DOCUMENT RESUME

ED 382 627 TM 022 996

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TITLE A Comparison Study of the Characteristics of the Ten Best School Districts in the State of Arkansas for 1992-93.
PUB DATE Nov 94
NOTE 15p.; Paper presented at the Annual Meeting of the Mid-South Educational Research Association (Nashville, TN, November 9-11, 1994).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Accountability; Comparative Analysis; Educational Finance; *Educational Quality; *Elementary Secondary Education; Expenditures; Remedial Instruction; *Report Cards; School Districts; School District Size; *School Size; Scores; Socioeconomic Status; State Legislation; *Test Results
IDENTIFIERS *Arkansas

ABSTRACT

The purpose of the study was to determine the characteristics of the 10 best school districts in Arkansas for 1992-93. State legislation (Act 688) of 1989 established an Office of Accountability within the State Department of Education that would provide, among other things, an annual school report card. The school report card assesses the performance of schools/school districts serving students in grades K-12 inclusive, with comparable characteristics such as: (1) socio-economic characteristics; (2) size of districts; (3) test scores on nationally normed tests; (4) number of students taking remedial courses in high school and college; and (5) per pupil expenditure on administrative, athletic, and gifted and talented programs. A general linear model was used for the comparison. Data support the conclusion that, in Arkansas, the ideal school district size is probably larger than 799 and less than 8,999. Medium-sized schools did the most effective job in promoting learning with the least risk of dropouts or nonattendance. Seven tables present analysis results. (Contains 4 references.) (SLD)

A COMPARISON STUDY OF THE CHARACTERISTICS OF THE TEN BEST SCHOOL DISTRICTS IN THE STATE OF ARKANSAS FOR 1992-93

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A PAPER PRESENTED AT THE ANNUAL MEETING OF THE MID-SOUTH EDUCATIONAL RESEARCH ASSOCIATION

Nashville, Tennessee
November 9-11, 1994

RUNNING HEAD: SCHOOL EFFECTIVENESS

ABSTRACT

The purpose of the study was to determine the characteristics of the ten best school districts in the state of Arkansas for 1992-93. Act 668 of 1989 established an Office of Accountability within the State Department of Education which would provide, among other things, an annual school report card. The school report card assesses the performance of schools/school districts serving students in grades K-12 inclusive, with comparable characteristics such as socio-economic characteristics, size of districts, test scores on nationally-normed tests; number of students taking remedial courses in high school and college; and per pupil expenditure on administrative, athletic, and gifted and talented expenses.

INTRODUCTION

The purpose of the study was to determine the characteristics of the ten best school districts in the state of Arkansas for 1992-93. Act 668 of 1989 established an Office of Accountability within the State Department of Education which would provide, among other things, an annual school report card. The school report card assesses the performance of schools/school districts serving students in grades K-12 inclusive, with comparable characteristics such as socio-economic characteristics, size of districts, test scores on nationally-normed tests; number of students taking remedial courses in high school and college; and per pupil expenditure on administrative, athletic, and gifted and talented expenses.

METHOD

A General Linear Model (GLM) was used for the basis of comparison. Results indicate that the average daily membership and expense per student are among the primary characteristics of the best coals of the state an directly affect other variables such as test scores, remedial courses etc.

THE PROBLEM

What is the ideal size of school district for Arkansas? Is there an ideal size? In what ways would one size of school districts to be more effective than others? These are some of the questions which this paper will try to answer in this project.

DEFINITIONS AND PROCEDURES

In this study average daily membership (ADM) was used as the sole index of school d district size. This was done in an effort to keep the analysis simple and on a common denominator across Arkansas' 321 independent school districts as they existed in January 1992. Many other variables could have been used as independent variables for classifying and exploring Arkansas school districts--number of certified staff, square mileage within the district lines, local millage assessed, average salaries of teachers--and those might be useful for subsequent studies. The most common denominator across these seemed to be ADM (Average Daily Membership). Many of the other possibilities for independent variables hinged either directly or indirectly upon ADM for their creation.

The Rankings of Arkansas School Districts On Selected Items of January 1993 was reviewed in arriving at a means for investigation. This document, promulgated annually by the Arkansas State Department of Education, ranks school districts from first through last on expense per average daily attendance (ADA) for each of the previous two years, ADA, ADM, number of teachers K-12 for each of the previous two years, average teacher salary for each of the past two years, and the number of certified personnel for each of the past two years. Data were also obtained from 319 school districts about dropouts between 1988 through 1992, attendance rates, completion rates, retention rates, Minimum Performance Test pass rates for the 8th grade for 1988 through 1993, Stanford

Achievement Test results, ACT test results from high school seniors for 1989 through 1993, Advance Placement exams, Black student and Black staff percentages, public college remediation, core curriculum enrollment in college math and college science, administrative expenses per ADM, and athletic expenses per ADM. The fact that many of these expenses were reported by the Arkansas State Department of Education on a per-ADM basis strengthened our decision to used average daily membership as an independent variable in one way or the other for analysis.

