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ABSTRACT

This report examines the results and conclusions of recent research on small and rural schools, and attempts to frame current debates over educational adequacy and financial equity in Idaho's rural school districts. Section I reports findings of recent research on school size and emphasizes the benefits of (typically rural) small schools. Most research focuses on effects of secondary school size in terms of curriculum offerings, student involvement and attitudes, interpersonal relations, administration, and student achievement. Section II describes the characteristics of rural education, emphasizing that community involvement and close interpersonal relations among teachers, parents, students, and administrators may offset financial and enrollment limitations. Section III analyzes data from Idaho high schools. Results do not show the large deficits in rural education that many expect. Mean differences in achievement were not evident between schools of various sizes. Section IV briefly describes the ongoing movement toward school consolidation and addresses common arguments in favor of school consolidation in the context of rural schools and education reform efforts. Appendices contain statistical data and raw data from Idaho high schools. Contains 56 references. (KS)

THE ADVANTAGES OF SMALL RURAL SCHOOLS

FINAL REPORT
To the Idaho Rural
School Association

SUBMITTED BY:

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February 8, 1994

PREFACE

This report identifies the results and conclusions of recent research on small and rural schools, and attempts to frame the debate on educational adequacy in and financial equity for Idaho's rural school districts. The paper is divided into 4 sections. Many themes appear throughout the report due to the interconnectedness of the issues involved--issues are approached from complementary perspectives in each section and sections are cross-referenced where appropriate.

Introduction

Section I reports the findings and conclusions of recent research on school size and emphasizes the benefits of (typically rural) small schools. Most research focuses on effects of secondary school size.

Section II discusses the special characteristics of rural schools.

Section III summarizes some observational data on Idaho's high schools. Actual data are contained in the Appendices.

Section IV briefly describes the movement toward school consolidation and addresses common arguments in favor of school consolidation in the context of rural schools and education reform efforts.

EXECUTIVE SUMMARY
THE ADVANTAGES OF SMALL RURAL SCHOOL

115,493 school districts existed nationwide in 1941 and small schools were the norm. Over the last 40 years, school consolidation has pared the number of school district to below 16,000. The drive to consolidate was fueled by James Conant's influential book, The Comprehensive High School (1967), which argued that school size affected a school's ability to offer a wide curriculum. Financial arguments, that large schools achieve economies of scale and keep education costs down, have also held broad appeal for policy-makers and state officials. Though reorganization efforts appeared to have run their course by the late 1970s, consolidation efforts reappeared as the education reform movement began to make more demands on school resources. School finance litigation based on educational adequacy and financial equity has helped renew interest in the cost savings that consolidation promises.

Proponents of consolidation tend to focus on the cost and curricular benefits of large schools; opponents tend to focus on recent research on school size, which indicates that small school size carries substantial advantages. Though definitions of small schools vary among studies, there is general agreement that "small" is associated with a number of benefits, including:

- Low student-teacher ratios
- Improved instructional methods, including student centered instruction, cross-age grouping, and cooperative learning.
- Close student-teacher relations
- A greater chance for student participation in extracurricular activities
- Higher student achievement, especially for at-risk students
- Less bureaucratic and more flexible administrative structures that allows greater communication between administrators and teachers
- Greater focus on educational "basics"
- Higher morale among students and teachers and less teacher stress
- Small schools are more flexible and may more easily adopt new instructional methods and education reforms

The circumstances of small *rural* schools provide additional benefits, including:

- Close ties between administrators, teachers, students, parents and communities
- Greater opportunity for cooperation between schools and communities

The close bond between rural communities and their schools has become a defining characteristic of rural education. The role of rural schools extends beyond education: in rural areas, schools act as community and service centers.

Given the close ties between rural communities and their schools, it is a mistake to consider school consolidation without considering its impact on local economies and service structures; one must look beyond schools, as well as at them when considering how to organize schools to promote education most effectively. The implications of consolidation are particularly acute for rural areas where local economies have declined.

Rather than providing a "deficit model" of public instruction, small rural schools are increasingly recognized for their strengths. Though rural residents typically have lower socioeconomic status than their suburban counterparts, large discrepancies in educational achievement do not exist. Small rural schools have done remarkably well, considering the obstacles of isolation, population sparsity, and financing that they have had to overcome. One assumes that if the resources available to small rural schools were expanded, the educative benefits could be substantial.

