DOCUMENT RESUME

ED 397 083 TM 025 083

AUTHOR Bobbett, Gordon C.; And Others
TITLE Can Arkansas School Districts' Report Cards on Schools Be Used by Educators, Community Members, or Administrators To Make a Positive Impact on Student Outcome?
PUB DATE 94
NOTE 56p.; Paper presented at the Annual Meeting of the Southern Regional Council on Educational Administration (Atlanta, GA, 1994).
PUB TYPE Reports - Evaluative/Feasibility (142) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS *Academic Achievement; Achievement Tests; Black Students; College Entrance Examinations; Criterion Referenced Tests; Demography; Educational Assessment; Educational Change; Elementary Secondary Education; Evaluation Utilization; Institutional Characteristics; Norm Referenced Tests; *Outcomes of Education; *Predictor Variables; *Report Cards; *School Districts; State Programs; Statistical Analysis; Student Characteristics; Testing Programs
IDENTIFIERS ACT Assessment; *Arkansas; Stanford Achievement Tests

ABSTRACT

This paper presents the latest in a series of studies examining school district report cards for their usefulness planning and implementing school improvement. The 1992-93 Arkansas report cards were studied. These were similar to the report cards from Tennessee that were the subject of the initial study in that they used and reported a norm-referenced national test and a criterion-referenced state-designed achievement test. Demographic items were used as independent variables, while student outcome items were used as dependent variables. These six outcomes were connected with test results on the Stanford Achievement Tests, the American College Testing program test, and the Arkansas Minimum Performance Test. Findings demonstrated that basic statistical techniques can yield misleading ideas about relationships among school and community characteristics and student achievement. More sophisticated statistical treatments are needed to portray relationships more accurately. Different school and community characteristics had dramatically different effects on the six outcome indicators reported. Arkansas report cards needed more information in terms of outcome indicators and categories for weaker student performance. In Arkansas, it is apparent that the impact of black students on overall student outcome data needs more study and clarification. Nine appendixes present detailed tables of the statistical relationships among variables. (Contains 11 tables and 13 references.) (SLD)

TM

CAN ARKANSAS SCHOOL DISTRICTS' REPORT CARDS ON SCHOOLS BE USED BY EDUCATORS, COMMUNITY MEMBERS, OR ADMINISTRATORS TO MAKE A POSITIVE IMPACT ON STUDENT OUTCOME?

Gordon C. Bobbett
Educational Consultant
8325 Richland Colony Rd.
Knoxville, TN 37923

Charles M. Achilles
University of Eastern Michigan
Ypsilanti, MI

Russell L. French
University of Tennessee
Knoxville, TN 37996

1994 Annual Meeting of the
Southern Regional Council on Educational Administration (SRCEA)]
Atlanta, GA

CAN ARKANSAS SCHOOL DISTRICTS' REPORT CARDS ON SCHOOLS BE USED BY EDUCATORS, COMMUNITY MEMBERS, OR ADMINISTRATORS TO MAKE A POSITIVE IMPACT ON STUDENT OUTCOME?

I. BACKGROUND

This paper represents the latest in a series of studies examining school district report cards. The 1988-89 and 1990-91 Tennessee school district report card data have been presented at this meeting (1991, 1992), the annual conference of the American Association of School Administrators (1992,1993), the American Education Research Association (1992,1993) and several other meetings (see References).

In the investigations of 1988-89 Tennessee report card data the researchers explored the relationships among eight school district variables (*average attendance, average professional salaries, county per capita income, expenditure per student, average daily membership, percentage of oversized classes, percentage of students on free or reduced lunches, and percentage of educators on upper Career Ladder levels II and III*) and the relationship between each variable and average student test scores at the school district level. In 1990-91, Tennessee began use of its new Tennessee Comprehensive Assessment Program (TCAP), thereby creating a new set of student outcome measures. The authors examined the relationships among 15 school district variables (*number of schools, average daily membership, percent student attendance, percent enrollment change, percent oversized class, percent students on free or reduced lunch, expenditure per pupil, county per capita income, percent career ladder, average professional salary, percent receiving regular high school diploma, percent receiving honors diploma, percent vocational education, percent special education, and percent chapter 1*) and the relationship between each variable and average student test scores at the school district level. In addition, the 1990-91 and subsequent report cards report TCAP results at substantially more grade levels within school districts (2-8, 10) making possible the study of relationships among school district characteristics and student outcomes at both school levels (*elementary, middle, secondary*) and individual grade levels (*2nd, 3rd, 4th, etc.*). This data analysis made possible interesting extensions of the 1988-89 report card studies and made possible a comparison of certain findings in the two sets of studies.

In this study, investigators have turned attention to Arkansas's school report cards. The 1992-93 Arkansas school district report cards are similar to Tennessee's school report cards previously analyzed, for they both used and reported a norm-referenced national achievement test, and a criterion-referenced state-designed achievement test. In addition, many demographic items—not related to student outcome and used as independent variables—are similar to Tennessee's such as Expenditure per Pupil, Attendance, Average Daily Membership (district size), Attendance rate, Income (county), percent Free and Reduced Lunch, and Pupil/teacher ratio (TENNESSEE category is "percent oversized classes").

---

1. This paper includes material presented at the annual meetings of MSERA (11/94) and extends the analyses of data to produce several interesting new findings.

This study analyzed the 1992-1993 ASCII data base provide by the Arkansas's State Department of Education; it represents the most current report card data available.

II. ARKANSAS LAW

In 1989 the State of Arkansas passed "Act 668" in the 77th General Assembly titled:

"AN ACT TO ESTABLISH AN OFFICE OF ACCOUNTABILITY WITHIN THE STATE DEPARTMENT OF EDUCATION; TO PROVIDE FOR ANNUAL SCHOOL DISTRICT REPORT CARDS; TO CREATE AN ADVISORY COMMITTEE ON ACCOUNTABILITY; AND FOR OTHER PURPOSES."

Background information related to the origin, purpose, and related guidelines of Arkansas' report cards is identified in several Sections of Act 668 which include:

> SECTION 1. This act shall be known as and may be cited as the "School Report Card Act."
>
> SECTION 2. In order to enhance the public's access to pubic school performance indicators and to better measure the dividends paid on the increasing public investment in Arkansas' schools, the General Assembly finds that a separate office of accountability should be established within the State Department of Education. The foremost obligation of this office shall be to publish annual "school report cards" assessing the performance of schools and school districts *serving students in grades K-12 inclusive, with comparable characteristics such as socioeconomic characteristics, size of districts, etc.*, across a range of indicators and over a period of time, and providing information to set future performance goals for each school or school district. A co-equal obligation of this office is to be accurate and open with the Department, the Advisory Committee, the subcommittee, and the public.
>
> SECTION 4. (a) . . . This report will be known as the "school report card" and shall be an index of each school or school district's performance measured against statewide standards for comparable school districts and schools. The "school report card" shall make comparisons to a school or school district's performance in preceding years and project goals in performance categories.
>
> (b) The "school report card" shall contain, but not be limited to, the school district's or school's drop out rate; retention in grade rate; college going rate; attendance rate; test scores on nationally-normed tests; number of students required to take remedial courses in high school and college; ratio of expenditures per pupil on administrative, athletic and gifted and talented expenses.
>
> (c) The "school report card" must be published no later than December 1 of each year, and it shall be published in a format that can be easily understood by parents and other members of the community who are not professional educators.
>
> SECTION 13 EMERGENCY It is hereby found and determined by the General Assembly that a program assessing the performance of Arkansas schools is needed to maintain the public's confidence in education reform in this state; that upon its establishment and funding, the office can begin accumulating necessary indicators of growth and improvement to supply to all citizens of the state; that in order to establish such a program within the Department of Education, this act needs to become effective immediately upon its passage. Therefore, an emergency is hereby declared and this act being necessary for the preservation of the public health, welfare and safety shall become effective immediately upon passage. (emphasis added)

III. ARKANSAS DISTRICT REPORT CARDS

Since 1989, Arkansas' State Board of Education has produced a report card on each school district using data provided by the district and by the State Department of Education. The cards report district-level data, i.e., individual school data are not reported. Currently, a report card contains student outcome data (testing information) and other district data. The Arkansas State Department of Education (SDE) provided a sample school district report card (Dewitt school district) including: **DEMOGRAPHIC AND DISTRICT INFORMATION** (Table 1, p 4), **DISTRICT AVERAGES** for Dewitt school district (Table 2, p 5), **DISTRICT AVERAGE COMPARED TO SIMILAR DISTRICTS, DISTRICT AVERAGE COMPARED TO STATE AVERAGE, AND DISTRICT COMPARISON WITH ALL OTHER DISTRICTS** (Table 3, p 6), and the **RANGES USED FOR COMPARISON GUIDE** (Table 4, p 7). In addition, the SDE provided the last five years of school district data (i.e., from 1988 to 1993) in an ASCII format for the 319 school districts. The authors organized Arkansas' report card items under two sections: (1) Student Outcome Indicators, and (2) Demographic Categories. They selected all outcome items with an "n" larger than 317 and used these items as the study's dependent variables. All items not directly related to student outcome were selected as the study's independent variables.

A. **Student Outcome Indicators (i. e. , used as the study's dependent variables)** The study's six student outcome variables along with the corresponding definitions provided by the Arkansas State Department of Education—Summary of Districts—are listed below.

1. **SAT8 25th Percentile** (SAT8-25%) Percent of students tested in grades 4, 7 and 10 scoring at or below the 25th percentile on the Stanford Achievement Tests SAT8.

2. **SAT8 50th Percentile** (SAT8+50%) Percent of students tested in grades 4, 7 and 10 scoring above the 50th percentile on the SAT8. The difference between this percentage and 100% is the district's remediation rate.

3. **SAT8 75th Percentile** (SAT8+75%) Percent of students tested in grades 4, 7 and 10 scoring above the 75th percentile on the SAT8.

4. **Average ACT** (ACT) The average ACT composite score of graduates on the last test taken.

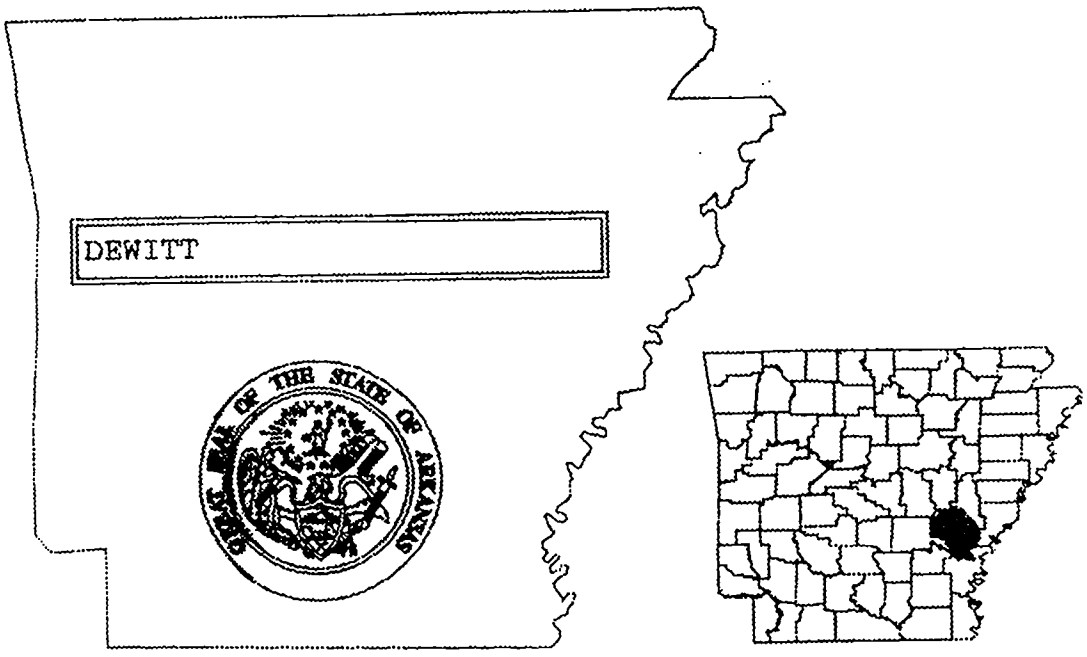
5. **MPT 8th Grade Pass** (MPT-8) Percent of eighth grade students obtaining the required passing score of 4204 on the Arkansas Minimum Performance Test (MPT).

6. **MPT Student Pass Rate** (MPT-PR) Percent of all students tested in grades 3, 6, and 8 obtaining a passing score on all tests taken.

B. **Demographic Categories (i.e., used as the study's independent Variables)** The investigators chose 17 demographic categories from the Arkansas District Report Card as the study's independent variables. Many educators and lay persons believe that these factors influence student academic performance.

ARKANSAS DEPARTMENT OF EDUCATION
ANNUAL SCHOOL DISTRICT REPORT CARD
1992 — 1993

Table 1.



DEMOGRAPHIC CATEGORIES 92-93

DISTRICT INFORMATION 91-92

		RANK			RANK
ADM	1,326	82	SQUARE MILES	597	5
RESOURCE RATE	$926	37	MILLAGE	22.0	299
EDUCATION LEVEL	8%	106	CERTIFIED STAFF	99.1	72
INCOME LEVEL	82%	177	PUPIL/TEACHER RATIO	14.1	149
FREE LUNCH RATE	40%	191	PER PUPIL EXPENSE	$3,067	147

Table 2

1992-93 REPORT CARD
DISTRICT AVERAGES 1989-1993

DEWITT

INDICATOR	88-89	89-90	90-91	91-92	92-93
DROPOUT RATE (7-12)	.6%	1.4%	1.2%	.7%	–
ATTENDANCE RATE	95.1%	94.9%	95.5%	95.2%	94.6%
COMPLETION RATE (9-12)	–	–	–	91.0%	97.6%
RETENTION RATE	–	–	2.5%	2.7%	3.5%
AVERAGE TEACHER'S SALARY	$21,742	$22,053	$26,157	$26,190	–
MPT 8TH GRADE PASS RATE	100.0%	100.0%	100.0%	97.5%	96.0%
MPT STUDENT PASS RATE (3-6-8)	–	–	–	95.4%	89.1%
MPT TESTS PASSED	–	–	–	12	12
STANFORD AT OR BELOW 25TH PERCENTILE	–	–	–	23.5%	17.6%
STANFORD ABOVE 50TH PERCENTILE	–	–	–	47.7%	55.6%
STANFORD ABOVE 75TH PERCENTILE	–	–	–	24.2%	29.9%
PERCENT TAKING ACT - SENIORS	–	57.4%	69.3%	58.7%	55.7%
AVERAGE ACT SCORE – ON LAST TEST TAKEN	–	18.9	19.6	20.8	19.8
SCHOLARSHIP ACT – COMPOSITE SCORE OF 19 OR ABOVE	–	51.9%	50.8%	64.1%	59.2%
ADVANCED PLACEMENT / EXAMS PER 1000	–	–	0.0	0.0	0.0
PERCENT OF BLACK STUDENT / PERCENT OF BLACK STAFF	–	–	–	16/9	15.9
PUBLIC COLLEGE REMEDIATION	55.9%	51.5%	62.1%	51.4%	–
CORE CURRICULUM ENROLLMENT IN MATH (9-12)	–	–	49.3%	47.3%	54.5%
CORE CURRICULUM ENROLLMENT IN SCIENCE (10-12)	–	–	58.6%	54.4%	59.5%
SCHOOL BOARD/SUPT./PRINCIPAL'S EXPENSES PER ADM	–	–	–	$286	$300
ATHLETIC EXPENSE PER ADM	–	–	–	$40	$41

1992-1993 REPORT CARD 1
DISTRICT AVERAGE COMPARED TO SIMILAR DISTRICTS
DISTRICT AVERAGE COMPARED TO STATE AVERAGE
DISTRICT COMPARISON WITH ALL OTHER DISTRICTS

Table 3

	DISTRICT AVERAGE	SIMILAR DISTRICTS AVERAGE	STATE AVERAGE	DISTRICT COMPARISON
DROPOUT RATE (7-12) *	.7%	2.4%	3.0%	GOOD
ATTENDANCE RATE	94.6%	N/A	94.0%	N/A
COMPLETION RATE (9-12)	97.6%	83.8%	81.1%	EXCELLENT
RETENTION RATE	3.5%	2.3	2.4%	BELOW AVERAGE
AVERAGE TEACHER'S SALARY *	$26,150	$25,646	$27,435	AVERAGE
MPT 8TH GRADE PASS RATE	96.0%	N/A	96.0%	N/A
MPT STUDENT PASS RATE (3-6-8)	89.1%	82.8%	78.7%	GOOD
MPT TESTS PASSED	12	N/A	10	N/A
STANFORD AT OR BELOW 25TH PERCENTILE	17.6%	19.7%	21.8%	AVERAGE
STANFORD ABOVE 50TH PERCENTILE	55.6%	49.9%	48.0%	GOOD
STANFORD ABOVE 75TH PERCENTILE	29.9%	23.2%	22.4%	GOOD
PERCENT TAKING ACT - SENIORS	55.7%	57.0%	60.4%	AVERAGE
AVERAGE ACT SCORE – ON LAST TEST TAKEN	19.8	19.8	20.1	AVERAGE
SCHOLARSHIP ACT – COMPOSITE SCORE OF 19 OR ABOVE	59.2%	58.3%	60.0%	AVERAGE
ADVANCED PLACEMENT / EXAMS PER 1000	0.0	N/A	32.8	N/A
PERCENT OF BLACK STUDENT / PERCENT OF BLACK STAFF	15.9	N/A	24/13	N/A
PUBLIC COLLEGE REMEDIATION *	51.4%	49.5%	51.7%	AVERAGE
CORE CURRICULUM ENROLLMENT IN MATH (9-12)	54.5%	59.1%	63.3%	AVERAGE
CORE CURRICULUM ENROLLMENT IN SCIENCE (10-12)	59.5%	64.8%	63.3%	AVERAGE
SCHOOL BOARD/SUPT./PRINCIPAL'S EXPENSES PER ADM	59.5%	64.8%	63.3%	AVERAGE
ATHLETIC EXPENSE PER ADM	$300	$86	$61	GOOD

* 1991-1992 DATA

COMPARISON GUIDE

EXCELLENT	=	WITH TOP 10% OF DISTRICTS
GOOD	=	BETTER THAN 70% OF DISTRICTS
AVERAGE	=	WITH MIDDLE 40% OF DISTRICTS
BELOW AVERAGE	=	BELOW 70% OF DISTRICTS
POOR	=	WITH BOTTOM 10% OF DISTRICTS
N/A	=	DISTRIBUTION OF DATA RESTRICTS VALID COMPARISON