RESEARCH METHODOLOGY

CREATION OF STRATA

Five strata appeared obvious after spending some time with the data. There were four school districts in the "ultra-large" strata for Arkansas although in some other states they might not be considered to be ultra large. These were districts with over 9,000 students in ADM. There was a noticeable break in the size of school district in the rankings after that with the district ranked number 5 having 7,809 ADM. The second strata was set from 8,999 to 3,000 and had 26 districts within it. The third noticeable separation in strata occurred between 2,999 and 800, and accounted for 108 school districts. The fourth was from 799 to 500 and had 73 districts. There were 108 in the strata of smallest schools, ADM of 499 or less. Five districts did not match in the data, resulting in a total of 319. Although 321 districts are reported in the 1993 Rankings, it was noted on page 2 that during the year there were two consolidations.

What is reported here then is a set of population parameters rather than sample statistics. While inferential techniques were used to add clarity to the analysis they technically were superfluous. When an entire population is measured, any observed difference is a significant

difference (Steele and Torrie, 1960, pp. 9-10; Wampold and Drew, 1990, pp. 84-84).

SURVIVAL IN LARGE SCHOOLS

In the 1988-89 school year the highest dropout rates were in the ultra-large school districts. Their dropout rate of 6.3 percent was twice that of the other four strata which were as little as 3 percent. Still, a dropout rate of six percent would be considered very favorable compared to recent rates of 50 and 51 percent in Chicago and Detroit schools. In the 1989-90 school year the large school strata (ADM more than 9,000) joined the second largest strata (3,000 to 8,999) with dropout rates of 5.6 and 4.3. The differences between the dropout rates of the larger districts and the smaller were significant beyond the .05 level. The same patterns continued in 1990-91 and 1991-92. A school district of 9,000 may take on a more impersonal atmosphere, and students are more likely to get lost in the shuffle.

Attendance rates are lowest in the largest strata of Arkansas Schools, though even at their worst they might well be the envy of the nation. Attendance averaged 92.67 percent in the ultra-large school districts, significantly less than the approximately 94.34 percent of the other four strata.

The issue of completion was the most telling when looking at district size as indexed by ADM. Table One shows the digression of completion with a high school diploma as school size goes from ADM of less than 500 to more than 9,000.

TABLE 1

HIGH SCHOOL COMPLETION RATES IN 1991-92 AS A FUNCTION OF AVERAGE DAILY MEMBERSHIP		
Size	N	Percentage Completing High School "On Time"
ADM 499 or less	105	85.135
ADM 500 through 799	73	83.757
ADM 800 through 2,999	106	81.522
ADM 3,000 through 8,999	26	80.871
ADM 9,000 through 24, 194	4	75.201
Total	324	
*Data not available on five school districts		

The odds of a student completing a high school education "on time"-- with his graduating class--drop ten percent as ADM moves up the spectrum from the smallest schools to the largest. In smaller schools it is more noticeable to classmates when a companion drops out of school and gives up on the dream of completing a basic education. Dropping out is more obvious in the medium sized school than it is in the larger size school districts of Arkansas. There is a statistically significant difference ($P<.02$) between the dropout rate of the ultra-large schools and the other four strata. The 1992-93 data followed the same trend.

On the issue of retention, students in small schools were no more likely to be held in grade than students in large schools. The percentage of students retained in grade in the 1990, 91, and 92 school years was about 3 percent overall.

SALARY DIFFERENCES AND SCHOOL DISTRICT SIZE

There were dramatic differences in teacher salaries between the five strata of districts studied. Table 2 shows the salaries between the five strata for the 1988-89 school year.

TABLE 2

AVERAGE TEACHER SALARIES IN 1988-89 IN FIVE STRATA OF ARKANSAS SCHOOL DISTRICTS		
Size	N	Percentage Completing High School "On Time"
ADM 499 or less	104	$ 19,092.60
ADM 500 through 799	73	$ 20,206.50
ADM 800 through 2,999	105	$ 21,101.70
ADM 3,000 through 8,999	26	$ 22,739.10
ADM 9,000 through 24,194	4	$ 24,942.80

There is an obvious economic difference of $5850.20 between the teachers of the largest and smallest districts, a difference that does not need an F test for further clarification, however an F test was done and the F for this ANOVA was 65.51, significant at the .0001 level. The teachers of the state found the difference significant at the grocery store, the automobile showroom, and the clothing store. The same linear trend, and of the same magnitude, persisted through the 1989, 1990, and 1991 school years. But the question that is bound to arise is: Do the students of these more highly paid teachers in their larger school districts learn more than their counterparts in the small rural schools? The data show that they do only to a point--and the point stops at the end of the 3,000 to 8,999 strata.

STUDENT ACHIEVEMENT AND SCHOOL SIZE

For each of the school years between 1988-89 through 1992-93, achievement measured by the Minimum Performance Tests was exactly counter to school size. The larger the school district was, the lower the percentage of students was that passed the MPT at the 8th grade level (Table 3).