The education reform movement has placed additional emphasis on educational outcomes, rather than financial inputs. When one considers the productive efficiency of small schools, rather than merely spending efficiency, the "savings" commonly associated with large schools are suspect. Many researchers claim that small schools get more achievement value out of their education dollars. Large schools have recognized the benefits associated with small size. New York schools, for example, advocate the creation of "schools within schools" as a method to capture some of the advantages of smallness. Generally, small schools lead to greater cognitive and affective development among all students, and especially among disadvantaged students.

THE ADVANTAGES OF SMALL RURAL SCHOOL

- Small Schools allow greater student participation in extracurricular activities.
- Interaction and cooperation among students, teachers, administrators, parents and communities are stronger in small schools.
- Small Rural Schools have less red tape and are more in tune with the needs of the community and more likely to seek community involvement is school activities.
- Students in small schools (all other things being equal) typically achieve at higher levels than their counterparts in large schools.
- Small Schools significantly boost educational achievement of at-risk students.
- Small schools have practiced many of the "new" education reform measures for decades--including low student/teacher ratios, cooperative learning methods, student-centered instructional methods, cross-age grouping, and non-graded classes, to name a few.
- Small schools are more adaptive to changing educational needs and can more easily integrate reform measures into the educational system.
- Small Schools place greater emphasis on education "basics."
- Teacher and student morale is higher in small schools and teacher stress is lower.
- The integral nature of schools in rural communities goes beyond fulfilling educative needs--rural schools act as community and service centers as well.
- Idaho's small rural schools show no achievement deficiencies compared to larger schools, despite that socioeconomic status in rural areas is significantly lower than in non-rural areas. One assumes that with greater resources, students in small schools would show even greater educational gains.
- The advantages of small schools are recognized by large schools, and measures have been taken in many instances to reduce school size (by building "schools within schools," for example).

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INTRODUCTION

Discussions of educative and financial effects of school size necessarily encompass a number of topics and a variety of perspectives. Usually, the benefits of small schools are held forth to question the national trend toward school consolidation, especially in America's rural areas. In this context, the focus could just as easily be on school district size. District size has important implications for school size; typically, as districts are consolidated or reorganized, schools within the districts merge and get larger.[1]

School size is also related to class size, which has become nearly synonymous with excellence in education. In fact, studies of school and class size often attribute positive educational outcomes to the same factors--closer teacher/student interaction, for example. As one limits class size, however, school size usually increases (that is, more space in needed to house the same number of students). This apparent dichotomy has important implications for school reform and school finance policies.[2]

This paper concentrates on the benefits of small rural schools. This approach encompasses research findings on class and district size since small schools have de facto small classes[3] and are, for the most part, found in small districts (since both school size and district size are functions of population density).

Most studies reviewed in Sections I and II investigate school size effects and rural/urban differences at the high school level. There are two reasons for this focus: effects of school size at the elementary level have been fairly well documented and seem conclusive, based on the number and general agreement of the findings; and secondary schools are relatively more expensive than elementary schools and are thus targets for consolidation and/or spending reductions.

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[1]If districts are consolidated but schools within districts are not, there is little change in cost or student achievement. A rural school operator, whether he/she is called a "superintendent" or a "principal", will be required. Operational facilities and administrative structures (and costs) will remain very much the same.

[2]Especially financial equity issues. Since school districts compete for a limited pot of money, reducing ADA/Support Unit calculations may stear more money toward large schools to the detriment of small schools (if corresponding changes are not made for small school support unit calculations).

[3]See Section III, p. 17 and Appendix A, Aix & Axi. School size and class size have a high positive correlation in Idaho, especially for schools with high school enrollment between 1 and 500.

A REVIEW OF CURRENT RESEARCH ON SCHOOL SIZE

The debate over secondary school size was largely framed in two influential books: The Comprehensive High School, by James Conant (196,) and Big School, Small School. High School Size and Student Behavior, by Mssrs. Barker and Gump (1964).

Conant's study, commissioned and funded by the National Association of Secondary School Principals, examined questionnaires from 2,024 schools. He concluded that school size affected a school's ability to offer a wide foreign language curriculum and advanced placement courses. On the basis of this evidence, Conant advocated the superiority of larger, comprehensive schools.

Barker and Gump's study compared juniors in four small Kansas high schools (83-151 total enrollment) with their counterparts in a larger high school (2,287 students). The study investigated the extent of student participation in school, community and social activities, student satisfaction, and number of classes taken. School size was negatively correlated with the attributes studied; that is, small schools performed better.