Table 4

RANGES USED FOR COMPARISON GUIDE [1]

INDICATOR	Excellent	Good	AVERAGE	BELOW AVERAGE	POOR
DROPOUT RATE	0.0 - 0.4	0.5 - 1.4	1.5 -3.3	3.4 - 5.3	5.4 - 14.9
COMPLETION RATE	100.0 -93.7	93.5 -88.2	88.1 -79.5	78.8 - 70.8	69.6 - 36.0
RETENTION RATE	0.08 - 0.8	0.98 - 1.5	1.68 -3.0	3.18 - 4.8	5.18 - 11.2
AVERAGE TEACHER'S SALARY	31,480 -28,322	28,289 -26,626	26,594 -24,185	24,167 -22,189	22,186 -18,578
MPT STUDENT PASS RATE	93.38 -90.9	90.88 -86.8	86.78 -76.8	76.68 - 65.9	65.68 - 31.1
STANFORD AT OR BELOW 25TH PERCENTILE	2.08 -10.9	11.08 -15.5	15.78 -24.6	25.0 - 37.1	37.48 - 61.8
STANFORD ABOVE 50TH PERCENTILE	44.48 -30.8	30.6 -25.5	25.48 -16.9	16.88 - 10.1	9.78 - 0.0
STANFORD ABOVE 75TH PERCENTILE	44.48 -30.8	30.68 -25.5	25.48 -16.9	16.88 - 10.1	9.7 - 0.0
PERCENT TAKING ACT - SENIORS	92.1 -69.9	69.7 -60.9	60.8 -46.7	46.48 - 36.0	35.7 - 16.0
AVERAGE ACT SCORE	25.28 -21.4	21.38 -20.4	20.38 -18.8	18.78 - 17.1	17.08 - 13.3
SCHOLARSHIP ACT	100.0 -75.0	74.5 -66.1	66.08 -47.3	47.18 - 29.6	29.4 - 0.0
PUBLIC COLLEGE REMEDIATION	0.0 -17.4	20.0 -38.6	39.1 -62.1	62.5 - 83.3	84.6 -100.0
CORE CURRICULUM ENROLLMENT IN MATH	100.0 -72.9	72.3 -63.3	63.2 -50.9	50.8 - 42.5	42.4 - 16.9
CORE CURRICULUM ENROLLMENT IN SCIENCE	100.0 -79.6	79.5 -68.1	67.8 -56.7	56.6 - 48.5	48.3 - 7.7
ADMINISTRATIVE EXPENSE	96 -247	253 - 295	296 -403	404 - 557	558 -1,514
ATHLETIC EXPENSE PER ADM	3 - 25	26 - 48	49 - 96	97 - 160	161 - 362

1. Table taken from Arkansas Department of Education Annual School District Report Card, 1992-93, Summary of Districts.

1. **Attendance Rate** Average Daily Attendance divided by Average Daily Membership. (Annual average of the four quarterly reports).

2. **Completion Rate** Percent of students completing the 12th grade who were enrolled during or after the 9th grade. Calculated by subtracting the cumulative dropout rate from 100%. (November Dropout Report).

3. **Retention Rate** Percent of students retained in grades K-8. (October Report).

4. & 5. **Black Student % / Black Staff %** Percent of black students and percent of black staff. (Students by race calculated from Annual Enrollment file/Staff by race calculated from Annual Certified Personnel Report).

6. **Board/Superintendent/Principal's Expense** Sum of state funds reported as administrative expenses of the School Board, Superintendent's Office and Principal's Office listed on the Annual Financial Report as salary expenditures on page 15, lines 43 and 46; operational expenditures on page 22, lines 15 and 22 divided by Average Daily Membership.

7. **Athletic Expense** Athletic expenses on page 38 of the Annual Financial Report divided by the Average Daily Membership.

8. **ADM/Size** Size is measured by the Average Daily Membership (ADM). The ADM reflects the number of students the district must be prepared to serve. The ADM used is an annual average of four quarterly attendance reports submitted to the Arkansas Department of Education (ADE).

9. **Resource Rate** The local resource rate was chosen as an indicator of the potential assets a district may incorporate into the educational process. The resource rate is primarily dependent on the wealth of the community and the number of students served by the district. The rate used is for the current school year and was obtained by using the 1992-93 ADM.

10. **Education Level** The educational level of the district is another indicator of the socio-economic status that was taken from 1980 census data. The education level is represented by the percent of adults in the district in 1980 with four or more years of college.

11. **Income Level** The income level of the district is an indicator of the socio-economic status of the students' families. The income level was taken from 1980 census data and represents the percent of families in the district above the poverty level at that time.

12. **Free Lunch Rate** The percent of students in the district eligible for free and reduced lunches is used as a current indicator of economic status of the families. Information for the free and reduced lunches came from a 1992-93 Child Nutrition Services report.

13. **Square Miles** The area in square miles in the district.

14. **Millage** The number of mills in effect for the school year.

15. **Certified Staff** The number of certified staff reported on the Annual Statistical Report (ASR).

16. **Pupil Teacher Ratio** The average daily attendance (ADA) divided by the number of teachers.

17. **Per Pupil Expense** The amount spent per pupil in ADA for the school year.

III. METHODOLOGY

Investigators used both the 1992-93 Dewitt school district report card and the 1992-93 statewide Arkansas school district report card data for the study. Although the report card provided a variety of test

results at the district level, the study's six student outcomes identified above were used in these analyses. The following research questions guided the study:

1. How do school district characteristics currently reported in the report cards relate to the reported student achievement?

2. What Report Card categories impact the six different outcome indicators?

3. How do reported school district characteristics (i.e, independent variables) interact with each other?

4. Do the report Card characteristics appear to represent all or most of the factors which relate to student outcome?

5. When the overlap (multicollinearity) of the independent variables is eliminated, what effect does each of the independent variables (i.e., Arkansas 17 school district categories) have on the student outcomes?

6. What meaningful (or educationally useful) information can be gleaned by educators or parents when Dewitt school district report card's "DISTRICT AVERAGE COMPARED TO SIMILAR DISTRICTS" (see p 6) and "RANGES USED FOR COMPARISON GUIDE" (see p 7) are jointly examined?

Investigators treated student outcome data (test data) as the dependent variables and other data as independent variables that influence student outcome. A composite of all school districts in Arkansas (n=319) was produced. Several analyses were conducted. The study used the .05 level of significance.

To answer question 1, two types of analysis were conducted. First, the researchers used two types of "trend-line" analysis including the Pearson Product Moment correlation and a Simple Regression analysis. These two statistical treatments were used to assess the relationships between each of the reported characteristics and each of the six school district's student outcomes. A *coefficient of determination* (r^2) showed the levels of interaction between categories and each of the six outcome dependent variables. Only data analysis common to both treatments are examined and reported.

The second analysis for question 1 used two "primary" regression models including Stepwise Regression (Forward) and Exploratory Multiple Regression (Nunnally, 1978, pp 24-34).

Research questions 2 and 3 required no further statistical analyses. After question 1 was answered, the 17 categories were organized into three general groups including: (a) consistent impact on outcome, (b) marginal impact on outcome, and (c) nominal to no impact on outcome. Using the primary data analysis, the significant interactions between the categories and six outcome indicators were examined using the study's 17 independent variables.

To answer question 3, the earlier data analysis using the Pearson Product Moment correlation matrix "r" analysis was used to examine interactions between independent variables from two perspectives. First, positive interactions between independent variables and negative interactions between independent variables were grouped and examined. Second, after the analysis identified independent variables that had a consistent impact on the six different outcome indicators, the interactions between these independent variables and other independent variables were examined.

To answer question 4, the 17 items' determination of coefficient (r^2) were summed for each of the six outcome indicators by each of the study's preliminary and primary data analysis (i.e, Preliminary: Pearson Product Moment correlation and Simple Regression; Primary: Stepwise Regression and Multiple Regression).

In response to question 5, the multicollinearity (overlap) between each of the independent variables and the six outcome (dependent variables) indicators was examined. First, Guttman's Partial Correlation was used to examine the interaction between each of the 17 report card categories and the six outcome indicators. Second, Type III Sum of Squares was used to examine the probability of each interaction.

In response to question 6, "Dewitt's" school district report card was checked for accuracy against the ASCII file provided by the SDE. Specifically, both the "DISTRICT AVERAGE COMPARED TO SIMILAR DISTRICTS" (see p 6) and "RANGES USED FOR COMPARISON GUIDE (SEE P 7)" were examined for their accuracy. Next, the selected items were reported and discussed.

IV. FINDINGS

Findings of the study are reported in two areas: (A) descriptive analysis of school districts and (B) responses to the research questions.

A. Descriptive Analysis of School Districts

1. The 1992-93 Profile of Arkansas' (AK) 319 School Districts

profile of Arkansas (AK) school districts (n=319) by Report Card category was developed (see Appendix A). For each category, the number of schools submitting data, mean score (M), standard deviation (SD), and minimum, maximum, and range were compiled (see Appendix B). In addition, a supplementary scatterplot (see Appendix B) is provided to portray the study's dependent and independent variables visually.

a. Outcome Data

All 319 districts all districts provided SAT8-25%, SAT8+50%, SAT8+75%, MPT-8, and MPT-PR, while 317 districts provided ACT data (see Appendix B). Approximately 22% of the districts scored below the **SAT8-25%**, 47% of the districts scored above the **SAT8+%50,** and 21% of the districts scored above the **SAT8+75%**. The wide ranges (60, 78, and 44, respectively) and respective standard deviation analysis (SD=10, 12, and 8, respectively) reflected more than 3 standard deviations between the top and bottom districts' SAT8 scores. Arkansas' mean district **ACT** score was 19.5. The lowest district averaged about a 13 on the ACT and the top district averaged about a 25. This 12-point range suggested 3 standard deviations (SD=1.7) between the top and bottom district. About 97% of the district's students passed the MPT-8; the worst district had about 71% pass and the best district had 100% pass. Again, the 29% range reflected more than 3 standard deviations (SD=3.7) between the bottom and top districts. While most of the districts reflected a large percentage of students passing the 8th grade **MPT-8** (M=97%), a smaller percentage of students passed the combined MPT at grades 3, 6, and 8 (M=80%). When either **MPT-8** or

MPT-PR is examined, the ranges (71% v 100%; and 31% v. 98%, respectively) and respective standard deviations (SD=3.7, 10.8, respectively) were large between the top and bottom districts.

b. **Demographic Data**

In the **Attendance Rate** (%AR) category, although the average percentage of attendance was 94%, the 9% difference between the top and bottom attendance rates along with the respective SD of 1.0 suggested that the top (M=100) and the bottom (M=96) rates were several deviations below and above the mean rate. The mean high school **Completion Rate** (9-12 grade) was 83%, with a range of 36% to 100% (*an approximate 300% difference*). The mean **Retention Rate** (K-8th) was 2.5%. The range of a low 0% to a high 11% and a SD of 1.8 suggested that the retention rate for the lower grade levels varied greatly among school districts.

Arkansas' average district reflected an 18% **Black Student** enrollment, with a low of 0% and a high of 100%. The standard deviation of 27% suggested that most of the districts had a predominantly white enrollment. The mean percent **Black Staff** was about 8%, ranging from a low of 0% to a high of 87%. The scatterplot (Appendix B-2) showed 16 districts with greater than 80% **Black Students** and 4 districts with greater than 80% Black Staff—a 4 to 1 ratio between districts with black students and districts with black staff. Note that there were no categories for other minorities such as Hispanic, Asian, or native American.

Although the average money spent on **School Administrators** (principals, superintendents, etc.) was $371, the average ranged from $96 to $1514—a $1,418 difference. All AK districts provided Average Daily Attendance (ADM) category data. The average school district's attendance was 1,356 students. The largest district had 21,147 students and the smallest district had 90 students.

The categories **Resource Rate, Education** (county), and **Income** used 1980 census data, the most current census data on these categories; therefore, AK's 1992-93 district report cards used and reported data that were 13 years old. The district mean **Resource Rate** was $645, with the poorest county reflecting a county wealth of $198 per student and the wealthiest district reflecting a wealth of $3,861 per student. The SD of $371 suggested that the poorest county was about two SDs below the mean and the wealthiest county was more than 3 SDs above the mean. The category **Education** suggested that the average district had approximately 7% of the adults receiving four years of college, ranging from 2% to 31%—a 29% difference. The category **Income** had a mean of 82% above the poverty level, i.e., 18% of the AK population was below the 1980 poverty level. The poorest district had 55% above the poverty level while the richest county had 4% below the poverty level.

In 1992, about 46% of AK students participated in the **Free and Reduced Lunch** program. This category is one common (*but usually understated*) indicator of the socio-economic status level of families served by the school. Percentages ranged from 14% to 100%.

The **Miles** category, reflecting the square miles in the respective district, averaged 166 miles and

ranged from 25 to 759 miles. The data analysis suggested a positive skew since the largest districts were 3 SDs (SD=111) larger than the mean.

The average **Millage** ($) per district, an indicator of district taxable income or district wealth, was 29 and ranged from 18 to 58—*a .00% difference*. The average district had about 95 **Certified Persons** and ranged from as few as 12 to as many as 2,020.

The mean **Pupil Teacher Ratio** (*i.e., the average daily attendance (ADA) divided by the number of teachers*) was 14 and ranged from 6 to 17. The SD of 1.9 suggested when the districts exceeded the mean of 14, they generally exceeded by less than 1 SD. At the other end of the spectrum, the district with the smallest pupil teacher ratio had a ratio more than 3 SDs below the average.

The category **Per Pupil Expense** ($) mean was $3,164, with a range of $2,595 to $6,655 (*an approximate 250% difference*).

B. Findings Pertinent to Research Questions

Student outcomes were a major focus of this study. All 319 districts provided SAT8-25%, SAT8+50%, SAT8+75%, MPT-8, and MPT-PR, and 317 districts provided mean ACT scores.

Note: except for SAT8-25%, all other student outcome items are reported from a "positive" perspective. For example, the data for SAT8+50%, ACT, MPT-8 , etc. suggests that the higher the number, the better the student's outcome. In the following data analysis and discussion, when data analysis for SAT8-25% reflects a "negative" slope, the authors have changed the "minus" to "plus", or the "plus" to a "minus" to make data presentation and discussion consistent.

1. How do school district characteristics currently reported in the report cards relate to the reported student achievement?

The study's complete data analysis for the Pearson Product Moment correlation's "r" (Appendix C), Simple Regression's "p-value" (Appendix E), Stepwise Regression (Forward) "p-value" (Appendix F), and Exploratory Multiple Regression "F-score" (Appendix F) are included in the Appendices. The study's analyses are organized into "preliminary" and "primary" analyses, where preliminary analysis references Pearson Product Moment and Simple Regression and primary analysis references Stepwise and Exploratory Multiple Regression, Type III Sum of Squares, and Guttman's Partial Correlation.

a. Percentage Black Students, Percent Free and Reduced Lunch, Attendance Rate, and Education (County 1980) have a consistent impact across different statistical analyses.

An independent variable has a "consistent impact" on the dependent variable if it shows a significant relationship across: (1) more than four of the six outcome indicators using preliminary analysis (Simple Regression or Pearson Product Moment) and (2) three or more of the six outcome indicators using primary analysis (Stepwise [Forward] or Exploratory Multiple Regression).

i. **Percentage of Black Students** When the percentage of black students data analyses are examined, there are 20 primary relationships and 32 total relationships (Preliminary= Pearson and Simple; Primary = Stepwise (Forward), Exploratory Multiple Regression, Type III Sum of Squares, Guttman's Partial Correlation statistics) were applied to six outcome indicators—see Table 5). Both the Pearson Product Moment correlation and Simple Regression analyses suggested a significantly negative relationship between Percentage of Black Students and each of the study's six outcome indicators. In the Primary data analysis segment, the Stepwise Regression's Forward analysis indicated a significantly negative relationship for SAT8+50%, SAT8+75%, and ACT score, a significantly positive relationship for SAT8-25%, and no significant relationship for MPT-8 and MPT-PR. The Exploratory Multiple Regression identified a positive trend-line for SAT8-25, and a significantly negative trend-lines for the other five student outcomes. The Type III Sum of Squares analysis suggested a significantly negative relationship for SAT-50%, SAT+75%, ACT score and MPT-PR and a negative trend-line for SAT-25%. The Guttman Partial Correlation statistic indicated a significantly positive (≥3%) relationship with SAT-25%, and a significantly negatively association with SAT+50%, SAT+75%, ACT scores, and MPT-PR. Simply, when the percentage of black students in a district increases, each of the six outcome measures generally decrease.

ii. **Attendance Rate** In the study's Attendance Rate analysis, the authors observed 19 primary and 29 total relationships that were significant (see Table 5). Both the Pearson Product Moment correlation and Simple Regression analysis suggested a significantly positive relationship between **Attendance Rate** and SAT8+50%, SAT8+75%, MPT-8, and MPT-PR, an a negative impact on SAT8-25%—five of the six outcome items, but an insignificant relationship with the student's average ACT score. The Type III Sum of Squares suggested a significantly negative association with SAT-25%, and an important positive affiliation with the other five outcome indicators. The Guttman's Partial Correlation statistic suggested that the category % Attendance had a important (≥3%) negative relationship with SAT-25%, and a important positive connection with SAT+75% and MPT-PR, but not an important association with SAT+50%, ACT scores, and MPT-8. Except for the student's ACT score outcome indicator (*the only elective test and the only high school exit measure*), % Attendance Rate had a large positive association with four of Arkansas' student outcomes indicators and a negative relationship with SAT+25%. When the student's attendance rate increases, there is positive increase in the student outcome measures. However, increased attendance in the district does not influence ACT scores, probably because these students have higher attendance.

iii. **Education (1980 County Census)** When the level of Education item was examined, data analysis identified 15 primary and 22 total relationships that were significant. While the Pearson Product Moment correlation analysis suggested the Education category had a significantly positive impact on SAT8+50%, SAT8+75%, and ACT scores (items that might be categorized as mid-level and top-level student outcomes), there was a significantly negative impact on MPT-8, and no impact SAT8-25% and

Table 5. Items that have a **CONSISTENTLY** significant relationship on student outcome: 1992-93 Arkansas School District Report Cards *.

