure per student was not significant for either nonmetro or metro systems and average high school teacher salary was not significant for metro schools.

Regression analysis was used to determine the extent to which these seven school system characteristics contributed to differences in student achievement test scores. Table 3 shows the unstandardized regression coefficients of the achievement battery test score means of grades eight and twelve for nonmetro and metro school systems. The results reveal that system level differences exist between nonmetro and metro school systems.

Nonmetro Systems

Two structural characteristics of the nonmetro or rural school systems accounted for most of the explained variation in student achievement test scores. Both the percent black enrollment and the type of school system (either county or city administered) were highly significant. The negative direction of the relationship between the percent of black enrollment in the system points-up the depressant effect of this factor on achievement test scores. The positive direction associated with the type of school system indicates that students attending independent city school systems attain higher average test scores.

Two other variables were significant for nonmetro school systems, but these were not consistent for both the eighth and twelfth grades. Expenditure per student was weakly related to eighth grade achievement scores. Similarly, average daily attendance was related to twelfth grade achievement scores. Both relationships were positive. Thus, the higher the expenditure per student and the higher the average daily attendance, the higher the test scores for these grades in nonmetro school systems.

None of the other variables considered for nonmetro systems were found to contribute significantly to differences in achievement. Student-teacher ratio, average high school teacher salary, and system enrollment each revealed little impact. Overall, the seven system level characteristics considered explained 81 percent of the variance in average achievement test results for nonmetro eighth graders and 49 percent for twelfth graders. The explained variance was significant at the .001 level.

Metro Systems

Results of the regression analysis for metro school systems differed in several respects from those for nonmetro systems. One important fact was that the profiles of the eighth and the twelfth grades differed.

As with the nonmetro school systems, the most critical characteristics of metro systems were the percent of the enrollment comprised of black students and the system type (county or city system). No other characteristic contributed significantly to achievement test scores at the twelfth grade level. Conversely, both expenditure per student and student-teacher ratio contributed significantly to the variance among eighth grade students. Neither the system size, average high school teacher salary or average daily attendance were important sources of variance among metro systems.

This combination of seven school system characteristics explained 77 percent of the variance in mean achievement test scores for metro eighth grade students and 70 percent for metro twelfth grade students. Both values are significant at the .01 level.

Conclusions

The major objective of this study was to examine the nonmetro-metro contextual differences in achievement scores with relation to structural characteristics of Alabama school systems. We found support for the hypothesis that several school systems characteristics are associated with student achievement scores. Moreover, the results suggest that system-wide characteristics affect nonmetro students more than metro students.

The primary explanatory factor in mean student achievement test scores was the black-white enrollment composition. In addition, only the administrative characteristic signifying whether the school system was county-wide or

parochial (city) consistently differentiated test scores. Because of the dominant impact of the race characteristic on the achievement test scores for both nonmetro and metro school systems, the percent black was removed as an independent characteristic. The R^2 values reduce considerably for both nonmetro and metro school systems. The remaining six structural characteristics are most differentiating among nonmetro school systems where about 50 percent of the variance in achievement test scores is explained. The same characteristics do not account for a significant proportion of the variance (17 percent) among metro twelfth grade scores. At the eighth grade level the R^2 is 33 percent and significant at .01.

Of the seven hypotheses tested, three must be clearly rejected. System enrollment, average high school teacher salary and average daily attendance appear to have little explanatory value. It seems that further consideration must be given to how these characteristics are measured and how they relate theoretically to student achievement. Also, the organizational characteristics (Bedwell and Kasarda 1975) directly under the control of the school system must be introduced. Our anticipation is that consideration of these factors will be more insightful.

Table 1. California Achievement Test Battery Score Means for Metro and Nonmetro School Systems in Alabama.

School Grade	Nonmetro mean	Nonmetro st. dev.	Metro mean	Metro st. dev.	Variance t Value	p
Grade one	1.75	.166	1.86	.264	2.55	.013
Grade two	2.76	.373	2.95	.385	2.70	.008
Grade three	3.71	.391	3.93	.512	2.50	.015
Grade four	4.64	.562	5.04	.675	3.43	.001
Grade five	5.57	.654	6.00	.749	3.22	.002
Grade six	6.43	.727	6.95	.818	3.57	.001
Grade seven	7.15	.826	7.74	.996	3.34	.001
Grade eight	8.35	.979	8.99	1.217	3.05	.003
Grade nine	9.11	1.155	9.90	1.333	3.33	.001
Grade ten	9.80	1.357	10.61	1.240	3.39	.001
Grade eleven	10.60	'.545	11.31	1.279	2.77	.007
Grade twelve	10.98	1.554	11.83	1.279	3.29	.001
Number of schools	82		45			

*System mean scores were adjusted for the number of students tested prior to recomputation of nonmetro and metro mean scores.

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Table 2. Means, Standard Deviations and Correlations for the California Achievement Test Battery Score. Means for the Eighth and Twelfth Grades of Nonmetro and Metro School Systems.