More current research on school size, including studies of the relationship between size and students' cognitive development, tend to confirm the assertions of Barker and Gump and question the relevance of Conant's findings and the validity of his conclusions.

Curriculum Offerings:

Conant's conclusions, and the historical bias in favor of large schools, were predicated on findings that large schools offered a larger depth and breadth of courses. Recent research has challenged Conant's conclusions and his use of course offerings, rather than actual course enrollment, as a useful measure.

D.H. Monk's 1987 study was the first modern empirical test of secondary school size and curriculum comprehensiveness. Monk concluded that large high school size does not guarantee advanced course offerings, but is related to the number of introductory courses offered. Monk's intensive study of English, foreign language, mathematics, and science course offerings indicates that the difference in diversity of course offerings within a subject area for large and small high schools is not large. Additionally, Monk found that only a very small percentage of students in larger high schools took advantage of course offerings not available in small schools.

Haller (1990), using survey statistics collected by the National Center for

Education Statistics, examined program comprehensiveness in three curricular areas: foreign languages, math and science. He concluded that base courses in all three disciplines were available at schools irrespective of size. Fewer than half of small schools (less than 100 seniors) offered advanced science courses; even the smallest schools (less than 50 seniors) offered a four-year math program; at least two introductory-level foreign language courses were offered at the smallest high schools, but by the time schools reached at least 100 seniors, they typically offered four full years of at least one language.

Smith's (1993) investigation of rural education enrollment in Washington State confirmed previous findings. Using data compiled by the State Superintendent's office for the 1991-92 school year, Smith compared course enrollment in small (less than 200) and large (over 200) schools. Smith found no significant difference in curriculum enrollment in Art, Mathematics, Natural Science, Physical Education, Business and Office, Diversified Occupations, Home and Family Life Education, Industrial Arts, Foreign Language, Music, Social Science, Traffic Safety, Community Resource Training, Health Occupations and Home Economics. A slightly higher percentage of small school students took courses in English and Social Studies while a higher percentage of large school students enrolled in vocational courses such as Marketing and Distribution, and Trade and Industry, which are not available in many small schools. Smith also noted an improvement in small school foreign language enrollment since a similar 1988 study.

Though no studies have been conducted in Idaho, one may conclude that the findings would be similar. College entrance requirements of three years of math and english have equalized school offerings somewhat between high schools. Larger high schools may offer more (primarily introductory) courses, but the percentage of students who take advantage of additional offerings is probably small.[1]

Student Involvement and Attitude:

Conant's argument that large schools offer a more comprehensive curriculum is naturally extended to extra-curricular activities. However, Barker and Gump's findings with regard to student affective development, as well as more current

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[1]See related discussion (Haller, Monk, & Tien; 1992) of curriculum and high-order cognitive skill below (p.8).

Cost impacts of requiring certain courses, as an argument for consolidation, is discussed on p. 20 and in Haller & Monk (date unknown). Likewise, the impetus to consolidate in order to achieve a larger curriculum offering is discussed on p.20 and in Haller et al. (1990).

research, directly contradicts this assumption.

Willems' (1967) replication of Barker and Gump's study in the same 5 Kansas high schools confirmed that student attitudes were highly correlated (.97) with a ratio S/A, which is defined as the number of students divided by the number of available activities.

Barker and Gump's findings were also duplicated in Baird's 1969 study, which used a much larger sample (3% of all high school students who took the ACT). Baird found that high school size was related to non-academic achievement in leadership, music, drama, and writing, but not in art or science. The percentage of students with no non-academic accomplishments was significantly higher in large schools (31.5% as opposed to 11.6% in small schools).

Morgan and Alwin's (1980) investigation of rural school students in Washington State revealed a negative correlation between school size and student participation. Students at small high schools participated in a greater number of activities and were more involved in each activity.

In a multivariate analysis of student participation and school size, Lindsay (1984) found that size effects were stronger than those of an individual's socio-economic status, academic ability, gender, sociability, curricular track and class rank.

Concerned that previous findings were based on entirely on student surveys, Schoggen and Schoggen (1988) use senior year-books to tabulate extracurricular participation in 27 New York high schools. They found that while large schools offered more activities (an average of 90 in the largest high schools compared to 20 in the smallest), a large percentage of students did not participate in any of the schools extracurricular activities. Variations in socio-economic status and distance between home and school did not contribute significantly to student participation.