	SAT-25%	SAT+50%	SAT+75%	ACT	MPT-8	MPT-PR
i. **% Black Student**	**20 Primary & 32 Total Significant Relationships**					
Pearson Product Moment (r)	*.70*	*-.70*	*-.57*	*-.58*	*-.40*	*-.68*
Simple Regression (p-value)	*.00*	*-.00*	*-.00*	*-.00*	*-.00*	*-.00*
Stepwise Regression (F-score)	6.9	-20.5	-25.7	-39.7	—	—
Exploratory Multiple Reg. (p-value)	.00	-.00	-.00	-.00	-.00	-.00
Type III Sum of Squares (p-value)	.00	-.00	-.00	-.00	—	-.00
Guttman's Partial Corr. (≥3% impact)	16.5	-19.8	-11.2	-9.2	—	-9.8
ii. **Attendance Rate**	**19 Primary & 29 Total Significant Relationships**					
Pearson Product Moment (r)	*- .19*	*.16*	*.20*	—	*.21*	*.21*
Simple Regression (p-value)	*- .00*	*.00*	*.00*	—	*.00*	*.00*
Stepwise Regression (F-score)	- 20	8.7	14.9	—	21.2	18.9
Exploratory Multiple Reg. (p-value)	-.00	.00	.00	—	.00	.00
Type III Sum of Squares (p-value)	-.00	.01	.00	.03	.00	.00
Guttman's Partial Corr. (≥3% impact)	-3.9	—	3.9	—	—	5.4
iii. **Education (1980)**	**15 Primary & 22 Total Significant Relationships**					
Pearson Product Moment (r)	—	*.21*	*.28*	*.30*	***-.12***	—
Simple Regression (p-value)	—	*.00*	*.00*	*.00*	—	—
Stepwise Regression (F-score)	- 6.9	20.5	25.7	39.7	—	—
Exploratory Multiple Reg. (p-value)	- .00	.00	00	.00	.00	—
Type III Sum of Squares (p-value)	—	.00	.00	.00	—	—
Guttman's Partial Corr. (≥3% impact)	—	3.7	5.3	8.1	—	—
vi. **Free and Reduced Lunch**	**13 Primary & 25 Total Significant Relationships**					
Pearson Product Moment (r)	*.61*	*-.62*	*-.60*	*-.53*	*-.23*	*-.60*
Simple Regression (p-value)	*.00*	*-.00*	*-.00*	*-.00*	*-.00*	*-.00*
Stepwise Regression (F-score)	11.0	-12.8	-17.3	-7.2	-23.7	—
Exploratory Multiple Reg. (p-value)	.02	-.00	-.00	-.02	-.00	—
Type III Sum of Squares (p-value)	—	-.03	-.00	—	—	—
Guttman's Partial Corr. (≥3% impact)	—	—	—	—	—	-3.1

* Each of the six different statistical treatments employed different methods to identify significant relationships. The Pearson Product Moment Correlation statistic reports an "r" value, the Simple Regression simple reports a "p" value, the Stepwise Regression statistic reports an F-score, and the Exploratory Multiple Regression reports a "p-value", Type III Sum of Squares reports a "p-value", and Guttman's Partial Correlation reports a % (important ≥3%) of impact on student outcome.

MPT-PR. The Simple Regression analysis identified significantly positive relationships for SAT8+50%, SAT8+75%, and ACT scores.

During the primary (multivariate) data analysis, the Stepwise Regression (Forward) analysis reflected a nominally negative significant relationship between Education and SAT8-25%, and a very strong positive relationship with SAT8+50%, SAT8+75%, and ACT scores. The Exploratory Multiple Regression analysis suggested no relationship with MPT-PR, significantly positive relationships for SAT8+50%, SAT8+75%, ACT scores, and MPT-8, and a significantly negative association with SAT8-25%--five of the study's six outcomes reflected relationships. The Type III Sum of Squares analysis and Guttman's Partial Correlation both suggested that the category Education had a significantly positive or important imprint on SAT+50%, SAT+75%, and ACT scores, but no relationship on SAT-25%, MPT-8, or MPT-PR.

The Education item has a positive, large and consistent association with the academically average and advanced students (SAT8+50%, SAT8+75%, ACT scores, MPT-8), has a nominally negative significant relationship on the bottom quartile (SAT8-25%), and NO relationship on elementary and middle school students taking a state designed criterion-reference test (MPT-PR). The district's Education relates to student outcome as measured by national achievement tests (SAT8 and ACT), but not as measured by state designed, criterion-referenced achievement tests (MPT-8 and MPT-PR).

iv. **Free and Reduced Lunch** In the Free and Reduced Lunch analysis, 10 primary and 22 total relationships were significant. The Pearson Product Moment correlation analysis and the Simple Regression analysis both suggested that an increasing percentage of Free and Reduced Lunch students has a negative impact--other than for SAT8-25%--on all the study's outcome indicators. When the primary statistical treatments were both applied to the data, both the Stepwise Regression and the Exploratory Multiple Regression suggested that the percent of Free and Reduced Lunch Students in a district had a significantly positive impact on SAT8-25%, and negative impact on SAT8+50%, SAT8+75%, ACT scores, and MPT-8 scores, but no significant impact on the MPT-PR outcome category. The Type III Sum of Squares analysis suggested a negative relationship with SAT+50% and SAT+75%, and Guttman's Partial Correlations analysis suggested a negative association with MPT-PR. Generally, the larger the district's percentage of students receiving Free and Reduced Lunch, the lower the student outcomes.

b. **Resource Rate, Pupil/teacher ratio, Percentage Black Staff, Administrative Expenditure per ADM, and Expenditure Per Pupil have a marginal impact on student outcome.**

An independent variable has a "marginal" association with the dependent variable if it shows a significant relationship across: (1) two or more of the six outcome indicators using preliminary analysis (Simple Regression or Pearson Product Moment) and (2) one or two of the six outcome indicators using primary analysis (Stepwise, Exploratory Multiple Regression, Type III Sum of Squares, and Guttman's Partial Correlation [i≥3% relationship with outcome).

i. **Resource Rate** In the **Resource Rate** category, the data analysis showed 7 primary and 11 total significant relationships. Both the Pearson Product Moment analyses and Simple Regression analyses suggested that Resource Rate has a significantly positive relationship with SAT8+75% (*high outcome students in the top quartile reflected on a nationally validated, reliable norm-referenced test in grades 4, 7, and 10*), and a significantly negative relationship between MPT-8 (8th grade state proficiency test). During the primary analyses, both the Stepwise Regression and Exploratory Multiple Regression suggest that Resource Rate had a positive impact on both the SAT8+50% and the SAT8+75% (see Table 6). The Type III Sum of Squares statistic indicated that Resource had a significantly positive association with SAT+50% (*average outcome students*) and a significantly negative connection with on MPT-8, but it did not relate with the other four other outcome indicators. Finally, the Guttman's Partial Correlation analysis suggested that Resource had a important (≥3%) negative connection with MPT-8 but no important relationship with the other five outcome indicators.

Resource Rate has a positive relationship with the typical average and above average student as indicated by a norm-referenced national achievement test. Resource rate does not reflect an important association with the weaker student's outcomes as measured by SAT8-25%, on top student's outcomes as measured by ACT (i.e., a possible high school exit exam), or all student's outcomes as measured by a multi-grade level state designed, criterion-referenced achievement test (MPT-PR and MPT-8). Resource Rate shows relationships with one set of things. But it does not relate to ACT where students choosing to take the test are probably more affluent. It doesn't show that Resource make much difference in criterion reference and more resources do not relate to lower STA8 scores!

ii. **Pupil/teacher ratio** There were 2 primary and 13 total significant relationships between the **pupil/teacher ratio** and the six outcome categories. Both the Pearson Product Moment correlation and the Simple Regression analysis suggested a significantly positive relationship between Pupil/Teacher ratio and SAT8+50%, SAT8+75%, ACT scores, and the district's MPT-PR percentages, a negative relationship with SAT8-25%, but no relationship with MPT-8. During the primary analysis, both the Stepwise Regression, Exploratory Multiple Regression and Type III Sum of Squares analysis showed a significantly positive relationship between pupil/teacher ratio and MPT-PR, but not for the other five outcome indicators. The Guttman's Partial Correlation statistic indicated on important relationship between Pupil/teacher ratio and student outcome. The Pupil/teacher ratio category interacts with grades 3 and 6 (MPT-PR), but not grade 8 (MPT-8) outcomes.

iii. **Percentage Black Staff** When the category **Percentage Black Staff** was examined, the data analysis identified 1 primary and 13 total significant relationships between Percentage Black Staff and the six outcome items. The Pearson Product Moment correlation analysis and the Simple Regression analysis were used to identify significant negative relationships between **Percentage Black Staff** and the six outcome categories. When the primary analyses was developed, the Stepwise Regression identified a

Table 6. Items that have a marginally significant association with student outcome.

	SAT-25%	SAT+50%	SAT+75%	ACT	MPT-8	MPT-PR
i. Recourse Rate	*7 Primary & 11 Total Sign.. Relationships*					
Pearson Product Moment (r)	—	—	.15	—	**-.21**	—
Simple Regression (p-value)	—	—	.01	—	-.00	—
Stepwise Regression (F-score)	—	7.2	6.5	—	—	—
Exploratory Multiple Reg.(p-value)	—	.00	.00	—	—	—
Type III Sum of Squares (p-value)	—	.05	—	—	-.00	—
Guttman's Partial Corr. (≥3% impact)	—	—	—	—	-3.9	—
ii. Pupil/teacher ratio	*3 Primary & 13 Total Sign.. Relationships*					
Pearson Product Moment (r)	-.16	.19	.22	.28	—	.17
Simple Regression (p-value)	-.00	.00	.00	.00	—	.02
Stepwise Regression (F-score)	—	—	—	—	—	35.4
Exploratory Multiple Reg.(p-value)	—	—	—	—	—	.04
Type III Sum of Squares (p-value)	—	—	—	—	—	.00
Guttman's Partial Corr. (≥3% impact)	—	—	—	—	—	—
iii. Percent Black Staff	*1 Primary & 13 Total Sign.. Relationships*					
Pearson Product Moment (r)	.63	-.61	-.51	-.50	-.35	-.64
Simple Regression (p-value)	.00	-.00	-.00	-.00	-.00	-.00
Stepwise Regression (F-score)	—	-4.0	—	—	—	—
Exploratory Multiple Reg.(p-value)	—	—	—	—	—	—
Type III Sum of Squares (p-value)	—	—	—	—	—	—
Guttman's Partial Corr. (≥3% impact)	—	—	—	—	—	—
iv. Administrative, Expenditure/ ADM	*1 Primary & 10 Total Sign.. Relationships*					
Pearson Product Moment (r)	.12	-.15	-.14	-.19	—	-.19
Simple Regression (p-value)	—	-.03	-.05	-.01	—	-.04
Stepwise Regression (F-score)	—	—	—	—	—	—
Exploratory Multiple Reg.(p-value)	—	—	—	—	**+.02**	—
Type III Sum of Squares (p-value)	—	—	—	—	—	—
Guttman's Partial Corr. (≥3% impact)	—	—	—	—	—	—
v. Number Certified Persons	*1 Primary & 6 Total Sign.. Relationships*					
Pearson Product Moment (r)	—	—	—	.13	-.28	-.12
Simple Regression (p-value)	—	—	—	.02	-.00	—
Stepwise Regression (F-score)	—	—	—	—	—	—
Exploratory Multiple Reg.(p-value)	—	—	—	—	—	—
Type III Sum of Squares (p-value)	—	—	—	—	-.04	—
Guttman's Partial Corr. (≥3% impact)	—	—	—	—	—	—
vi. Per Pupil Expenditure	*1 Primary & 4 Total Sign.. Relationships*					
Pearson Product Moment (r)	.12	—	—	-.12	—	-.15
Simple Regression (p-value)	—	—	—	—	—	—
Stepwise Regression (F-score)	—	—	—	—	—	—
Exploratory Multiple Reg.(p-value)	—	—	—	—	**+.02**	—
Type III Sum of Squares (p-value)	—	—	—	—	—	—
Guttman's Partial Corr. (≥3% impact)	—	—	—	—	—	—

significantly negative association between **Percentage Black Staff** and SAT8+50%, but no significant relationship with the other five indicators. The Exploratory Multiple Regression analysis, Type III Sum of Squares, and Guttman's Partial Correlation identified no associations with any of the six outcome indicators. Percent Black Staff might be identified as an important variable using preliminary data analysis; however, when the rigorous primary (multivariate) analyses are used to examine the data, percent black staff has no meaningful association with any of the six outcome indicators. Another explanation might be that since another category in the multivariate analysis such as Black Student or % Free and Reduced Lunch had such a large relationship with outcome, % Black Staff might be overshadowed (i.e., visualize the sum of squares total) because of secondary importance in the multivariate analysis. Remember, the study's univariate (i.e., Pearson Product Moment Correlation and Simple Regression) analysis suggested a consistent and significant trend-line between % Black Staff and student outcome.

iv. **Administrative Expenditure per ADM** When the **Administrative Expenditure per ADM** category was examined, the analysis identified 1 primary and 9 total significant relationships with the six student outcomes. Both the Pearson Product Moment correlation and the Simple Regression analysis suggest a significantly negative relationship between Board/Superintendent/Principal's Expense ($) and SAT8-25%, SAT8+50%, SAT8+75%, ACT, and MPT-PR. The Stepwise Regression (Forward), Type III Sum of Squares, and Guttman's Partial correlation analysis identified no important relationships, and the Exploratory Multiple Regression shows one significantly positive connection with MPT-8. Since the Administrative Expenditure per ADM item reflects no consistent association with any of the six outcome indicators, its overall connection might be questionable. Because he study's univariate analysis identified significant negative relationships, it true relationship with student outcome needs additional analysis (i.e., find and identify categories that might overshadow its true association with student outcome.

v. **Number of Certified Persons** When the **Number of Certified Persons** category was examined, the analysis identified 1 primary and 6 total significant relationships with the six student outcomes. The Pearson Product Moment correlation analysis suggested a significantly positive trend-line with ACT, a significantly negative relationship with MPT-8 and MPT-PR, and no important association with SAT-25%, AST+50%, SAT+75%. The Simple Regression analysis suggested a significantly positive relationship with ACT score, but a significantly negative relationship with MPT-8. The Stepwise Regression (Forward), Exploratory Multiple Regression, and the Guttman's Partial Correlation statistics did not help identify significant relationship for any of the outcome indicators, while the Type III Sum of Squares identified a significantly negative relationship between MPT-8 but not for the other five outcome indicators.

This study's univariate analysis suggested that the **Number of Certified Persons** category can have a slight association with high school students that are preparing to attend college, not on a national, norm-referenced outcome indicator, and a slightly negative relationship with state developed criteria-referenced outcome indicator. An important question needs to be answered: Does Number of Certified Persons category reflect the geographic size of the district or the accumulated academic skills of the district?

c. **Items that have insignificant and nominal impact on student outcome.**

An independent variable has a "nominal" relationship on the dependent variable if it has significant association with outcomes using preliminary analyses, but no significant relationship across any of the six outcome indicators using primary analyses (Stepwise Regression [Forward], Exploratory Multiple Regression, Type III Sum of Squares, and Guttman's Partial Correlation).

While 10 categories were identified as having a "consistent"(4 categories) or "marginal" (6 categories) relate with student outcome, the remaining 7 independent variables appeared to have no association with student outcome. Using the preliminary "univariate" analyses (Pearson Product Moment and Simple Regression), 12 significant relationships were observed for ($) Income (County 1980), 10 for Retention Rate, 9 for Completion Rate, 6 for ADM, 5 for Number of Certified Persons, 3 for ($) Per Pupil Expense, 2 for Athletic Expense/ADM and Miles, and NO significant relationships for Millage (see Table 7). However, using the more rigorous primary, multivariate analysis methods (Stepwise Regression, Exploratory Multiple Regression, Type III Sum of Squares, and Guttman's Partial Correlation), there were **no** significant relationships between these nine independent variables and the six outcome indicators. Note: 41% of Arkansas's 17 report card variables had NO important relationship to student outcomes.

2. **What categories impact the six different outcome indicators?**

a. **SAT8 25th Percentile (SAT8-25%)** *Percent of students tested in grades 4, 7 and 10 scoring at or below the 25th percentile on the Stanford Achievement Tests SAT8.*

The "primary" data analysis suggested that **%Black Students** and **Free & Reduced Lunch** have a significantly negative impact on SAT8-25%, **Attendance Rate**, and **Education** have a significantly positive impact on SAT8-25% , while the "marginal" items such as ($) Resource Rate, Pupil/Teacher ratio, Percent Black Staff, and ($) Bd., Super, Prin. exp./ADM have little impact on student outcome. Note that of the four identified items that impact SAT8-25%, educators, community members, school boards, etc. have little or no control over these items.

The SAT8-25% category might be characterized as Arkansas' report card method to describe the students in the bottom academic quartile, or weak academic students. Note that of Arkansas' 17 report card categories, 13 categories had no impact on SAT8-25% including such hotly debated issues as completion rate, retention rate, athletic expenses/ADM, education, and income .

b. **SAT8 50th Percentile (SAT8+50%)** *"Percent of students tested in grades 4, 7 and 10 scoring above the 50th percentile on the SAT8. The difference between this percentage and 100% is the district's remediation rate."*

This study identified 18 "primary" data analyses where the categories **% Black Students, Free & Reduced Lunch** and possibly **% Black Staff** had a significantly negative relationship with SAT8+50%, and **Attendance Rate, Education, ($) Resource Rate** had a significantly positive association with SAT8+50%

Table 7. Arkansas Report Card items that have an INSIGNIFICANT impact on student outcome.