Metro N = 45 / Nonmetro N = 82		Grade 8 Score X̄ = 9.0 s = 1.217 X_1	Grade 12 Score X̄ = 11.8 s = 1.279 X_2	Expenditure per Student X̄ = $730.76 s = 115.470 X_3	System Size X = 10371 s = 14657.182 X_4	Average Daily Attendance X̄ = .91 s = .041 X_5	Student-Teacher Ratio X̄ = 22.1 s = 1.983 X_6	System Type X̄ = .60 s = .495 X_7	Average H.S. Teachers' Salary X̄ = $10,590 s = 469.914 X_8	Percent Black Students X̄ = .24 s = .191 X_9
Grade 8 Score X̄ = 8.4 s = .979	X_1	-----	.732***	.373**	-.171	.247*	-.557***	.342**	.416***	-.664***
Grade 12 Score X̄ = 10.7 s = 2.294	X_2	.638***	-----	.059	-.193	.183	-.252*	.339**	.190	-.720***
Expenditure per student X̄ = $683.40 s = 64.800	X_3	.298**	.187	-----	-.005	-.153	-.613***	.419***	.667***	.178
System Size X̄ = 3775 s = 2112.067	X_4	-.055	.054	-.042	-----	-.188	.135	-.341**	.116	.323**
Average Daily Attendance X̄ = .92 s = .027	X_5	-.278*	-.056	.0002	-.046	-----	-.050	.005	.022	-.374***
Student-Teacher Ratio X̄ = 22.7 s = 1.312	X_6	-.357***	-.231*	-.658***	.143	.027	-----	-.419***	-.527***	.073
System Type X̄ = .40 s = .493	X_7	.617***	.400***	.163	-.348**	-.315**	-.287**	-----	.388***	.037
Average H.S. Teachers' Salary X = $10,234 s = 309.861	X_8	.549***	.471***	.326**	-.015	-.162	-.299**	.517***	-----	.014
Percent Black Students X̄ = .36 s = .275	X_9	-.769***	-.614***	-.073	-.088	.220*	.256*	-.269*	-.411***	-----

*P < .05   **P < .01   ***P < .001

Table 3. Regression of Grades Eight and Twelve Achievement Test Battery Scores on Selected Structural Characteristics of Nonmetro and Metro School Systems in Alabama.

Structural Characteristics	School Grade and System Location			
	Eighth Grade		Twelfth Grade	
	Nonmetro	Metro	Nonmetro	Metro
Expenditure per Student	.004[*]	.109[**]	.004	.001
Student-Teacher Ratio	.066	-.185[*]	.145	.073
Average Daily Attendance (%)	.174	.199	14.803[*]	-3.294
Average H.S. Teacher Salary	.000	.000	.001	.000
System Size (enrollment)	.000	.000	.000	.000
System Type	.875[**]	.540[*]	1.385[**]	1.103[**]
Percent Black	-2.322[**]	-4.604[**]	-4.397[**]	-5.494[**]
R^2	.81	.77	.49	.70
F - Value	45.23[a]	17.98[a]	10.44[a]	12.39[a]
Number of School Systems	82	45	80[b]	45

* Coefficient is twice its standard error.

** coefficient is three times its standard error.

a - Significant at .01.

b - Two school systems did not administer the California Achievement Test at the twelfth grade level.

Alabama Department of Education. (1977). Annual Report: Statistical and Financial Data. Montgomery, AL: Alabama State Board of Education.

Bidwell, Charles E. and John D. Kasarda. (1975). "School District, Organization and Student Achievement," American Sociological Reivew, 40: 55-70.

Brookover, Wilbur B. and Edsel L. Erickson. (1975). Sociology of Education, Homewood, IL: Dorsey Press.

Chicano Education Project (1980). "Building Accountability in the 80's," Un Nuevo Dia, 6 (Winter).

Coleman, James S. et. al. (1966). Equality of Educational Opportunity, National Center for Educational Statistics. Washington, D.C.: U.S. Government Printing Office.

Debord, Larry W., Larry J. Griffen and Melissa Clark. (1977). "Race and Sex Influences in the Schooling Processes of Rural and Small Town Youth," Sociology of Education, 50 (April): 85-102.

Dillman, Don A. and Kenneth R. Tremblay. (1977). "The Quality of Life in Rural America." pp. 115-129 in The Annals: The New Rural America Philadelphia: The American Academy of Political and Social Science.

Durant, Thomas J. and Clark S. Knowlton. (1978). "Rural Ethnic Minorities: Adaptive Response to Inequality." pp. 145-167 in Thomas R. Ford (Ed.) Rural U.S.A.: Persistence and Change. Ames, IA: Iowa State University Press.

Gilder, Gilford C. (ed.). Alabama County Data Book: 1977, Montgomery, AL: Alabama Development Office.

Hannan, Michael T., John H. Freeman and John W. Meyer. (1976). "Specification of Models for Organizational Effectiveness," Comment on Bidwell and Kasarda (1975), American Sociological Review, 41: 136-143.

Hauser, Robert M. (1972). Socioeconomic Background and Educational Performance, Rose Monograph Series, Washington, D.C.: American Sociological Association.

Jencks, Christopher S. et. al. (1972). Inequality: A Reassessment of the Effect of Family and Schooling in America, New York: Pasic Books.

Mosteller, Frederick and Daniel P. Moynihan (Eds.). (1972). On Equality of Educational Opportunity, New York: Vintage Books.

Sher, Jonathan P. (1977). Education in Rural America, Boulder, CO: Westview Press.

Sher, Jonathan P. (1977). "Proposal to End Federal Neglect of Rural Schools," Phi Delta Kappan, 60: 280-282.

Sher, Jonathan P. (1978). <u>Revitalizing Rural Education: A Legislative Handbook</u>, Washington, D.C.: National Conference of State Legislatures.

Touliatos, John Byron Lindholm, and Amy Richl (1977). "Interaction of Race with Other Variables on Achievement in School," <u>Psychology in the Schools</u>, 14: 360-363.

Tweeton, Luther. (1979). "Education and Rural Development," Unpublished paper presented at the National Rural Education Seminar at the University of Maryland.