Hollard and Andre (1987) found student participation in a greater number and variety of extracurricular activities in small schools, especially for low-ability and low socioeconomic status students. Additionally, they found that high participation rates lead to higher levels of self-esteem, higher educational aspirations and attainment, lower delinquency rates, improved race relations, and more community involvement as young adults.

Pittman and Haughwout (1987) explored the relationship between high school drop-out rates and school climate, size, and program diversity. They reported that increasing the size of the student body corresponded to a parallel rise in drop-out rates. The also indicated that school size mediates the level of student participation and the severity of school problems; "When small schools are consolidated into

mega-schools, a sacrifice in the quality of school social environment is made."[2]

Page (1991) investigated the relationship between high school size and substance abuse. Using data from rural and semi-rural areas, Page found that students in large schools were significantly more likely to get drunk, smoke cigarettes, chew tobacco, and use marijuana or hashish than students in small schools.

Walberg and Fowler (1991) found that increased school size has negative effects upon student participation, satisfaction and attendance and adversely affects the school climate and a student's ability to identify with the school and its activities.

Interpersonal Relations:

Student/teacher relationships in small schools parallels findings on student/teacher interaction in small classrooms. But because small schools often serve as community centers, as well as educational centers, relations between teachers and parents, and students and communities are strengthened as well. Students in small communities interact more frequently and informally with teachers and with each other.

Numerous studies have linked small classes to increased educational achievement and improved student behavior.[3] Teachers in small schools are able to give their students more personal attention and are more aware of their talents and needs. In small communities, familiarity with students often extends beyond their academic strengths and weaknesses; teachers have the advantage of knowing student's families.

An example drawn from an article on a small Missouri farming community is illustrative:

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[2]Pittman, R.B. & Haughwout, P. "Influence of High School Size on Dropout Rate," Education Evaluation and Policy Analysis 9, n. 4 (1987): 343.

[3]Findings of student/teacher ratio studies are more numerous and conclusive in elementary settings. Summaries of research findings may be found in National Education Association, "What Research Says About Class Size," Data Search, February 1986 and in Hawley, Willis D. et al., "Good Schools: What Research Says about Improving Student Achievement." Peabody Journal of Education, 61, 4, Summer 1984. There is considerable agreement that smaller class size has a positive effect on achievement among disadvantaged students and lower achieving students. Class size affects student attitudes, teacher morale and teacher stress. Small classes also allow more individualized, varied, and adaptive learning activities.

> "...ordinarily, the boy's teacher, Idell Thompson, would expect him to follow the quiet-time rules. But she overlooks this little infraction because she knows he is adjusting to his mother's new marriage. 'I am more understanding because I've known his stepfather's family for years,...his stepfather's grandfather has been our family doctor since the middle 1930s."[4]

and again,

> "...teacher Lisa Fairley borrows a piece of a student's family history to help him understand homonyms. He is having trouble understanding two meanings of the word grind. 'You know, your grandfather used to *grind* meat!' Fairley recalls in a flash."[5]

Students in small schools are not allowed to fall through the cracks of the educational system. Teachers see to it that low achievers get the special attention they need, and often take a personal interest in what courses their students are taking (encouraging them to take courses that will challenge them and prepare them for higher education and careers).

Anecdotal evidence suggests that instruction in small schools is also more likely to be learner-centered and to place a strong emphasis on cooperative learning.[6]

Administration:

Small schools (and districts) also mean less administrative red tape and more cooperation among administrators, teachers and staff and closer involvement with parents and communities. Walberg (1989) speculates that the advantages of small schools may be due to this dynamic relationship:

> Generally, it appears that the smaller the district, the higher the achievement when the socioeconomic status and per-student

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[4]Koepke, M. "Going, Going, Gone," Teacher Magazine (May/June 1991): 41.

[5]Ibid., 45.

[6]Analysis of teaching methods in various settings has been sparse. One major critique of the move toward smaller class sizes is that it has not been accompanied by a corresponding shift in teaching methods. The structure of small schools seems more naturally conducive to (though does not guarantee) many of the instructional methods advocated by school reformers--including individualized instruction, peer tutoring, cooperative learning, cross-age grouping and community involvement.

expenditures are taken into account. Why? Superintendent and central staff awareness of citizen and parent preferences, the absence of bureaucratic layers and administrative complexity, teacher involvement in decision making, and close home-school relations--these may account for the apparent efficiency of small districts in North America.[7]

The advantages of smallness are easily recognized by practitioners in small school settings. Mehaffie's (1983) survey of teachers and administrators in small west-Texas high schools, for example, revealed highly positive opinions about the small secondary school and its educative and social functions.