	SAT-25%	SAT+50%	SAT+75%	ACT	MPT-8	MPT-PR
i. ($) **Income (County 1980)**	NO primary & 10 total sign..relationships					
Pearson Product Moment (r)	- .49	.50	.47	.42	.16	.43
Simple Regression (p-value)	- .00	.00	.00	.00	.01	.00
Stepwise Regression (F-score)	—	—	—	—	—	—
Exploratory Mult.. Reg..(p-value)	—	—	—	—	—	—
ii. **Retention Rate**	NO primary & 9 total sign.. relationships					
Pearson Product Moment (r)	.18	-.17	-.14	—	-.12	-.15
Simple Regression (p-value)	.00	-.00	-.00	-.03	—	-.02
Stepwise Regression (F-score)	—	—	—	—	—	—
Exploratory Mult.. Reg..(p-value)	—	—	—	—	—	—
iii. **Completion Rate**	NO primary & 9 total sign.. relationships					
Pearson Product Moment (r)	- .14	.15	—	—	.17	.15
Simple Regression (p-value)	- .00	.00	.03	—	.00	.01
Stepwise Regression (F-score)	—	—	—	—	—	—
Exploratory Mult.. Reg..(p-value)	—	—	—	—	—	—
iv. **ADM (Average Daily Member.)**	NO primary & 6 total sign.. relationships					
Pearson Product Moment (r)	—	—	.12	.18	**-.26**	—
Simple Regression (p-value)	—	—	.02	.00	**-.00**	—
Stepwise Regression (F-score)	—	—	—	—	—	—
Exploratory Mult.. Reg..(p-value)	—	—	—	—	—	—
v. **Number of Certified persons**	NO primary & 5 total sign.. relationships					
Pearson Product Moment (r)	—	—	—	.13	-.28	-.12
Simple Regression (p-value)	—	—	—	.02	-.00	—
Stepwise Regression (F-score)	—	—	—	—	—	—
Exploratory Mult.. Reg..(p-value)	—	—	—	—	—	—
vii. **($) Athletic Exp./ADM**	NO primary & 2 total sign.. relationships					
Pearson Product Moment (r)	—	—	—	—	—	—
Simple Regression (p-value)	—	—	-.04	—	—	-.04
Stepwise Regression (F-score)	—	—	—	—	—	—
Exploratory Mult.. Reg..(p-value)	—	—	—	—	—	—
viii. **Miles**	NO primary & 2 total sign.. relationships					
Pearson Product Moment (r)	—	—	—	—	-.19	—
Simple Regression (p-value)	—	—	—	—	-.01	—
Stepwise Regression (F-score)	—	—	—	—	—	—
Exploratory Mult.. Reg..(p-value)	—	—	—	—	—	—
ix. **Millage**	NO primary & NO total sign.. relationships					
Pearson Product Moment (r)	—	—	—	—	—	—
Simple Regression (p-value)	—	—	—	—	—	—
Stepwise Regression (F-score)	—	—	—	—	—	—
Exploratory Mult.. Reg..(p-value)	—	—	—	—	—	—

(Table 8). The SAT8+50% category might be a means to quantify the academic health of the average and above-average student. More primary significant relationships (n=18) are identified between SAT8+50% and the 17 report card items than for any other outcome indicators. Completion rate, Retention rate, ($) Administrative and Athletic expenditure per ADM, ADM, Income, Miles, Millage, Pupil/teacher ratio, Number of certified persons, and Expense per pupil do not significantly related to the student's SAT8+50%.

c. **SAT8 75th Percentile** (SAT8+75%) *Percent of students tested in grades 4, 7 and 10 scoring above the 75th percentile on the SAT8.*

This study identified 17 "primary" data analyses where the categories **% Black Students, Free & Reduced Lunch** had a significantly negative association with SAT8+75%, and **Attendance Rate, Education, and ($) Resource Rate** had a significantly positive relationship with SAT8+75%. This outcome indicator might be referenced in the report card as one of the two indicators (ACT score is the other) that reflects performance of Arkansas' top students. Percent of black staff, Administrative Expenditures/ADM, Retention rate, Completion rate, ADM, Expenditure per pupil, Athletic Expenditure/ADM, Miles, Pupil/teacher ratio, and Millage do no significantly related to the student's SAT8+75%.

d. **Average ACT (ACT score)** *The average ACT composite score of graduates on the last test taken.*

This study identified 12 significant primary relationships that related with ACT scores including significantly negative trend-lines with **% Black Students** and **Percent Free and Reduced lunch**, and a significantly positive relationship with **Education**. The ACT score is the only outcome indicator that is available for 12th-grade students; the SAT8 is administered to students in grades 4, 7, and 10, and the MPT is administered to tudents in grades 3, 6, and 8. Data analyses suggested that the average ACT score category, when compared to the other five outcome categories, had the fewest (n=6) significant relationships with the other 17 report card items—*SAT8+50% had 11, SAT8+75% had 10, and SAT8-25% had 8 significant relationships.* Attendance rate, ($) Resource Rate, Pupil/teacher ratio, Percent of Black Staff, Expenditure per pupil, and ($) Athletics expenditure/ADM do not relate to the student's average ACT score.

e. **MPT 8th Grade Pass (MPT-8)** *Percent of eighth-grade students receiving the required passing score of 4204 on the Arkansas Minimum Performance Test (MPT).*

The primary data analyses identified 9 significant relationships with the student's MPT-8 score including a significantly negative interaction with % Black Students (1 significant analysis), Free and Reduced Lunch (2), and a positive interaction with Attendance Rate (2), Education (1), and ($) Bd/Super/Principal expenditure (1). Resource Rate, Pupil/Teacher Ratio, %Black Staff, Income, Retention rate, Completion Rate, ADM, Per Pupil Expenditure, Athletic expenditure/ADM, Miles, and Millage --12 of the 17 report card items did not have a significant association to MPT-8.

Table 8. Summary of primary analysis (i.e., Stepwise Regression, Exploratory Multiple Regression, Type III Sum of Squares, and Guttmans Partial Correlation), the "consistent" or "marginal" demographic categories compared to the six outcome indicators in Arkansas's School District Report Cards.

	SAT-25%	SAT+50%	SAT+75%	ACT	MPT-8	MPT-PR	Total
Consistent Relationship							
1. % Black Students	4	4	4	4	1	3	20
2. Attendance Rate	4	3	4	1	3	4	19
3. Education	2	4	4	4	1	—	15
4. Free & Reduced Lunch	2	3	2	3	2	1	13
Marginal Association							
5. ($) Resource Rate	—	3	2	—	2	—	7
6. Pupil/Teacher ratio	—	—	—	—	—	3	3
7. Percent Black Staff	—	1	—	—	—	—	1
8. Administrative Expend./ADM	—	—	—	—	1	—	1
9. No. Certified Persons	—	—	—	—	1	—	1
10. Per Pupil Expenditure	—	—	—	—	1	—	1
Total	**12**	**18**	**16**	**12**	**12**	**11**	

f. **MPT Student Pass Rate** (MPT-PR) *Percent of all students tested in grades 3, 6, and 8 obtaining a passing score of all tests taken.*

The primary data analyses identified 8 significant relationships between independent variables and the student's MPT-PR, including a negative relationship with %Black Students (1 analyses), and a positive connection with Attendance Rate (2 analysis), and pupil/Teacher Ratio (2 analysis). The MPT-PR outcome item has the fewest number of significant relationships with independent variables among the six outcome measures. Free & Reduced Lunch, Education, Resource Rate, %Black Staff, Administrative expenditure/ADM, Income, Retention rate Rate, Completion Rate, ADM, Number of Certified persons, Per Pupil Expenditure, Athletic Expenditure/ADM, Miles, and Millage--14 of the 17 Arkansas report cards items--had no association with MPT-PR. Where Free and Reduced Lunch and Education relates with SAT8's three outcome indicators (grades 4, 7, 10; norm referenced test), they have no association with the MPT-PR (grades 3, 6, and 8; criterion referenced tests).

3. **How do reported school district characteristics interact with each other?**

a. **General Interactions**

To determine the important interactions between the 17 independent variables, they were correlated with each other. Interactions are examined from two perspectives including: (a) general interactions and (b) significant interactions with categories identified as having a "consistent" impact on student outcomes.

i. **Positive Interactions** As Table 9 illustrates, there were 22 important ($p \leq .01$, $r \geq .25$) positive correlations between the study's independent variables. Most c the relationships are not surprising such as ADM is linked to number of certified persons (r=.98), black student and black staff (r=.92), per pupil expenditure and administrative expenses per ADM (r=.82), and millage and expenditure per pupil (r=.39). **Education** level is strongly related to average daily membership (i.e., educated people live and work in the cities or larger communities, r=.59), number of certified persons (larger communities have more people, r=.56), have larger incomes (r=.35), resources (r=.25), and students in the cities attend larger schools with more students in each class (r=.34). Free and Reduced Lunch, a socio-economic status indicator, relates strongly to percent of black students (r=.61), percent of black staff (r=.60), administrative expenditures (r=.33), and per pupil expenditure (r=.27). It seems reasonable that the amount of money spent per student relates to the county's resource (r=.39), tax millage (r=.37), and percent of free and reduced lunch (r=.27). Nor is it surprising that pupil/teacher ratio is linked to the county's income (r=..29), average daily membership (r=..34), and education level (r=.34). Since rural schools usually spend less on salaries than urban and city schools, it seems reasonable that the administrative expenses per ADM are related to percent free and reduced lunch (r=.33), county's resource (r=.32), and income (r=.25).

Table 9. Pearson Product Moment . orrelation used to examine the positive relationships between Arkansas demographic categories.

	r	Categories				r	Categories		
1	.98	ADM	v	No. Cert. Persons	12	.34	ADM	v	P/t ratio
2	.92	% Black St.	v	% Black Staff	13	.34	Education	v	P/t ratio
3	.82	$ Per Pupil	v	Adm. Exp./ADM	14	.33	% F/R Lunch	v	Adm. Exp./ADM
4	.61	% F/R Lunch	v	% Black Staff	15	.32	Resource	v	Adm. exp./ADM
5	.60	% F/R Lunch	v	% Black St's	16	.31	Attendance	v	Completion
6	.59	Education	v	ADM	17	.29	P/t ratio	v	Income
7	.56	Education	v	No. Cert. Persons	18	.27	% F/R Lunch	v	$ Per Pupil
8	.39	Resource	v	$ Per Pupil	19	.25	Adm. Exp./ADM	v	Income
9	.37	Millage	v	$ Per Pupil	20	.25	ADM	v	Income
10	.35	Education	v	Income	21	.25	Education	v	Resource
11	.34	Millage	v	Adm. Exp./ADM	22	.25	P/t ratio	v	No. Cert. P.

II. Negative Interactions

The negative interactions listed below (see Table 10) are also not surprising. Larger cities, where most of a state's financial resources are often centralized, are often known for their high crime rates, drug problems, and inner-city poverty. There is a negative link between larger pupil/teacher ratio and lower expenditure per pupil (r= -.76), administrative expenditure per ADM (r= -.74), and percent of free and reduced lunch (Table 7). More affluent districts (Income) have fewer students participating in free and reduced lunch (r= -.74), hire a smaller percentage of black staff (r= -.52), and have a smaller percentage of black students (r= -.50). There is a negative relationship between the **Administrative Expenditure per ADM** and Education (r= -.28) and between Administrative Expenditure per ADM and the district's ADM (r= -.27). Finally, there is a negative relationship between the percent of free and reduced lunch (a SES factor) and the community's education (r= -.25), Income (r= -.74), and pupil/teacher ratio (r= -.41).

Table 10. Pearson Product Moment correlation used to examine the negative relationships between Arkansas demographic categories.

1	-.76	P/t ratio	v	$ Per Pupil	6	-.41	% F/R Lunch	v P/t ratio
2	-.74	P/t ratio	v	Adm. Exp./ADM	7	-.28	Education	v Prin. Exp./ADM
3	-.74	% F/R Lunch	v	Income	8	-.27	ADM	v Prin. Exp./ADM
4	-.52	%Black Staff	v	Income	9	-.25	% F/R Lunch	v Education
5	-.50	% Black St.	v	Income	10	-.25	P/t ratio	v Millage

b. Interaction for %Black Students, Free and Reduced Lunch, Attendance Rate, and Education

To develop a better portrayal of items with either a collective negative or positive impact on student outcome, the " consistent"relationships were examined. Items with a .05 level of significance are identified (r=.11).

i.) **% Black Students** The item, Percent Black Students, is a complex issue to understand. Districts with a high the percentage of black students, have more black staff (r=+.92), have a higher the Retention Rate (r=.15), attend school in the larger districts (r=.15), attend school in larger counties (r=.16), live in poorer communities (Income) (r= -.50), and are recipients of a larger percentage of free and reduced lunches (r=.60). Black students generally have more professional educators (r=.17) in their districts than do non-black students. Attendance rate, completion rate, administrative expenditure per ADM, athletic expenditure per ADM, resource, or education are not linked to the percentage of black students, nor is millage, pupil/teacher ratio or expenditure per pupil. Nine of 17 items have a significant relationship to percentage of black students, and 8 items do not have an impact on the percentage of black students.

II. **Percent Free and Reduced Lunch** The item percentage of free and reduced lunch is generally a socio-economic status indicator. Students participating in free and reduced lunch usually have poorer attendance in schools (r= -.19), have poorer completion rates (r= -.19), higher retention rates (r=.19), and live in rural or smaller population areas (r= -.23). Educationally, students who receive free and reduced lunches live in districts where fewer people have attended college (r= -.25), are educated by a larger percentage of African-Americans (r= .60), and are taught by black teachers (r= .61), while the district's school administrators usually receive higher salaries per ADM than administrators with students not receiving free and reduced lunches (r= -.23). In addition, these students live in smaller districts (miles; r=.16), have fewer professional educators (r=.18) in the district, and are taught in classes with fewer students per teacher (r=. -.41). Yet, these students generally have more money (Expenditure per Pupil) spent on their education than students not receiving free and reduced lunches (r=.27).

Items that have no relationship to percent free and reduced lunch include athletic expenditure per ADM, resource, and miles. Most of Arkansas' school district items relate to the percentage of free and reduced lunch; 14 of 17 Arkansas report card items have a significant relationship while 3 items do not.

iii. **Attendance Rate** Attendance Rate is one of the most universal items included in most southeastern state report cards (French, et al., 1994). Students can't learn school material if they never attend school; students who attend school complete school (r=.31). Participation in sports might indirectly have a positive impact on students, for when the administration spends more money on athletics, there is a small percentage of students who attend school more often (r=.14). When students do not attend school, they live in smaller or rural communities (ADM: r= -.22), their parents are below the poverty level and qualify for federal financial assistance (r=. -.19), have fewer trained educators in the district (r= -.23), and less money per student is spent by the district on the student's education (r=. -.15). Items that do not relate to the district's attendance rate include retention rate, percentage of black students or staff, administrative expenditure per ADM, resource rate, education, income, number of square miles in the county, millage, and pupil/teacher ratio. In summary, 10 of 17 card items do not relate to the student's attendance rate.

iv. **Education** "*The educational level of the district is another indicator of the socio-economic status that was taken from 1980 census data. The education level is represented by the percent of adults in the district in 1980 with four or more years of college.*"(1993, Arkansas State Department of Education). Students identified with higher community education levels generally attend larger schools districts (r=.59), and live in counties with higher resources rates (r=.25) and incomes (r=.35)—resource and income might reflect a district's SES. These students attend schools in districts with a larger percentage of students qualifying for free and reduced lunch (r=.25), their administrators earn lower salaries per ADM (r= -.28), are educated in a district with a larger number of certified persons (r=.56), are taught in classes with a higher pupil/teacher ratio (r=.34), but less money per student spent on their education (r= -.14)

than students attending lower education-level districts. Card items that have no relationship to the education item include Attendance rate, Completion rate, Retention rate, Percent of black student or black staff, Administrative expenditure per ADM, Miles and Millage. Eight of the 17 card items, or about half of the items, have no impact on the districts education.

4. **Do the report Card characteristics appear to represent all or most of the factors which relate to student outcome?**

The *determination of coefficients* (r^2) for the 17 independent variables were summed. In the preliminary data analyses, the Pearson Product moment suggested that these items accounted for more than 100% of the variance for the district's SAT8+50%, SAT8-25%, MPT-PR, SAT8+75%, and ACT score (170%, 169%, 163%, 147%, and 128%, respectively), and accounted for about 70% of the variance for MPT-8 (see Appendix D). The Simple Regression analysis closely paralleled the Pearson Product Moment correlation analysis (169%, 158%, 152%, 145%, 120%, and 58%, respectively) (see Appendix E). Note that the sum of the five of the six analyses exceeds 100%.

In the primary data analyses, the **Stepwise Regression** suggested that the 17 report card variables accounted for about one-half (M= 51%) of the variance between the 17 independent variables and each of the six outcome indicators (SAT8+50%=61%, SAT8-25%=59%, MPT-8=57%, MPT-PR=50%, ACT=44%, and SAT8+75%=38%) (see Appendix F). The **Exploratory Multiple Regression,** closely paralleling the Stepwise Regression, suggested that these independent variables accounted for about 53% of the variance (SAT8+50%=60%, MPT-8=57%, SAT8-25%=53%, SAT8+75%=53%, MPT-PR=50%, and ACT=44%) (see Appendix F).

Of the study's 17 categories, Percent of Black Student's has the largest impact on student outcome. In addition, the study's Stepwise Regression (Forward) analysis suggested that percent of black students accounted for about one-third of the existing variance (SAT8-25%=51%, SAT8+50%=49%, SAT8+75%=7%, ACT=32%, MPT-8=15%, and MPT-PR=48%). Using simple math and the data analyses noted above, the total variance for SAT8-25% was 59%, and the percentage of black students represented 51% of the 59%--only 8% of the variance was represented by attendance rate, education, and the percent of free and reduced lunch. The analysis for the SAT8+50% outcome indicator reviled that while six variables accounted for 61% of the variance, percent of black students accounted for 49% of the 61%--12% of the variance is accounted for by the other five other independent variables. In the SAT8+75% analyses, percent of black students accounted for 7% of the 38% variance; ACT score analysis indicated that the same factor accounted for 32% of 44% variance. The MPT-8 analysis revealed that 15% of the 57% variance is attributable to Percent Black Students, and MPT-PR analysis suggested that Percent of Black Students accounted for 48% of the 50% variance—2% of the variance was due to attendance and number of certified persons items.

Although Percentage of Black Students has a consistent and disproportionately large impact on the student's outcome, as measured by the six outcome indicators, the above analyses further suggest

that 39% to 62% of the things that impact student outcome are not included in Arkansas's School District Report Cards (see Appendix F).

5. **When the overlap (multicollinearity) of the independent variables is eliminated, what effect does each of the independent variables (i.e., Arkansas 17 school district categories) have on the student outcomes, as measured by each of the six outcome indicators and the mean student outcome?**

I. **Guttman's Partial Correlation**

As illustrated in Table 11, the Guttman's Partial Correlation statistic was used to examine the impact each of Arkansas' 17 report card categories had on each of the six different student outcomes. When the 17 categories that impacted SAT8-25% were examined, Percentage of Black students (17%), Attendance Rate (4%), Free and Reduced Lunch (1%), and Athletic expenditure per ADM (1%) accounted for 23% of the 25% of the variance between the the 17 categories and **SAT8-25%**.

Percent Black Students (20%), Education (4%), Attendance Rate (3%), Percent Free and

Table 11. Partial correlation's percentage of influence of each category on student outcome.