TABLE 3

PERCENTAGE OF EIGHTH GRADE STUDENT PASSING THE MINIMUM PERFORMANCE TESTS BETWEN FIVE STRATA OF SCHOOLS		
Size	N	Percentage Passing MPT
ADM 499 or less	104	99.205
ADM 500 through 799	73	98.333
ADM 800 through 2,999	105	98.453
ADM 3,000 through 8,999	26	97.712
ADM 9,000 through 24,194	4	93.825

Differences were significant at the .0002 level. While the fact that over 90 percent of students passed the MPT at the 8th grade level in all school strata is laudable, it was obvious that the odds of passing it were higher in schools of less than 9,000 ADM. The same trend existed in the other four years of MPT data.

The top strata and the bottom strata had the highest percentages of students scoring in the bottom 25 percent on the Stanford Achievement Tests and the lowest percentages of students scoring in the top 25 percent (Table 4). Differences admittedly are not statistically significant in this analysis, but, on the other hand, these are population data, and all differences are significant when dealing with those.

TABLE 4

PERCENTAGES OF STUDENTS SCORING IN THE BOTTOM 25 PERCENT OF THE STANFORD ACHIEVEMENT TESTS IN 1991-92 AS A FUNCTION OF AVERAGE DAILY MEMBERSHIP		
Size	N	Percentage in lowest 25 percent
ADM 499 or less	106	25.716
ADM 500 through 799	73	24.297
ADM 800 through 2,999	106	23.501
ADM 3,000 through 8,999	26	22.214
ADM 9,000 through 24,194	4	27.672

These data lead to the conclusion that, for Arkansas, the ideal size school district is probably larger than 799 and less than 8,999. Medium sized schools do the most effective job in promoting learning, and with the least risk of dropouts or non-attendance.

The data in Table 5 depict the percentages of students in the five strata who scored above the 75th percentile on the Stanford Achievement Test in 1991. These are significant at the .01 level:

TABLE 5

PERCENTAGES OF STUDENTS SCORING IN THE TOP 25 PERCENT OF THE STANFORD ACHIEVEMENT TESTS IN 1991-92 AS A FUNCTION OF AVERAGE DAILY MEMBERSHIP		
Size	N	Percentage in lowest 25 percent
ADM 499 or less	106	18.666
ADM 500 through 799	73	19.633
ADM 800 through 2,999	106	21.343
ADM 3,000 through 8,999	26	24.720
ADM 9,000 through 24,194	4	21.164

What about ACT scores? In 1989 the highest ACT scores went to the graduates of the largest school districts in Arkansas, in a linear digression from 20.27 in the ultra-large school districts to 18.8 in the smallest school districts. By 1992, with full implementation of the Arkansas Standards and with other renewed efforts, the difference between the highest and the lowest was from 20.3295 (Strata 2 schools) to 19.1345 (strata 5 schools). The range of ACT scores tightened from 1.47 in 1989 to 1.195 in 1992, and the strata 1 schools of over 9,000 ADM no longer topped the list--strata 2 schools did. Students from the ultra-large strata schools did not perform significantly better than did their age-mates in smaller, more rural schools.

A similar trend existed when the percentages of students scoring above 19 on the ACT were investigated. In 1989 the trend was linear, with 62 percent of students from ultra-large school districts scoring above 19 and going downward to 50.261 percent for students in 500-799 ADM schools. But by 1991 the largest percentages of students scoring above 19 were coming from strata 2 schools (61.832 percent) and the least from strata 5 schools (49.706).

In 1990 the strata 1 schools led Arkansas on percentages of students earning advance placement at universities through advance placements. Table 6 shows the pattern of almost total domination by the ultra-large schools on advance placement credits.

TABLE 6

PERCENTAGES OF COLLEGE-BOUND STUDENTS EARNING ADVANCE PLACEMENT CREDITS IN 1990-91 ACCORDING TO SCHOOL DISTRICT SIZE		
Size	N	Percentage Earning Placement
ADM 499 or less	103	4.673
ADM 500 through 799	73	1.785
ADM 800 through 2,999	105	7.590
ADM 3,000 through 8,999	26	35.582
ADM 9,000 through 24,194	4	85.848

By 1992 the strata 2 schools had joined the ultra-large ones and were within 10 percent of having as many students earn advance placement credit.

TABLE 7

PERCENTAGES OF COLLEGE-BOUND STUDENTS EARNING ADVANCE PLACEMENT CREDITS IN 1992-93 ACCORDING TO SCHOOL DISTRICT SIZE		
Size	N	Percentage Earning Placement
ADM 499 or less	104	1.57
ADM 500 through 799	73	3.74
ADM 800 through 2,999	106	15.42
ADM 3,000 through 8,999	26	53.76
ADM 9,000 through 24,194	4	63.07

The strata 1 school districts experienced a 23 point drop in advance placement during that

time period, from an 86 percent to a 63 percent. At the same time the Strata 2 schools had an increase from 35 to 54 percent, and Strata 3 schools improved from 7.5 to 15. All of these are indicators that the middle sized schools in Arkansas are the ones that are showing the most notable improvements academically.

It is understood that school districts become the size they are, and acquire the characteristics they have, for reasons other than the rational ones we have attempted to outline above. Particularly where consolidation decisions are pending, however, it is hoped that these findings will be useful in configuring learning environments that seem to make the most sense.

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