Some researchers speculate that the uncomplicated and flexible structure of rural schools will allow improved implementation of school reform measures.[8]

Student Achievement:

A preponderance of evidence indicates that small schools, and correspondingly small classes, are associated with high student achievement, especially among minority and at-risk students.

Using data from 553 eight-graders and 712 high school seniors, Summers and Wolfe (1975) found that "(s)maller schools are effective in increasing learning in elementary and senior high schools. Black elementary school students particularly benefit from being in smaller schools, and low achievers particularly benefit in senior high schools."[9]

Fowler and Walberg (1991) correlated school size effects for 293 New Jersey high schools with 18 outcomes, including retention, suspensions, post-school employment, college attendance, and standardized test scores. They found that six of the outcomes were negatively associated with school size, and retention and several of the achievement test scores were higher in smaller schools.[10]

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[7]Walberg, Herbert J. "District Size and Student Learning," Education and Urban Society, February 1989: 162.

[8]See related discussion, "Consolidation and Education Reform," p. 23.

[9]Wolfe (1975) as cited in Fowler, W.J. (1992): 11.

[10]Their study also found that school district size was negatively correlated with ten of the outcomes. See Fowler, E.J. & Walberg, H.J. "School Size, Characteristics, and Outcomes," Educational Evaluation and Policy Analysis 13, n. 2 (Summer 1991): 189-202.

Marion, McIntire and Walberg (1991), using data collected from 251 rural schools, found that school size was negatively correlated with school-level achievement and educational attainment.

In a comprehensive study of Alaskan students in grades 4, 6, and 8, Huang and Howley (1991) found that the negative effect of disadvantaged background on student achievement is significantly less in small than in medium or large schools.

Easton (1985), Edington & Martellaro (1984), McIntire & Marion (1989), and Ward & Murray (1985) found no significant differences in achievement between rural and urban youth.[11]

Hand & Prather (1990) found that students from rural high schools generally outperformed their urban counterparts in university studies (based on GPAs).

Haller, Monk and Tien (1992) investigated the relationship between curricular offerings and higher order thinking skills, reasoning that the availability of more courses in a subject area may not affect basic skill development, but might greatly affect higher-order cognitive skills. Contrary to their hypothesis, they found no correlation between school size and higher order skills in either science or mathematics. Similarly, there was no association between a school's rurality and its students' scores on tests of higher order thinking skills.

Conclusion:

Recent research on the relationship between schools size and affective and cognitive development has shifted the burden of proving educative effectiveness from small to large schools:

> It is not impossible to have a good large school; it simply is more difficult... What are the defensible reasons for operating an elementary school of more than a dozen teachers and 300 boys and girls? I can think of none... I would not want to face the challenge of justifying a senior, let alone junior, high of more than 500 or 600 students (unless I were willing to place arguments for a strong football team ahead of arguments for a good school, which I am not)...Although I have set top limits for school size at 800 students for the secondary phase and 400 for each of the lower two, my preference is for 600 and 300 respectively. And I believe that primary schools of only 150 boys and

[11]Cited in Haller, E.J. et al."Small Schools and Higher Order Thinking Skills," Paper presented to American Educational Research Association at their annual meeting in San Francisco, (April 1992): 6.

girls can be very satisfactory.[12]

Small schools have a number of advantages over large schools. Generally, small schools lead to greater cognitive and affective development among all students, and especially among disadvantaged students.

[12]Goodlad (1984), 309-310, 338, as cited in Williams, D. "The Dimensions of Education: Recent Research on School Size," Working Paper Series, Clemson, SC: Strom Thurmond Institute of Government and Public Affairs, Clemson University (December 1990): 7.

RURAL EDUCATION

The findings discussed in the previous section has important implications for America's rural schools, since the vast majority of rural schools are small, are found in small school districts, and have correspondingly low student/teacher ratios. Though researchers often fail to distinguish between "rural" and "small" in their investigations, rural schools share certain defining characteristics that go beyond size.