	SAT-25%	SAT+50%	SAT+75%	ACT	MPT-8	MPT-PR	Mean
% Black Students	16.5%	19.8%	11.2%	9.2%	2.9%	9.8%	11.6%
Attendance Rate	3.9%	2.6%	3.9%	1.6%	1.3%	5.4%	3.1%
Education (1980 Census data)	.7%	3.7%	5.3%	8.1%	.5%	.1%	3.1%
Free & Reduced Lunch	1.3%	1.6%	2.9%	1.1%	1.3%	3.1%	1.9%
Pupil/teacher ratio	.1%	.4%	.5%	.7%	3.9%	1.1%	1.1%
Per pupil expenditure	.1%	.4%	.5%	.7%	.4%	1.9%	.7%
Resource	.1%	1.3%	.9%	.5%	.3%	.1%	.6%
Athletic Expend. / ADM	1.2%	.2%	1.0%	.3%	.3%	.0%	.5%
% Black Staff	.3%	1.0%	.5%	.1%	1.0%	.0%	.5%
No. cert. persons	.0%	.3%	.5%	.6%	.9%	.2%	.4%
Retention Rate	.2%	.0%	.1%	.7%	1.5%	.1%	.4%
ADM	.0%	.3%	.6%	.6%	.3%	.5%	.4%
Prin. expenditure / ADM	.4%	.0%	.0%	.0%	.0%	1.9%	.4%
Completion Rate	.1%	.4%	.0%	1.3%	.0%	.0%	.3%
Millage	.3%	.7%	.3%	.0%	.2%	.1%	.3%
Mile	.1%	.1%	.0%	.3%	.0%	.0%	.1%
Income (1980 Census data)	.0%	.0%	.2%	.1%	.1%	.1%	.1%
Mean Percentage =	25.3%	32.9%	28.4%	26.0%	14.8%	24.5%	25.3%

Reduced Lunch (2%), Resource Rate (1%), and Percent Black Staff (1%) accounted for 31% of the 33% of the variance between independent variables and **SAT8+50%**--six categories had an impact while 11 did not (see Appendix G).

When the **SAT8+75%** was examined, the data analysis suggested that Percent of Black Students (11%), Education (5%), Attendance Rate (4%), Percent Free and Reduced Lunch (3%), and Athletic expenditure per ADM (1%) accounted for 24% of the total 28%variance. Note that 5 of the 17 categories had an impact on academically advanced students (SAT8+75%). When the three SAT8 outcome indicators were examined collectively, Percent of Black Students accounted for about 16% of the collective mean variance of 28%, or 57% out of 100% of the things that impact the student's SAT8 score, and Attendance Rate collectively accounted for 12% out of the 100% of the variance. Note that Percent of Black Students has about five times more impact on SAT8 scores (i.e., SAT8-25%, SAT8+50%, SAT8+75%) than Attendance Rate. Also note that the 17 categories have more collective impact on average (SAT8+50%=32.9%) and above average (SAT8+75%=28.4%) student's outcome scores than they had on the weak academic students (SAT8-25%=25.3%).

When the partial correlation was used to examine the district's mean **ACT** scores, Percent of Black Students (9%), Education (8%), Attendance Rate (2%), Completion Rate (1%) and Percent of Free and Reduced Lunch accounted for 21% of the mean 26% of the variance. Note that, individually, both Percent of Black Students and Education accounted for about one-third of the total identified variance, while the other 15 categories accounted for the remaining 33%. The district's **MPT-8** was examined. The data analyses suggested that Pupil/Teacher Ratio (4%), Attendance (3%), Retention Rate (2%), Attendance Rate (1%), Completion Rate (1%), and Percent of Black Staff (1%) accounted collectively for 12% of the 14% of the variance, and when the **MPT-PR** was examined, Percent of Black Students (10%), Attendance Rate (5%), Percent of Free and Reduced Lunch (3%), Administrative expenditure (2%), Per Pupil Expenditure (2%), and Pupil/Teacher Ratio accounted for 23% of the total 26% of the variance.

When the impact of the 17 categories was summarized, several interesting interactions can be observed. The county's Education level impacts average (SAT8+50%) and above average (SAT8+75%) students, as measured by a nationally designed, norm-referenced test, but it does not seem to impact lower academic performance (SAT8-25%), or the student academic outcome as measured by a state-designed, criterion-referenced test. The Percentages of Black Students, Attendance Rate, and Percent of Free and Reduced Lunch impact all six student outcomes. Completion Rate only impacts ACT scores, Retention Rate only impacts the MPT-8, and Administrative Expenditure only impacts the student's MPT-PR score. The Percentage of Black Staff marginally impacts both the average student (SAT8+50%) and the MPT-8, and the athletic expenditure marginally impacts the both the top (SAT8+75%) and bottom (SAT8-25%) but not the average students (SAT8+50%), the student's college admission score (ACT), or student outcome measured by a state-designed, criterion-referenced test.

The six outcome indicators were combined and a mean outcome score was developed for each of the 17 card categories. Collectively, Percent of Black students accounted for 11% of the variance,

Attendance Rate accounted for 3%, Education accounted for 3%, percent Free and Reduced Lunch accounted for 2%, and Resource Rate accounted for 1%) of the mean variance on student outcome. Categories that accounted for less than 1% of the items that impact student outcome (i.e, as measured by the six collective outcome indicators) included per pupil expenditure (0.6%), completion rate (0.5%), number of certified persons (0.6%), pupil/teacher ratio (0.5%), ADM (0.5%), athletic expenditure (0.4%), administrative expenditure (0.4%), percent of black staff (0.4%), miles (0.3%), retention rate (0.3%), millage (0.2%), and income (0.1%). Note that only three items had more than 3% impact on student outcomes and 14 items had less than 3%.

ii. **Type III Sum of Squares**

The Type III Sum of Squares was used to examine the probability of each of the 17 report card items had on each of the six outcomes. Attendance Rate and Percent of Black Students had a significant impact on **SAT8-25%**, Attendance Rate, Percent of Black Students, Resource Rate, Education, and Percent Free and Reduced Lunch had a significant impact on SAT8+50%, and Attendance Rate, Percent of Black Students, Education, and Percent of Free and Reduced Lunch had a significant impact on **SAT8+75%**. Categories that had a significant impact on the district's ACT score included Attendance Rate, Percent of Black Students, and Education--3 of 17 categories. The district's **MPT-8** scores were impacted by Attendance Rate, Completion Rate, Resource Rate, and Number of Certified Persons, while the categories that impacted **MPT-PR** included Attendance Rate, Percent of Black Students, and Pupil/Teacher Ratio.

The Type III Sum of Squares analysis (Adjusted r^2) suggested that the Arkansas's 17 categories accounted for 61% of SAT8+50%, 58% of SAT8-25%, 52% of SAT8+75%, 50% of MPT-PR, 46% of ACT scores, and 26% of MPT-8 scores. Collectively, the Type III Sum of Squares suggested that the 17 categories accounted for less than 49% of the variance.

Remember, when he study's **question 4** was answered earlier , the data analysis suggested that 38% to 61% of the variance was identified (see appendix F). Now, accounting for the multicollinearity factor, the Guttman's Partial Correlation analysis suggested that 24% to 33% of the variance was identified (Appendix G), and the Type III Sum of Squares suggested that the 17 categories accounted for 26% to 61% of the identifiable variance (Appendix H). Clearly, more things impact student outcomes than are represented by Arkansas' school district report card items.

6. **What meaningful information can be gleaned by educators or parents when Dewitt school district report card's "DISTRICT AVERAGE COMPARED TO SIMILAR DISTRICTS" (see p 6) and "RANGES USED FOR COMPARISON GUIDE" (see p 7) are jointly examined?**

Arkansas organized and reported a comparison guide for many report card items (see p 7). An item was EXCELLENT when that particular item was in the top 10% of districts, GOOD when the item was better than 70% of districts, AVERAGE when the item was in the middle 40% of districts, BELOW AVERAGE when the district's item was below 70% of districts, and POOR when the item was in the bottom 10% of districts.

The Dewitt district report card was provided by the Arkansas State Department of Education as an example of the materials provided to each school district in Arkansas. Dewitt's demographics indicate that they have 1,326 students in the district (Rk=82) and a resource rate of $926 (Rk=37). Eight percent of the adults living the the district have four or more years of college (Rk=177), and 40% of its students receive free and reduced lunch (Rk=191) (see p 3, Table 1). The district information suggests that Dewitt, one of the larger districts in the state, consists of 597 square miles (Rk=5), has a millage of 22.0 (Rk=299), has 99.1 certified staff (Rk=72), an average pupil/teacher ratio of 14.1 (Rk=149), and the district spends an average of $3,067 (Rk=147) a year to educate a school child.

Dewitt schools have a small dropout rate of .07%, an attendance rate of 94.6%, an "excellent" completion rate of 97.6%, a "below average" retention rate of 3.5%, and pay their teachers close to the state mean ($26,150) (the ASCII data provided by the Arkansas SDE did not average salaries by district). The district students have a 96.0% pass rate for the MPT-8, and a "good " pass rate of 89.1% for the multi-grade MPT (grades 3, 6, and 8). When the Dewitt students were administered the SAT8, an "average" 17.6% were rated below the 25th percentile, but a "good" percentage were above the 50th percentile (55.6%) and 75th percentile (29.9%). An "average" number of Dewitt's students took the ACT (55.6%), their "average" scores of 19.8 was close to the state's average of 19.5, and were evaluated "average" (59.2%) on the composite score above of 19. While the Arkansas averaged 32.8 students per 1000 students taking the advanced placement exam, none of Dewitt's students qualified for advance placement (0.0). DeWitt (the SDE sample) district's report card suggested that 15.9% of its students are black (see Table 2, p 5), but the ASCII data base provided by the SDE suggested that 15.2% were black students—a .7% difference between the report card and the state's data base. In addition, although the Report card item states: "PERCENT OF BLACK STUDENT/ PERCENT OF BLACK STAFF", it reports percent of black students. The Report card did not provide a corresponding percentage for percent of black staff, nor did it indicate that the number was actually a percentage. Finally under the descriptor "State Average" [third column], the report card reported "24/13", but the ASCII file indicated that Dewitt schools consisted of 18% black students and 8% black staff. Note that the percentage sign was not attached to either of the two numbers.

While 52% (rated "average") of Dewitt's students participate in public college remediation, about 54% of their students had taken Algebra II or higher, and 60% of 10-12 grade students had taken biology, chemistry, physics, or advance science: both of Dewitt's math and science items were rated "average". While the ASCII data base reflects dollar amounts (Dewitt's administrative expenditure per ADM=$300), the report card reported percentages (e.g., 59.5% for district average, and 63.3% for state average). The Report Card suggested that the district's athletic expense per ADM was $300, but the ASCII data base suggested that they spent an average of $41 per ADM--a $259 difference. Further, while the report card suggested that the state mean for athletic expenditure per ADM was $61, the mean computed for this study suggested $72--an $11 difference.

The Dewitt report card gave an abbreviated (*i.e., not district average, similar district average,*

state average, and *district comparison*) data analyses including district means and state ranks for items such as ADM, Resource rate, Education, Income, Free and Reduced Lunch, Miles, Millage, Number of certified persons, Pupil/Teacher ratio, and per pupil expenditure. In addition, Dewitt's report card did not reflect any data analysis for the item "administrative expenditure per ADM" (this item was included in the ASCII file). Finally, the Dewitt report card provided 1991-92 data for such items as: Dropout Rate (7-12), Average Teacher's Salary, and Public College Remediation.

The ASCII data base provided by the Arkansas SDE and the sample Dewitt report card were compared. Dewitt's report card contained 66 numeric indicators in Table 3, of which 60 corresponded to the ASCII data base provided by Arkansas' SDE. Six items were incorrect: 4 items for percent black student/percent of black staff and 2 items for athletic expenditure per ADM. In addition, three items—dropout rate, average teacher's salary, and public college remediation—reflected one-year-old data (1991-92). These three items contained 9 separate numeric indicators; therefore, 9 of 66 numeric indicators reflected outdated material. Combining these 15 items (6+9), 23% of Dewitt's report card data is incorrect or outdated. Also, this 23% does not take into account two other items in the first page of Dewitt's report card—Education level and Income level (see Table 1, p 4)—reflected 1980 census data; 14 years outdated. Twenty percent of the first page of Dewitt's report card contained outdated data.

Act's 668, SECTION 4. (b) referenced the need to evaluate weak academic students (i.e., remedial") and "gifted and talented" students. Dewitt's card (see Table 3) reported six outcome indicators that delineate the gifted and talented (i.e., (1) Stanford above the 75th percentile (i.e., SAT8+75%), (2) percent taking the ACT, (3) Scholarship ACT--composite score of 19 or above, (4) Advanced Placement/exams per 1000, (5) Core Curriculum in Math, and (6) Core curriculum in Science). At the other end of the academic spectrum (weak students), Dewitt's card reported two outcome indicators (i.e, Stanford below 25th percentile, Public College Remediation—see Table 3); one public school outcome indicator and one postsecondary school outcome indicator. The percent of Chapter 1 students and the percent of Special Education students are not included in Dewitt's card.

The end of the senior year should represent the summation of all the student's K-12 academic growth. Other than the administration of the ACT test and resulting scores, which are usually reserved for students planning to attend college, the Arkansas report card does not provide outcome measures for students exiting high school. Nor does the report card report outcomes for students by individual grade level or school level. Dewitt's card did not comply with Act 668's Section 4 (a): ". . . *an index of each school or school district's performance measured against statewide standards for comparable school districts and schools*."

V. CONCLUSIONS

The findings of the study lead to five conclusions.

1. **When using simple, basic statistical techniques to determine relationships between school/community characteristics and student achievement, findings can be misleading. More sophisticated statistical treatments portray relationships more accurately.**

The preliminary statistical treatments used in this study—Pearson Product Moment correlation and Simple Regression—suggested that most of Arkansas' school district report card items have an impact on student outcome. When they were used, the data analysis suggested that 16 of the 17 items had a significant relationship with one or more student outcome indicators; there was no relationship between outcome and the county's millage.

When the more rigorous primary data analyses —Stepwise Regression and Exploratory Regression analysis—were applied to the study's data, the four items with a consistent impact on student outcome were **percent black students**, **percent free and reduced lunch**, **attendance rate**, and the county's **educational** level. The main reason for the differences between the preliminary and primary data analyses is a result of "multicollinearity" (i.e., overlap) between the different independent variables.

Educators must be wary of placing emphasis on any item that *superficially* seems to affect outcome. Rigorous statistical analyses are strongly urged when designing and selecting items that are to be included in a state's district report cards. Some states such as North Carolina and South Carolina are currently utilizing and reporting their data analysis as a segment of their school district report cards (French, 1994). The Arkansas SDE should consult with other State Departments of Education and possibly participate in some type of multi-state consortium in developing a more comprehensive list of characteristics to report and a more common and rigorous analysis of the available data. A comprehensive understanding of the interactions between the variables is essential. Re-inventing the selection of variables and analyses of their relationships, on a single-state basis, can be time consuming and costly.

The Arkansas SDE made no attempt to relate to the consumer of their district report cards any particular category's value in promoting academic excellence. The district report cards tacitly promotes the notion that if an item, included in the district report card format, is rated "good", "average", or "poor," then there must be a reliable and relevant relationship between that item and academic excellence (see Table 4, p 7). Of the four items having a significant impact on student outcome, none can be readily affected or altered by educators, local or state school boards, or the state department of education. Report cards can have little impact on educational improvement if consumers cannot find direction for improvement efforts. When the advanced regression models or the multicollinearity models are applied to the data, researchers and policymakers can begin to understand the subtle and profound impact of one statistical treatment over another alternative statistical treatment. The primary statistical analyses used in this study lead to several important generalizations.

- Attendance has a ***positive*** impact—other than for ACT scores—on all aspects of student outcome;

- Percent of Black Students has a significantly ***negative*** impact on student outcome;

- Education level of the community has a ***positive*** impact on students that are characterized as average and above average when they are administered a nationally designed, norm-referenced academic achievement test and when they are evaluated by the ACT, a high school exit exam for students planning to attend college;

- Percent of Free and Reduced Lunch generally has a ***negative*** impact on all aspects of student outcome, but has the most dramatic negative impact on the performance of students above the 50th percentile and above 75th percentile on the SAT8, ACT scores, and Arkansas's 8th grade proficiency test (MPT-8).

- Pupil/Teacher Ratio has a significantly ***positive*** impact on student outcome when the students are evaluated by their **Pass Rate,** but no impact on nationally designed achievement tests (SAT8), a test for admittance into college (ACT), or an eighth-grade state designed, criterion-referenced achievement test (MPT-8); and

- Twelve report card categories (i.e, Completion Rate, Retention Rate, Percent of Black Staff, Administrative expenditure, Athletic expenditure, ADM, Resource Rate, Income (1980 census data), Miles, Millage, Number of Certified Persons, and Per Pupil Expenditure) have no important impact on student outcome.

- The 17 school/community characteristics included in the Arkansas report card generally account for somewhere between a mean low of 26% (Guttman's Partial Correlation, see Appendix G) to a high of 53% (Exploratory Multiple Regression, see Appendix F) of the variance on student outcome. (*i.e., Stepwise Regression: M=51.5%, Exploratory Multiple Regression: M=53.1%, Guttman's Partial Correlation: M=26.9%, and Type III Sum of Squares: M=48.7%*). The mean percentage of variance for these four statistical treatments suggests that 45% of the variance is due to the 17 Arkansas school district report card variables, and 55% of the things that impact outcome are not included in the current report card format.

2. **Different school/community characteristics have dramatically different impacts on the six different outcome indicators reported.**

Most of Arkansas' report card items do not have a consistent impact on all outcome indicators. As illustrated in Table 8 (p 17) (consistent/marginal impact on six outcome variables), four items impact SAT8-25% and three variables impact both the ACT scores and the district mean MPT-PR. As suggested in the earlier studies of Tennessee report cards, more attention to the variation of impact of a single factor is necessary when making policy decisions.

3. **Arkansas report cards need more information (both outcome indicators and categories) addressing weaker student performance.**

The All Handicapped Children Act of 1975 (Public Law 94-142, Section 504) requires the states and respective schools to place equal or adequate academic emphasis on the needs of exceptional students (students at the extremes of the academic spectrum). Section 4(b) of Arkansas' Act 668 acknowledges the urgency of accommodating the needs of all students, especially students representing both ends of the spectrum by stating: ". . . *students required to take remedial courses in high school*" and later, ". . . *gifted and talented expenses*".

Only one outcome indicator relates to the K-12 weaker academic students: the SAT8-25%. Also, there are only a few report card categories with a significant relationship to the SAT8-25%. Perhaps Arkansas only used readily available, convenient demographic data for its report card. The authors suggest that more information be gathered at the school/district level for inclusion in the report card, such as: suspension rate, level of parental involvement, school organization and culture, student motivation, instructional methodologies, curriculum features and pre-and post-test student outcome. Some of these factors may be more essential to improvement of student performance than those currently reported.

4. The impact of black students on a district's overall student outcome data needs further investigation and clarification.

The study's primary data analysis consistently suggested that percent of black students had the largest negative impact on student outcome. Remember that even when the multicollinearity analysis (Guttman's Partial Correlation and Type III Sum of Squares) was used to analyze the data, and after the effect of the other independent variables were eliminated, the percent of black students still had the strongest impact on outcome of the 17 card categories.

Also remember that the preliminary data analysis suggested that the percent of black students item had a strong relationship with a variety of other report card items such as retention rate, percentage of black staff, ADM, income, percentage of free and reduced lunch, miles, and number of certified persons in a district. Hence, the percentage of black students might reflect socio-economic status or some other unnamed or undetermined variable. Remember, if 7 of the 17 Arkansas report card items had a significant impact on percent of black student, a valid question might be: Is percentage of black students an appropriate report card item since there is strong and consistent relationship with the other report card items? Since most of the variance was not identified in this study's data analysis, policymakers should not try to make educational decisions based on any single variable.

RECOMMENDATIONS: States must be concerned with the educational needs of all its students. Should students with different needs and of different socio-economic status be taught differently? Maintaining the *status quo*, where every child is taught in the same way, may not be the appropriate solution. Students with special educational needs reflecting vastly different backgrounds, socio-economic conditions, and academic expectations might need to be taught differently. Educators must develop new and innovative approaches in the instruction of these students, while maintaining a high level of expectation for all students. Educators should always remember that output—student outcome—and not input is the real distinguishing factor in determining the excellence of an educational system.

5. **The selection of a statistical treatment has a dramatic impact on the study's findings and conclusions.**

The selection and use of certain statistical treatments have a very large impact on the study's findings and conclusions. When the Pearson Product Moment correlation or the Simple Regression statistical treatments were applied to the study's data, 16 of the 17 items had a significant relationship with one or more student outcome indicators; there was no relationship between outcome and the county's millage. If the resulting findings from these superficial statistical treatments become the preliminary analyses instead of the primary statistical treatment applied to the data, Arkansas' State Department of Education could be awarded much praise and recognition for finding, isolating, measuring, and reporting important categories that impact student outcome.

6. **For Arkansas, at least, the co-linearity of percent black students/percent black staff might need review.**

Why are black staff so prominent only in districts with a high percentage of black students?

VI. REFERENCES

Bobbett, G. C., French, R. L., & Achilles, C. M. (1991). Role of School District Report Cards (Why Do We Bet on .25 With .75 Running Loose"), Paper presented at the annual meeting of the National Council of Professors of Educational Administration (NCPEA), ERIC ED 338656.

Bobbett, G. C., French, R. L., & Achilles, C. M. (1991). What Factors Really Influence Student Academic Performance? (An Analysis of the Relationships Among Factors Commonly Reported In School District Report Cards, Paper presented at the annual meeting of the Mid-South Educational Research Association (MSERA), ERIC ED 340738.

Bobbett, G. C., French, R. L., Achilles, C. M., & McNamara, J.F. (1992). Student Outcome and Policymaking: An Analysis of Tennessee's Report Cards on Schools (Why Do We Bet on .25 When .75 is Running Loose?), Paper presented at the annual meeting of the American Association of School Administrators (AASA), ERIC ED 342804.

Bobbett, G. C., French, R. L., Achilles, C .M., & McNamara, J. F. (1992). What Policymakers Can Learn From School Report Cards: Analysis of Tennessee's Report Cards on Schools, Paper presented at the annual meeting of the American Education Research Association (AERA), ERIC ED 352417.

Bobbett, G. C., French, R. L., & Achilles, C. M. (1992). Evaluation of the Categories Currently Used in Report Cards with Student Outcome, Paper presented at the annual meeting of the Southern Regional Council of Educational Administration (SRCEA), ERIC ED 352417.

Bobbett, G. C., French, R. L., & Achilles, C. M. (1992). How Meaningful Are Report Cards on Schools? Paper presented at the annual meeting of the Mid-South Educational Research Association (MSERA), ERIC ED 355242.

Bobbett, G. C., French, R. L., & Achilles, C. M. (1993). An Analysis of Report Cards on Schools: How Community/School Characteristics Impact Student Outcome, Paper presented at the annual meeting of the American Association of School Administrators (AASA), ERIC 019798 and the *Executive Summary* for the paper with the same title, ERIC ED 360316.

Bobbett, G. C., French, R. L., & Achilles, C.M. (1993). The Impact of Community/School Characteristics on Student Outcomes: An Analysis of Report Cards on Schools. Paper presented at the annual meeting of the American Education Research Association (AERA), ERIC ED 368 031. *(1990-91 TENNESSEE REPORT CARD DATA).*

Bobbett, G. C., Achilles, C.M., Ramey, M., French, R. L.(1994). Policy Implications of Tennessee Report Card Analyses. Paper presented at the annual meeting of the Southern Regional Council of Educational Administration (SRCEA) (ERIC TM 022 062).

Bobbett, G. C., & French, R. L. (1994). A Study of Various Statistical Analyses Applied to School Report Cards. Paper presented at the annual meeting of the Mid-South Educational Research Association (MSERA) (ERIC ED 375147).

French, R.L., & Bobbett, G. C. (1993). An Analysis of State Report Cards in Five Southeastern States. Paper presented at the annual meeting of the Mid-South Educational Research Association (MSERA) (ERIC ED 373094).

French, R.L., & Bobbett, G. C. (1994). An Analysis of School Report Cards used in Ten Southeastern States. Paper presented at the annual meeting of the American Education Research Association (AERA) (ERIC ED 377243 & ED 378230.

Nunnally, J. C. (1978). Psychometric Theory (2nd ed.). New York: McGraw-Hill.

VIII. NOTES

Gordon C. Bobbett is an education consultant/researcher living in Knoxville, Tennessee. Russell French is professor of Curriculum and Instruction, The University of Tennessee, Knoxville. Charles M. Achilles is professor of Educational Leadership at Eastern Michigan University, Ipsilanti, MI.

The authors thank numerous persons who reacted to earlier drafts of this material and made helpful comments. Some who deserve individual mention are Dr. William Wayson, Ohio State University (retired), and Dr. Donald J. Dessart and Dr. John Philpot, Statistics Department, Jniversity of Tennessee-Knoxville.

APPENDIX A

Discriptive Statistics

N=319

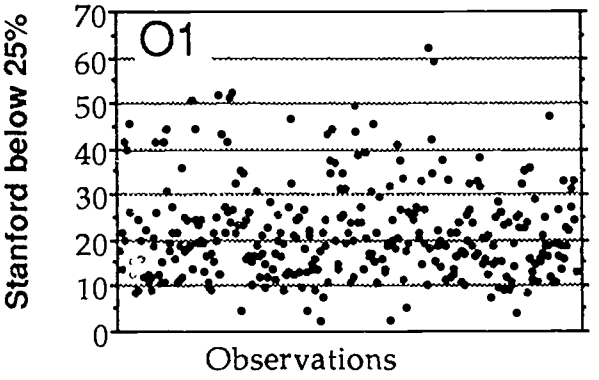
1992-93 Arkansas School District data

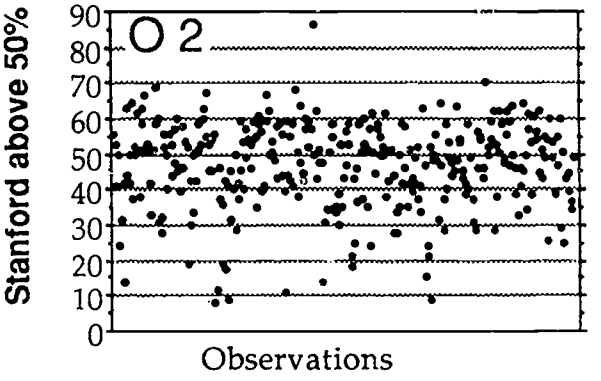
	Outcome Items	Number	Mean	Standard Dev.	Minimum	Maximum	Range	Kurtosis	Skewness
1	**% Stanford below 25th percentile**	319	**21.6**	10.3	**2.0**	**61.8**	59.8	1.3	1.1
2	**% Stanford above 50th percentile**	319	46.6	12.1	7.9	86.0	78.1	.7	-0.7
3	**% Stanford above 75th percentile**	319	**20.6**	8.1	**0.0**	**44.4**	44.4	-.1	-0.1
4	**Average ACT score**	317	**19.5**	1.7	**13.3**	**25.2**	11.9	.8	-0.4
5	**MPT 8th Grade pass rate**	319	97.4	3.7	**70.8**	**100.0**	29.2	10.0	-2.5
6	**MPT Student pass rate (grade 3, 6, & 8)**	319	80.3	10.8	**31.1**	**98.3**	67.2	2.9	-1.4
7	*MPT tests passed (grade 3, 6, & 8)*	319	10.0	2.4	**2.0**	**12.0**	10.0	1.1	-1.4
8	*% Taking ACT-Seniors*	317	**53.8**	13.5	16.0	92.1	76.1	.2	-0.2
9	*Scholarship-ACT-above 19*	317	55.3	17.9	0.0	100.0	100.0	.5	-0.4
10	*Advance Placement/1000*	317	11.7	36.1	0.0	277.0	277.0	22.5	4.5
11	*% Core curriculum-Math*	317	57.5	12.8	16.9	100.0	83.1	1.1	0.2
12	*% Core Curriculum - Science*	317	63.3	13.2	7.7	100.0	92.3	1.4	0.1
	Demographic/District Items								
1	**Attendance Rate (%)**	319	94.3	1.0	**90.6**	99.6	9.0	2.9	-0.1
2	**Completion Rate (9-12 grade)**	318	83.0	9.5	**36.0**	**100.0**	64.0	1.7	-0.8
3	**Retention Rate (K-8th grade)**	317	**2.5**	1.8	**0.0**	**11.2**	11.2	3.1	1.5
4	**% Black Students**	319	18.0	26.8	**0.0**	**100.0**	100.0	1.1	1.5
5	**% Black Staff**	319	8.4	16.2	**0.0**	**87.3**	87.3	7.6	2.7
6	**($) Board/Supt./Principal's exp./ADM**	304	371.2	48.8	**96.1**	**1513.7**	1417.6	6.3	1.7
7	**($) Atheletic Expense /ADM**	304	**75.2**	48.8	**2.5**	**361.8**	359	6.3	1.7
8	**ADM (Average Daily Membership)**	319	1,355.6	2,172	90	21,147	21,057	40.2	5.5
9	**Resource Rate (County: 1980)**	319	**644.6**	371.0	**198.0**	**3861.0**	3663	26.8	4.2
10	**Education (County: 1980)**	319	**7.0**	3.6	**1.6**	**31.6**	30.0	10.1	2.4
11	**Income (County: 1980)**	319	82.0	7.1	55.3	96.1	40.8	1.0	-1.0
12	**Free & Reduced Lunch 92**	319	46.4	17.4	**13.5**	**100.0**	86.5	.5	0.8
13	**Miles (County)**	319	166.1	110.8	**25.0**	**759.0**	734.0	6.3	2.0
14	**Millage (County)**	319	28.7	5.2	**18.0**	**58.4**	40.4	4.9	1.6
15	**Number certified persons**	319	95.0	165.9	12.8	2020.3	2008	71.3	7.4
16	**Pupil/teacher (P/t) ratio**	319	**13.7**	1.9	**6.4**	**17.3**	11.0	1.7	-1.1
17	**Per Pupil Expense ($)**	319	$3,164	$524	$2,595	$6,655	$4,060	14.5	3.3

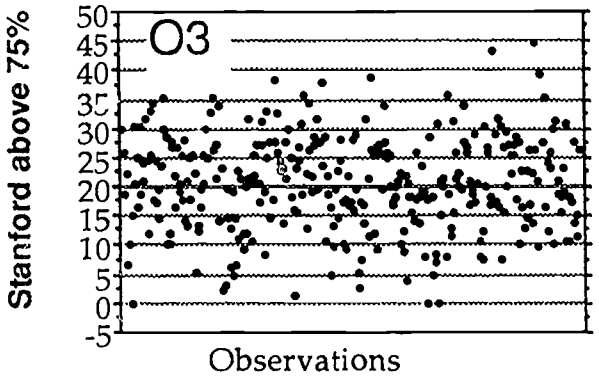
Bold = Student Outcome and Dempgraphic/District items selected for further study.
Italics = Items not selected for futher study.