Defining Rural Education:

There is no common definition of "rural." Academics and federal, state and local agencies tend to use whichever definition fits their purposes based on existing structures and statistics. The US Census Bureau defines "rural" as a residual category of places "outside urbanized areas in open country, or in communities with less than 2,500 inhabitants," or where the population density is "less than 1,000 inhabitants per square mile." The Office of Management and Budget (OMB) treat rural and non-metropolitan synonymously: geographic areas consisting of a large population nucleus, together with economically and socially related adjacent communities are metropolitan statistical areas; all others are non-metropolitan or rural areas. The Farmers Home Administration defines rural areas as open country, communities up to 20,000 population in non-metropolitan areas, and towns of up to 10,000 population with a rural character in metropolitan areas.

Since there is no common definition of "rural," it follows that "rural education" is a somewhat ambiguous term. The US Department of Education defines nearly all of Idaho schools as rural (with the exceptions of some schools in Idaho's more metropolitan areas--Boise, Pocatello, Idaho Falls, etc.). Perhaps for this reason, the Idaho State Board of Education does not attempt to differentiate rural schools (though small schools are defined for purposes of support unit calculations). Nevertheless, researchers maintain that "rural education" has certain defining characteristics. Dunne (1981) contends that rural education is defined by a lack of distinction between what belongs in the school and what belongs in the community, close ties between families and the school, a sense of community spirit among school children, and "rural independence and self-reliance translated into the school setting."[1] Other researchers typically use measures of population density, administrative structures, enrollment, economic base and other variables (or a combination of variables) to define rurality.

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[1]Dunne, 1981 in Rios, Betty R. "'Rural'--A Concept Beyond Definition?" ERIC Clearinghouse on Rural Education and Small Schools (March 1988): 2.

Inclusion of economic base as a descriptive element of rurality is important. In addition to low population density, Idaho's rural districts share dependence on natural resource-based industries. "Rural education" must be considered in the context of rural communities.[2]

Education in the Context of Rural Communities

> Rural America suffers from the highest unemployment rates in the United States, a rate of poverty that is growing twice as fast as that found in metropolitan areas, a 10 percent decrease in median family income, and a wide-scale exodus of the young and educated seeking employment in the urban areas.[3]

Rural Idaho, like rural America, declined rapidly in the 1980s. Though personal income, wages, and employment continue to grow faster in Idaho than in the rest of the nation, many rural communities are struggling to survive. Lack of a diversified economy, and dependence on resource-based industries, such as mining, forestry and agriculture, are chiefly responsible for the decline.

With trade liberalization over the last decade, rural areas are no longer insulated from international competition and developments in the world economy. International supply and demand fluctuations, exchange rate changes, interest rates, and regulatory changes etc. have had profound effects on the economies of rural areas over the last decade. US based companies have found it profitable to replace low-skill jobs with machines or to relocate in order to take advantage of cheaper foreign labor. As a result of these trends, unemployment and poverty in rural areas has risen dramatically, and rural population growth has declined as more and more young people move to urban areas. Economic decline and the aging of rural populations[4] challenge the existence of rural schools. However, rural schools continue to play an integral role in the lives of rural residents:

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[2]School consolidation schemes must also be considered within a rural economic context. See "Consolidation Within the Context of Rural Economies," p. 22.

[3]Miller, Bruce. Distress and Survival: Rural Schools, Education and the Importance of Community. Northwest Regional Educational Laboratory, Rural Education Program (December 1991): 23.

[4]Economic decline in rural areas has affected the amount of money that can be raised through local property tax levies. The "greying" of rural america also has important implications for school levies, since older district residents typically don't have school-age children and (therefore) don't nave a vested interest in community schools.

> The Family, the church, and the school have been at the heart of rural communities since this country first was settled. These three institutions have provided the standards of behavior, circles of personal interaction, and variety of social activities that collectively shape community ethos and identity. It is not unusual to have rural residents define their place of living by the church to which they belong, or the school district in which they reside. Even with the on-going social and economic transformation or Rural America, these institutions still provide many rural Americans with their roots.[5]

Schools are often key elements of community infrastructure, often providing services[6] and acting as a catalyst for community development. In areas where local economies have been particularly hard hit, schools have become symbols of community solidarity and a source of community identity.[7]

Achievement of Rural Students:

Rural education has frequently been upheld as a "deficit model" of instruction from which low outcomes are the norm. Comparisons of achievement scores belie this claim and, when considered in tandem with school size research, actually suggest the contrary.