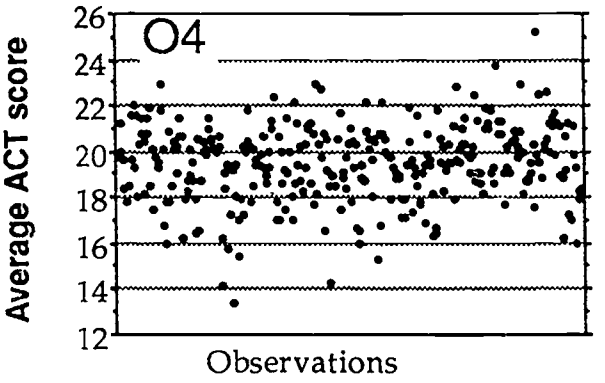
Appendix B

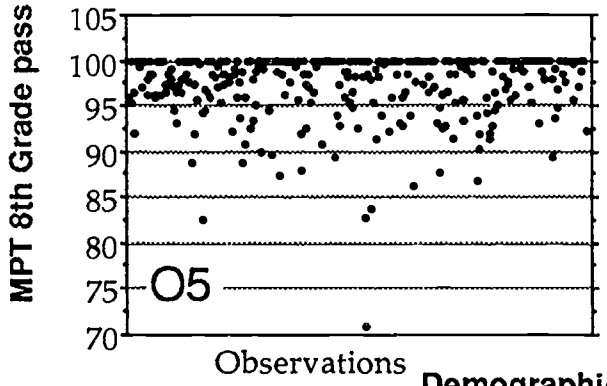
Student Outcome items

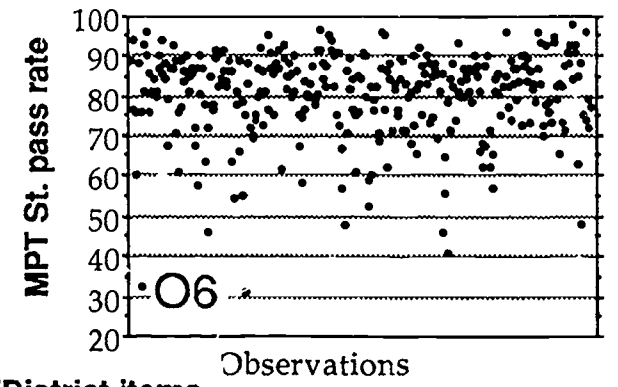




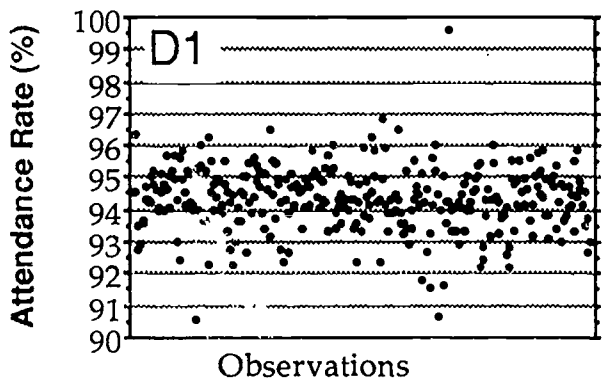


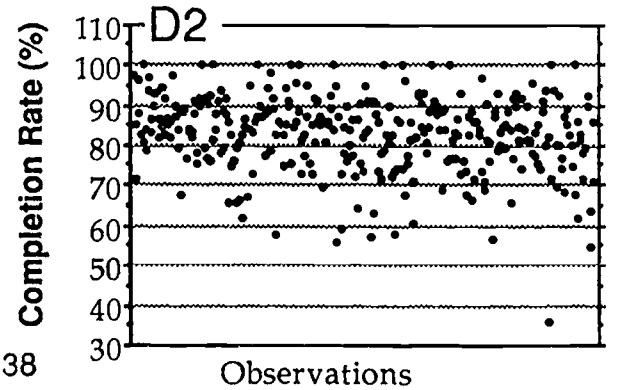


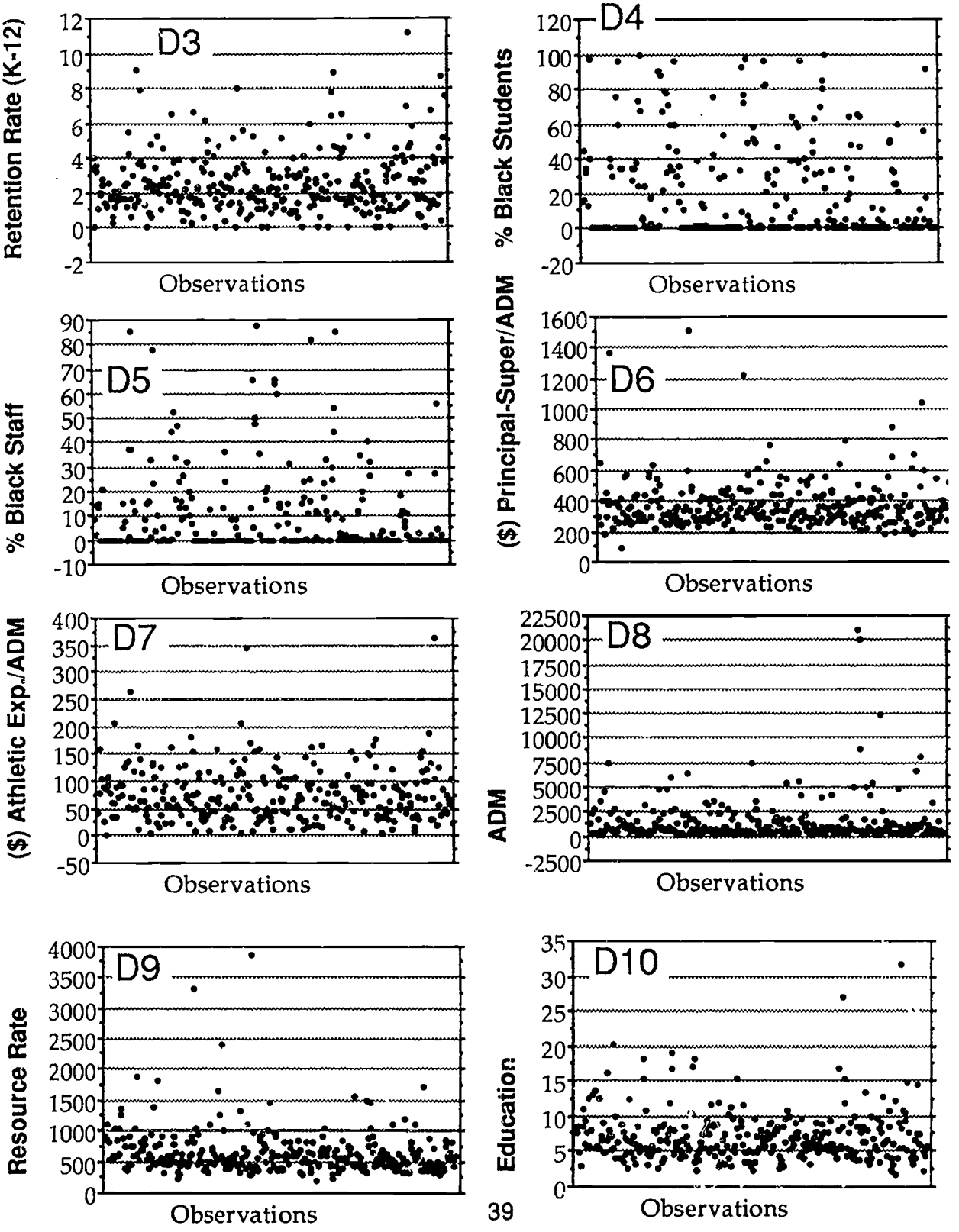


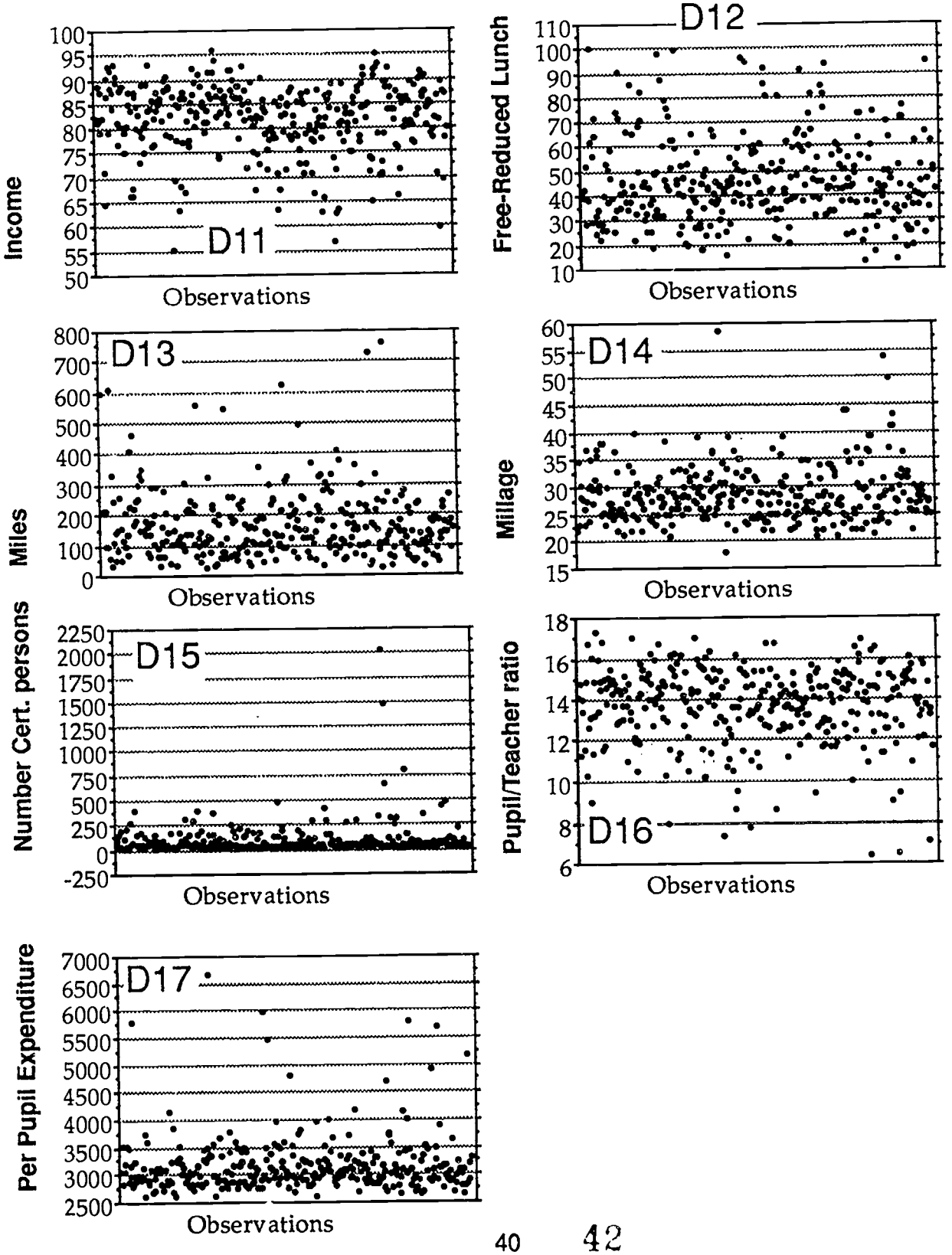


Demographic/District items






D3
Retention Rate (K-12)
12
10
8
6
4
2
0
-2
Observations
D4
% Black Students
120
100
80
60
40
20
0
-20
Observations
D5
% Black Staff
90
80
70
60
50
40
30
20
10
0
-10
Observations
D6
($) Principal-Super/ADM
1600
1400
1200
1000
800
600
400
200
0
Observations
D7
($) Athletic Exp./ADM
400
350
300
250
200
150
100
50
0
-50
Observations
D8
ADM
22500
20000
17500
15000
12500
10000
7500
5000
2500
0
-2500
Observations
D9
Resource Rate
4000
3500
3000
2500
2000
1500
1000
500
0
Observations
D10
Education
35
30
25
20
15
10
5
0
Observations


Income
D11
Observations
Free-Reduced Lunch
D12
Observations
Miles
D13
Observations
Millage
D14
Observations
Number Cert. persons
D15
Observations
Pupil/Teacher ratio
D16
Observations
Per Pupil Expenditure
D17
Observations

Pearson Product Moment Correlation

	Item	1 %Stanford-25th %	2 %Stanford+50th %	3 %Stanford + 75th%	4 %Average ACT score	5 %MPT 8th grade pass rate	6 %MPT student pass rate	7 *MPT tests passed*	8 *% taking ACT-Seniors*	9 *Scholarship-ACT-above 19*	10 *Advance Placement/1000*	11 *% Core curriculum-Math*	12 *% Core Curriculum - Science*	1 Attendance Rate	2 Completion Rate	3 Retention Rate	4 % Black Students	5 % Black Staff	6 Prin. exp/ADM	7 Atheletic expen. /ADM	8 ADM	9 Resource	10 Education	11 Income	12 F & R 92	13 Miles	14 Millage	15 No. cert. persons	16 P/t ration	17 Per pupil
1	%Stanford-25th %	###	-.89	-.78	-.55	-.38	-.68	-.61	-.24	-.53	-.11	-.14	-.10	-.19	-.14	.18	.71	.63	.12	-.10	.00	-.03	-.11	-.49	.61	.11	-.01	.03	-.16	.12
2	%Stanford+50th %	.89	###	.89	.60	.31	.67	.62	.30	.57	.18	.23	.14	.16	.15	-.17	-.70	-.61	-.15	.04	.06	.11	.21	.50	-.62	-.09	-.01	.03	.19	-.10
3	%Stanford + 75th%	.78	.89	###	.55	.27	.58	.54	.33	.49	.22	.25	.11	.20	.11	-.14	-.57	-.51	-.14	.10	.12	.15	.28	.47	-.60	-.05	.05	.09	.22	-.09
4	%Average ACT score	.55	.60	.55	###	.17	.45	.42	.27	.90	.26	.23	.18	.07	.00	-.07	-.56	-.50	-.19	-.04	.18	.00	.30	.42	-.53	-.01	.00	.13	.24	-.12
5	%MPT 8th grade pass rate	.38	.31	.27	.17	###	.47	.47	.05	.19	-.04	.04	.04	.21	.17	-.12	-.40	-.35	.01	.02	-.26	-.21	-.12	.16	-.23	-.19	-.01	-.28	-.02	-.10
6	%MPT student pass rate	.68	.67	.58	.45	.47	###	.88	.21	.46	.05	.10	.04	.21	.15	-.15	-.68	-.64	-.19	.07	-.10	-.01	.01	.43	-.60	-.07	-.04	-.12	.17	-.15
7	*MPT tests passed*	.61	.62	.54	.42	.47	.88	###	.22	.42	.10	.14	.09	.18	.13	-.12	.63	-.59	-.26	.04	-.07	-.03	.07	.43	-.57	-.04	-.11	-.11	.28	-.24
8	*% taking ACT-Seniors*	.24	.30	.33	.27	.05	.21	.22	###	.21	.16	.23	.14	.12	.15	.08	-.17	-.20	-.13	.08	.15	.13	.29	.22	-.34	.09	-.05	.13	.23	-.11
9	*%Scholarship-ACT -above 19*	.53	.57	.49	.90	.19	.46	.42	.21	###	.20	.17	.11	.08	.08	-.09	-.55	-.49	-.22	-.02	.13	.01	.24	.35	-.49	-.01	.00	.09	.23	-.15
10	*Advanced Placement/1000*	-.11	.18	.22	.26	-.04	.05	.10	.16	.20	###	.32	.08	-.02	.02	-.08	-.08	-.06	-.18	-.08	.39	.08	.42	.25	-.30	.03	.11	.34	.29	-.11
11	*%Math-CC*	.14	.23	.25	.23	.04	.10	.14	.23	.17	.32	###	.18	.14	.12	-.10	-.05	.01	-.14	-.01	.29	.09	.38	.22	-.28	.13	.00	.25	.28	-.08
12	*%Science-CC*	-.10	.14	.11	.18	.04	.04	.09	.14	.11	.08	.18	###	.15	.01	-.10	-.05	-.04	.00	-.04	.00	.12	.12	.09	-.11	.05	-.03	.00	.12	-.10
13	% Attend. Rate	.19	.16	.20	.07	.21	.21	.18	.12	.08	-.02	.14	.15	###	.31	-.09	.03	.11	.02	.14	-.22	.08	.01	.06	-.19	-.01	.08	-.23	.09	-.15
14	%Completion Rate	.14	.15	.11	.00	.17	.15	.15	.15	.08	.02	.12	.01	.31	###	-.09	-.06	-.05	-.14	.02	-.12	.01	.05	.17	-.19	-.01	.01	-.13	.19	-.22
15	%Retention Rate	.18	.17	.14	.07	.12	.15	.12	.08	.09	.08	.10	.10	.09	.09	###	.15	.10	.10	.00	.05	.10	.07	.18	.19	.00	.08	.04	.05	.11
16	%Black st's	.71	.70	.57	.56	.40	.68	.63	.17	.56	.08	.05	.05	.03	.06	.15	###	.92	.10	.02	.15	.08	.07	.50	.60	.16	.05	.17	.04	.08
17	%Black staff	.63	.61	.51	.50	.35	.64	.59	.20	.49	.06	.01	.04	.11	.05	.10	.92	###	.11	.10	.13	.05	.05	.52	.61	.14	.05	.15	.02	.07
18	Administration/Prin. exp./ADM	.12	.15	.14	.19	.01	.19	.26	.13	.22	.18	.14	.00	.02	.14	.10	.10	.11	###	.18	.27	.32	.28	.25	.33	.20	.34	.21	.74	.82
19	Atheletic expenditure/ADM	.10	.04	.10	.04	.02	.07	.04	.08	.02	.08	.01	.04	.14	.02	.00	.02	.10	.18	###	.18	.16	.08	.01	.10	.03	.24	.16	.14	.17
20	ADM	.00	.06	.12	.18	.28	.10	.07	.15	.13	.39	.29	.00	.22	.12	.05	.15	.13	.27	.18	###	.12	.59	.25	.23	.20	.19	.98	.34	.01
21	Resourse	.03	.11	.15	.00	.21	.01	.03	.13	.01	.08	.09	.12	.08	.01	.10	.08	.05	.32	.16	.12	###	.25	.09	.05	.09	.13	.13	.17	.39
22	Education	.11	.21	.28	.30	.12	.01	.07	.29	.24	.42	.38	.12	.01	.05	.07	.07	.05	.28	.08	.59	.25	###	.35	.25	.04	.11	.56	.34	.14
23	Income	.49	.50	.47	.42	.16	.43	.43	.22	.35	.25	.22	.09	.06	.17	.18	.50	.52	.25	.01	.25	.09	.35	###	.74	.19	.21	.22	.29	.20
24	%F&R	.61	.62	.60	.53	.23	.60	.57	.31	.49	.30	.28	.11	.19	.19	.19	.60	.61	.33	.10	.23	.05	.25	.74	###	.06	.16	.18	.41	.27
25	Miles	.11	.09	.05	.01	.19	.07	.04	.09	.01	.03	.13	.05	.01	.01	.00	.16	.14	.20	.03	.20	.09	.04	.19	.06	###	.22	.18	.21	.09
26	Millage	.01	.01	.05	.00	.01	.04	.11	.05	.00	.11	.00	.03	.08	.01	.08	.05	.05	.34	.24	.19	.13	.11	.21	.16	.22	###	.20	.25	.37
27	No. cert.pers	.03	.03	.09	.13	.28	.12	.11	.13	.09	.34	.25	.00	.23	.13	.04	.17	.15	.21	.16	.98	.13	.56	.22	.18	.18	.20	###	.25	.05
28	P/t ratio	.16	.19	.22	.24	.02	.17	.28	.23	.23	.29	.28	.12	.09	.19	.05	.04	.02	.74	.14	.34	.17	.34	.29	.41	.21	.25	.25	###	.76
29	$Per pupil	.12	.10	.09	.12	.10	.15	.24	.11	.15	.11	.08	.10	.15	.22	.11	.08	.07	.82	.17	.01	.39	.14	.20	.27	.09	.37	.05	.76	###

Student Outcome Items: columns 1–12. Demographic/District Items: columns 1–17.

Box = Positive Significance at the .05 level.
Shade = Negative Significance at the .05 level.

"r" values for n=300: p≤.05=.113; p≤.01=.148 (Young, Verdman, p. 576 [1977]).

Pearson Product Moment Correlation

	Demographic/ District Items	Stanford below 25th %		Stanford above 50th %		Stanford above 75th %		Average ACT score		MPT 8th grade pass rate		MPT Students pass rate	
		R	% R^2	R	% R^2	R	% R^2	R	% R^2	R	% R^2	R	% R^2
1	Attendance Rate	[illegible]	3.6%	.16	2.4%	.20	4.0%	.07	.5%	.21	4.3%	.21	4.5%
2	Completion Rate	[illegible]	2.0%	.15	2.3%	.11	1.3%	.00	.0%	.17	2.9%	.15	2.3%
3	Retention Rate	.18	3.3%	-.12	2.9%	[illegible]	1.9%	-.07	.5%	[illegible]	1.4%	-.15	2.3%
4	% Black Students	.71	50.3%	[illegible]	46.3%	[illegible]	32.9%	[illegible]	31.7%	[illegible]	15.2%	[illegible]	45.4%
5	% Black Staff	.63	40.1%	[illegible]	37.6%	[illegible]	25.2%	[illegible]	25.1%	[illegible]	12.5%	[illegible]	41.0%
6	Prin. expenditure / ADM	.12	1.4%	[illegible]	2.1%	[illegible]	2.0%	[illegible]	3.8%	.01	.0%	[illegible]	3.6%
7	Atheletic Expend. / ADM	-.10	1.0%	.04	.2%	.10	1.1%	-.04	.2%	.02	.0%	.07	.5%
8	ADM	.00	.0%	.06	.4%	.12	1.5%	.18	3.1%	-.25	6.6%	-.10	.9%
9	Resource	-.03	.1%	.11	1.2%	.15	2.2%	.00	.0%	-.21	4.4%	-.01	.0%
10	Education	-.11	1.1%	.21	4.5%	.28	8.0%	.30	9.0%	-.12	1.5%	.01	.0%
11	Income	[illegible]	23.8%	.50	24.9%	.47	22.2%	.42	17.8%	.16	2.5%	.43	18.3%
12	Free & Reduced Lunch	.61	36.7%	[illegible]	37.8%	[illegible]	35.5%	[illegible]	27.6%	[illegible]	5.5%	[illegible]	35.9%
13	Mile	.11	1.2%	-.09	.8%	-.05	.3%	-.01	.0%	-.19	3.7%	-.07	.5%
14	Millage	-.01	.0%	-.01	.0%	.05	.2%	.00	.0%	-.01	.0%	-.04	.2%
15	No. cert. persons	.03	.1%	.03	.1%	.09	.8%	.13	1.8%	[illegible]	7.8%	[illegible]	1.4%
16	Pupil/teacher ratio	[illegible]	2.4%	.19	3.7%	.22	4.7%	.24	5.6%	-.02	.0%	.17	3.0%
17	Per pupil expenditure	.12	1.5%	-.10	1.1%	-.09	.8%	[illegible]	1.4%	-.10	.9%	[illegible]	2.2%
	Sum=		169%		170%		147%		128%		70%		163%

Light Shade located under R^2 (i.e., the r^2 is converted to percentage (%) of impact for the respective indepedent varialbe) = p≤.05; Dark shade reflects a negative "trend-line".

APPENDIX E

Simple Regression

	Demographic/ District Items	Stanford below 25th %				Stanford above 50th %				Stanford above 75th %				Average ACT score				MPT 8th grade pass rate				MPT Students pass rate			
		R	% (Adj. R^2)	F-Score	p	R	% (Adj. R^2)	F-Score	p	R	% (Adj. R^2)	F-Score	p	R	% (Adj. R^2)	F-Score	p	R	% (Adj. R^2)	F-Score	p	R	% (Adj. R^2)	F-Score	p
1	Attendance Rate	.20	3.9%	12.8	.00	.17	2.4%	8.8	.00	.19	3.3%	12.0	.00	.06	.1%	1.3	.26	.17	2.4%	8.9	.00	.20	3.8%	13.5	.00
2	Completion Rate	.16	2.4%	9.7	.00	.17	2.5%	9.0	.00	.12	1.2%	4.9	.03	.04	-.2%	.4	.51	.19	3.3%	11.9	.00	.15	1.9%	7.0	.01
3	Retention Rate	.20	3.5%	12.5	.00	.19	3.3%	11.7	.00	.15	1.9%	7.1	.01	.12	1.2%	5.9	.03	.09	.4%	2.4	.12	.13	1.4%	5.5	.02
4	% Black Students	69	47.6%	290.3	.00	.70	48.4%	299.8	.00	.60	35.6%	176.5	.00	.57	31.7%	147.3	.00	.40	15.7%	60.1	.00	.69	47.9%	293.4	.00
5	% Black Staff	.63	39.5%	208.4	.00	.62	38.5%	200.4	.00	.53	28.0%	124.6	.00	.51	25.5%	109.0	.00	.38	14.0%	50.2	.00	.64	40.7%	219.1	.00
6	Prin. expenditure / ADM	.08	.3%	1.8	.18	.13	1.5%	5.1	.03	.11	.9%	3.8	.05	.14	1.4%	6.4	.01	.04	-.2%	.5	.50	.12	1.0%	4.3	.04
7	Atheletic Expend. / ADM	.10	.6%	2.9	.09	.05	.0%	.9	.34	.12	1.1%	4.3	.04	.05	-.1%	.7	.42	.01	-.3%	.0	.84	.09	.5%	2.5	.11
8	ADM	.00	-.3%	.0	.97	.07	.1%	1.5	.23	.13	1.4%	5.4	.02	.17	2.5%	9.0	.00	.22	4.3%	15.4	.00	.08	.4%	2.2	.14
9	Resource	.04	-.2%	.4	.53	.11	.8%	3.7	.06	.14	1.7%	6.6	.01	.01	-.3%	.0	.91	.18	2.9%	10.8	.00	.00	-.3%	.0	1.00
10	Education	.10	.6%	3.0	.08	.19	3.4%	12.3	.00	.26	6.5%	23.1	.00	.30	8.5%	30.5	.00	.10	.6%	2.9	.09	.01	-.3%	.0	.89
11	Income	.49	24.1%	102.1	.00	.52	26.4%	115.1	.00	.48	22.5%	93.2	.00	.42	17.1%	66.2	.00	.16	2.1%	7.8	.01	.43	17.8%	70.1	.00
12	Free & Reduced Lunch	.59	34.0%	164.9	.00	.62	38.4%	199.3	.00	.62	37.6%	192.7	.00	.52	26.3%	113.7	.00	.24	5.5%	19.5	.00	.60	35.4%	175.4	.00
13	Mile	.09	.4%	2.4	.12	.06	.0%	1.1	.29	.02	-.3%	.2	.68	.00	-.3%	.0	.97	.15	2.1%	7.9	.01	.04	-.2%	.4	.51
14	Millage	.02	-.3%	.2	.69	.01	-.3%	.1	.80	.07	.1%	1.4	.24	.01	-.3%	.0	.89	.01	-.3%	.1	.81	.01	-.3%	.0	.83
15	No. cert. persons	.03	-.3%	.2	.65	.03	-.2%	.4	.55	.09	.5%	2.8	.10	.13	1.3%	5.3	.02	.24	5.3%	18.8	.00	.11	.9%	3.6	.06
16	Pupil/teacher ratio	.16	2.2%	8.0	.01	.19	3.4%	12.2	.00	.19	3.3%	11.9	.00	.22	4.6%	16.1	.00	.03	-.2%	.2	.64	.14	1.5%	6.0	.01
17	Per pupil expenditure	.09	.4%	2.4	.13	.08	.4%	2.3	.13	.08	.0%	1.0	.32	.09	.5%	2.7	.10	.04	-.2%	.4	.51	.08	.3%	2.0	.16
	Sum=		158%				169%				145%				120%				58%				152%		

Shade = Negative Correlation
Box = Significant : p≤.05

47

48

Stepwise Regression (Forward) & Multiple Regression

	Demographic/ District Items	Stanford below 25th %		Stanford above 50th %		Stanford above 75th %		Average ACT score		MPT 8th grade pass rate		MPT Students pass rate	
		Stepwise Reg. (Forward)	Multiple Regression	Stepwise Reg. (Forward)	Multiple Regression	Stepwise Reg. (Forward)	Multiple Regression	Stepwise Reg. (Forward)	Multiple Regression	Stepwise Reg. (Forward)	Multiple Regression	Stepwise Reg. (Forward)	Multiple Regression
		F:*/**	p	F:*/**	p	F:*/**	p	F:*/**	p	F:*/**	p	F:*/**	p
1	Attendance Rate	20.0	.000	8.7	.000	14.9	.002	1.7	- -	21.2	.000	18.9	.002
2	Completion Rate	.2	- -	.8	- -	.4	- -	3.4	- -	.0	- -	.1	- -
3	Retention Rate	.7	- -	.0	- -	.2	- -	1.5	- -	.0	- -	.2	- -
4	% Black Students	152.551	.000	75.6	.000	75.0	.000	74.0	.000	124.1	.000	238.7	.000
5	% Black Staff	.8	- -	4.0	- -	2.1	- -	2.5	- -	.0	- -	.4	- -
6	Prin. expenditure / ADM	.5	- -	.2	- -	.1	- -	.1	- -	2.7	.019	.4	- -
7	Athletic Expend. / ADM	2.0	- -	.0	- -	1.6	- -	1.2	- -	.2	- -	.6	- -
8	ADM	.7	- -	.3	- -	1.0	- -	1.3	- -	.6	- -	.4	- -
9	Resource	.9	- -	7.2	.009	6.5	.008	.8	- -	.1	- -	1.2	- -
10	Education	6.9	.004	20.5	.000	25.7	.000	39.7	.000	.3	- -	.6	- -
11	Income	.0	- -	.1	- -	1.2		2.0	- -	1.1	- -	.9	- -
12	Free & Reduced Lunch]	11.0	.018	12.8	.002	17.3	.000	7.2	.019	23.7	.003	3.7	- -
13	Mile	.0	- -	.1	- -	.3	- -	2.4	- -	1.1	- -	.1	- -
14	Millage	.0	- -	1.8	- -	.1	- -	.5	- -	2.3	- -	.5	- -
15	No. cert. personne	.8	- -	.0	- -	.4	- -	.4	- -	.5	- -	.4	- -
16	Pupil/teacher ratio	.1	- -	1.6	- -	1.0	- -	2.3	- -	1.9	- -	35.4	.004
17	Per pupil expenditure	.1	- -	.0	- -	.5	- -	.0	- -	.2	.019	.5	- -
	Model Summary												
	Number	4	4	6	6	5	5	3	3	3	4	3	3
	R	.771	.747	.786	.777	.615	.730	.668	.666	.76	.768	.712	.728
	R^2	.594	.558	.618	.604	.378	.533	.446	.443	.57	.589	.503	.529
	Adjusted R^2 (%)	59%	55%	61%	60%	38%	53%	44%	44%	57%	57%	50%	50%
	F Score	108.456	99.3	79.9	79.7	66.3	71.4	79.3	83.1	130.9	23.8	102.0	18.7
	p		.0001		.0001		.0001		.0001		.0001		.0001

* Box = Significant ≤.05
** Shade = Neg. Par. Correlation

Guttman's Partial Correlation

	Demographic/ District Items	Stanford below 25th %		Stanford above 50th %		Stanford above 75th %		Average ACT score		MPT 8th grade pass rate		MPT Students pass rate	
		r	r^2 %	r	r^2 %	r	r^2 %	r	r^2 %	r	r^2 %	r	r^2 %
		.606	*37%*	*.627*	*39.3%*	*.548*	*30.0%*	*.486*	*23.6%*	*.298*	*8.9%*	*.589*	*34.7%*
1	Attendance Rate	-.197	3.9%	.161	2.6%	.198	3.9%	.126	1.6%	.169	2.9%	.233	5.4%
2	Completion Rate	-.035	.1%	.064	.4%	-.010	.0%	-.114	1.3%	.114	1.3%	-.017	.0%
3	Retention Rate	.043	.2%	-.003	.0%	.034	.1%	.082	.7%	-.069	.5%	-.025	.1%
4	% Black Students	.406	16.5%	-.445	19.8%	-.334	11.2%	-.304	9.2%	-.112	1.3%	-.313	9.8%
5	% Black Staff	-.053	.3%	.100	1.0%	.073	.5%	.038	.1%	-.059	.3%	-.003	.0%
6	Prin. expenditure / ADM	-.061	.4%	.001	.0%	.004	.0%	.002	.0%	.061	.4%	-.139	1.9%
7	Atheletic Expend. / ADM	-.110	1.2%	.042	.2%	.100	1.0%	-.062	.3%	-.014	.0%	.015	.0%
8	ADM	-.003	.0%	.058	.3%	.078	.6%	.080	.6%	.096	.9%	-.068	.5%
9	Resource	-.036	.1%	.116	1.3%	.096	.9%	-.068	.5%	-.197	3.9%	.035	.1%
10	Education	-.083	.7%	.193	3.7%	.230	5.3%	.285	8.1%	.054	.3%	-.029	.1%
11	Income	-.011	.0%	-.011	.0%	-.035	.2%	-.034	.1%	-.053	.3%	-.027	.1%
12	Free & Reduced Lunch	.112	1.3%	-.126	1.6%	-.169	2.9%	-.103	1.1%	-.014	.0%	-.177	3.1%
13	Mile	.033	.1%	-.054	.1%	-.022	.0%	.057	.3%	-.059	.3%	.006	.0%
14	Millage	.059	.3%	-.083	.7%	-.061	.3%	-.018	.0%	-.010	.0%	-.024	.1%
15	No. cert. persons	-.019	.0%	-.052	.3%	-.073	.5%	-.060	.5%	-.121	1.5%	.047	.2%
16	Pupil/teacher ratio	-.027	.1%	.064	.4%	.069	.5%	.081	.7%	-.049	.2%	.106	1.1%
17	Per pupil expenditure	.033	.1%	.062	.4%	.073	.5%	.086	.7%	-.026	.1%	.139	1.9%
	Sum=		25.3%		32.9%		28.4%		26.0%		24%		24.5%

Shade = Negative Correlation
Box = Items greater than 1% percentage of influence

51

52

Type III Sum of Squares
Mode Coefficient Table
1992-93 (Arkansas)

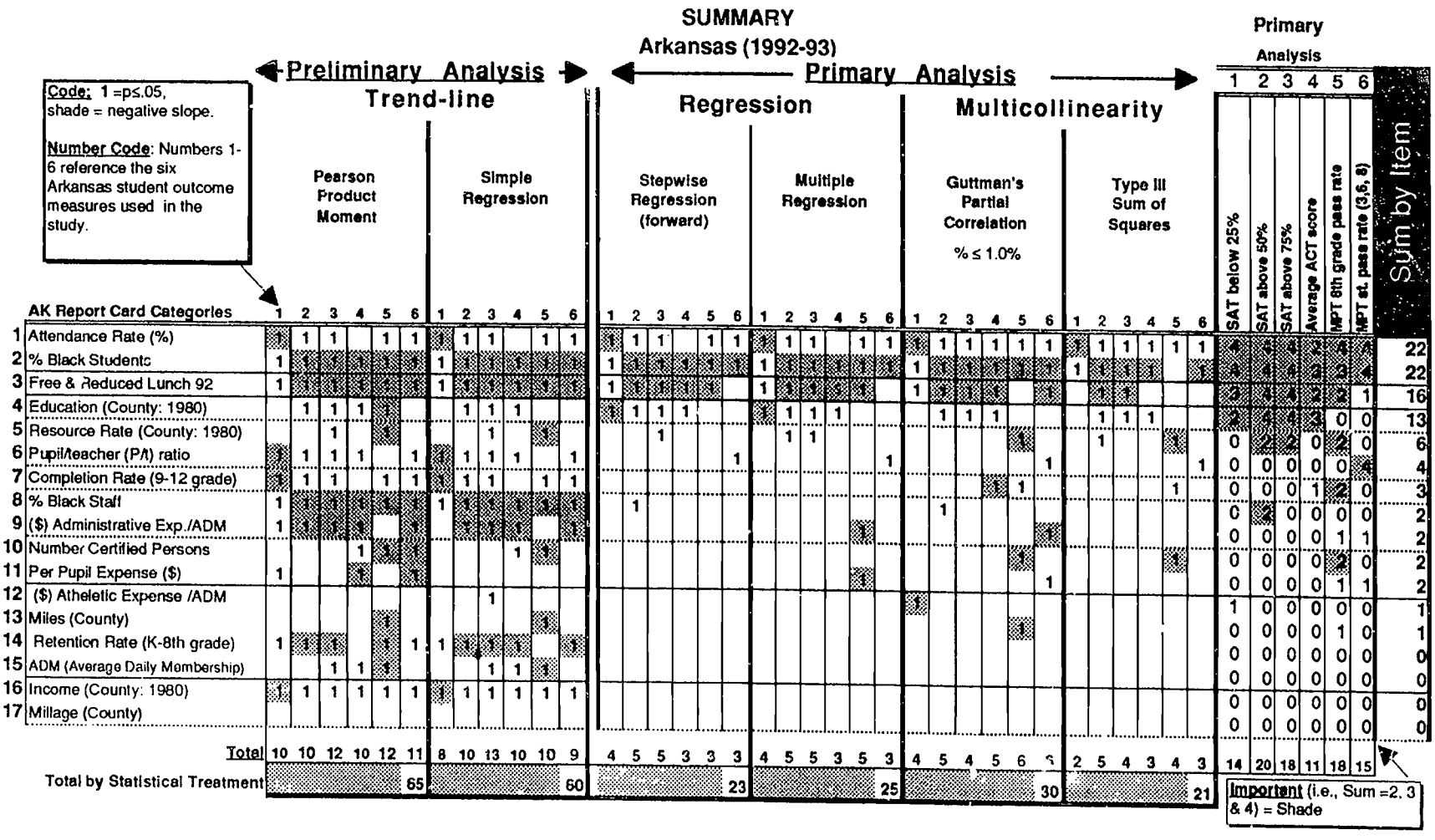
The Type III sums of squares statistic was "... designed to remove the effect of all the other effects in the model before testing the effect in question. Consequently, they can be thought of as being constructed from a sequential model where each effect in turn plays the role of the last effect being entered into the model. Because of this, observed cell frequencies do not play a part in forming the hypotheses being tested". (emphaisis added) (Abacus Concepts, Inc. SuperANOVA, p. 192).

	Arkansas Report Card Categories	Stanfrod below 25%		Stanfrod above 50%		Stanfrod above 75%		Average ACT		MPT 8th Gr. pass rate		MPT St. pass rate (3,6, & 8)	
		t	p	t	p	t	p	t	p	t	p	t	p
1	Attendance Rate (%)	[illegible]	.00	2.75	.01	3.40	.00	2.13	.03	2.89	.00	3.13	.00
2	Completion Rate (9-12 grade)	-.59	.55	1.07	.28	-.17	.87	[illegible]	.06	1.94	.05	.04	.97
3	Retention Rate (K-8th grade)	.73	.47	-.06	.95	.58	.56	1.38	.17	-1.16	.25	-.22	.83
4	% Black Students	7.47	.00	[illegible]	.00	[illegible]	.00	[illegible]	.00	[illegible]	.06	[illegible]	.00
5	% Black Staff	-.89	.38	1.70	.09	1.23	.22	.64	.53	-.99	.32	-.99	.32
6	($) Board/Supt./Principal's exp./ADM	-1.03	.30	.02	.98	.07	.94	.04	.97	1.03	.30	-1.19	.23
7	($) Atheletic Expense /ADM	[illegible]	.06	.70	.48	1.69	.09	-.87	.39	-.24	.81	.07	.94
8	ADM (Average Daily Membership)	-.05	.96	.98	.33	1.32	.19	1.34	.18	1.62	.11	-.28	.78
9	Resource Rate (County: 1980)	-.61	.54	1.96	.05	1.62	.11	-1.15	.25	[illegible]	.00	.17	.86
10	Education (County: 1980)	-1.40	.16	3.30	.00	3.98	.00	5.00	.00	.91	.36	.88	.38
11	Income (County: 1980)	-.19	.85	-.18	.85	-.65	.52	-.58	.56	-.89	.38	.04	.97
12	Free & Reduced Lunch 92	1.89	.06	-2.17	.03	[illegible]	.00	[illegible]	.08	-.24	.81	[illegible]	.10
13	Miles (County)	.56	.58	-.58	.57	-.37	.71	.95	.34	[illegible]	.10	.06	.95
14	Millage (County)	.99	.32	-1.40	.16	-.86	.39	-.30	.77	-.17	.86	-1.08	.28
15	Number certified persons	-.32	.75	-.88	.38	-1.23	.22	-1.34	.18	[illegible]	.04	-.20	.84
16	Pupil/teacher (P/t) ratio	-.46	.65	1.08	.28	1.16	.25	1.37	.17	-.82	.41	2.88	.00
17	Per Pupil Expense ($)	.55	.58	1.04	.30	1.23	.22	1.46	.15	-.48	.63	1.55	.12

Model Summary

	Stanfrod below 25%	Stanfrod above 50%	Stanfrod above 75%	Average ACT	MPT 8th Gr. pass rate	MPT St. pass rate (3,6, & 8)
Number	301	301	301	300	301	301
R	.778	.792	.740	.694	.546	.728
R^2	.606	.627	.548	.486	.298	.529
Adjusted R^2 (%)	58.2%	60.5%	52.1%	45.5%	25.6%	50.1%
F-value	25.60	28.04	20.19	15.68	7.07	18.72
p-value	.0001	.0001	.0001	.0001	.0001	.0001

Box/Light Shaded - ps 05, Box/non-shaded = mps 10, Dark Shaded = Significant at either .05 to .10 level plus a "negative" Beta score form Model Coefficient analysis.


SUMMARY
Arkansas (1992-93)
Preliminary Analysis
Trend-line
Primary Analysis
Regression
Multicollinearity
Primary Analysis
Code: 1 =p≤.05, shade = negative slope.
Number Code: Numbers 1-6 reference the six Arkansas student outcome measures used in the study.
Pearson Product Moment
Simple Regression
Stepwise Regression (forward)
Multiple Regression
Guttman's Partial Correlation
% ≤ 1.0%
Type III Sum of Squares
SAT below 25%
SAT above 50%
SAT above 75%
Average ACT score
MPT 8th grade pass rate
MPT st. pass rate (3,6, 8)
Sum by Item
AK Report Card Categories
1 Attendance Rate (%)
2 % Black Students
3 Free & Reduced Lunch 92
4 Education (County: 1980)
5 Resource Rate (County: 1980)
6 Pupil/teacher (P/t) ratio
7 Completion Rate (9-12 grade)
8 % Black Staff
9 ($) Administrative Exp./ADM
10 Number Certified Persons
11 Per Pupil Expense ($)
12 ($) Atheletic Expense /ADM
13 Miles (County)
14 Retention Rate (K-8th grade)
15 ADM (Average Daily Membership)
16 Income (County: 1980)
17 Millage (County)
Total
Total by Statistical Treatment
65
60
23
25
30
21
Important (i.e., Sum =2, 3 & 4) = Shade