Two prominent national studies have investigated the effect on ruralness on student achievement. The National Assessment of Education Progress (NAEP) annually tests children at ages 9, 13 and 17 in the areas of reading, writing, mathematics and science. The 1990 NAEP study used a definition of rural that included all students in non-metropolitan areas with a population below 10,000 and an agrarian economic base. The National Educational Longitudinal Study (NELS) of 1988 used identical data but divided students into three categories: urban, i.e. central city; suburban, i.e. the area surrounding a central city within a county constituting the Metropolitan Statistical Area (MSA); and rural, i.e. areas outside an MSA.

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[5]Northwest Regional Educational Laboratory Report, "The Condition of Education in Rural, Small Schools," Draft of report prepared for Office of Education research and Improvement, U.S. Department of Education. Portland OR (January 1994): Chapter IV, 1.

[6]Since schools are often the only public buildings in rural communities, they serve as polling places, classrooms for adult education, theaters, banquet halls, etc.

[7]This symbolism helps explain the often fierce resistance to school consolidation in rural districts. See "Consolidation Pitfalls," p. 25.

According to the most recent data compiled by the National Assessment of Education Progress (NAEP), rural student scores for mathematics, writing, reading, science (1990), and history (1988) were equivalent to the national mean in every instance and 8th grade civics scores (1988) were significantly higher.[8]

The National Educational Longitudinal Study (NELS) of 1988 found that rural 8th graders scored at or about the national average on measures of science, mathematics, reading, and history/government. However, they scored significantly lower than their suburban counterparts on all four achievement tests but significantly higher than urban students.[9] An analysis of risk factors was also included in the NELS report. The proportion of rural students in all risk categories was high:

- parents have no high school diploma (12%)
- limited english speaking proficiency (2%)
- family income less than $15,000 (26%)
- child has a sibling who dropped out (7%)
- is home alone more than 3 hours (14%)

Previous studies have emphasized the negative correlation between such risk factors and student performance. The number of at-risk rural students in the NELS study was comparable to the number of at-risk urban students, though rural student achievement was significantly higher.[10]

Any achievement differences that do exist between small rural schools and larger, non-rural schools may be a result simply of the availability of information:

> A case in point is Alaska, where after incredible sums of oil money were pumped equilaterally into the schools to make even the smallest technologically modern, students from small and large schools revealed no achievement disparity.[11]

Results of small studies may be more persuasive than large quantitative studies. Kleinfeld et al. (1982), for example, studied achievement differences

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[8]Statistics compiled by the Northwest Regional Laboratory.

[9]Ibid.

[10]For implications in Idaho, see "Socio-economic Status in Idaho's Rural Areas," p. 16.

[11]Kleinfeld et al., 1985 as cited in Edington et al., "Rural Student Achievement: Elements for Consideration," New Mexico Center for Rural Education (December 1987): 6.

between Native Americans in rural tribal schools and those attending urban boarding schools. Students who attended school in their own communities had higher success rates than their urban counterparts.[12]

Conclusion:

The supportive ethos in small, rural schools--community involvement and close interpersonal relations between teachers, parents, students, and administrators--may act to offset the financial and enrollment limitations inherent in rural communities. The encouraging performance of rural students, many of whom are poor and many of whose schools have limited financial resources, suggests that rather than providing a "deficit model" of education, rural schools provide a model of strength worth studying and emulating. That rural schools have done so well with so little suggests that their performance could be greatly enhanced with additional resources.

[12]Ibid., p. 5. It should be noted that Kleinfeld's study approximates a matched pairs design. Confounding factors (SES, poverty levels, family life, etc.) are reduced by studying achievement within a specific, similar population.

A LOOK AT IDAHO'S HIGH SCHOOLS

The following analysis of Idaho's high schools is entirely observational and descriptive. No attempt has been made to eliminate the influence of exogenous variables; e.g., socio-economic status (SES), even though poverty is known to have a depressing effect on student achievement and the poverty rate of rural areas is generally high. Studies that have not controlled for SES typically find no significant relationship between achievement and school size.[1]

Data was drawn from the Governor's "Profile of Rural Idaho," the State Board of Education's Idaho School Profiles (1991-1992) and Tax Levies for School Purposes (1991-1992), a compilation of data on student enrollment per building (provided by the State Board of Education), and student grade information provided by the University of Idaho Registrar.

Method:

Two data sets were created. The first is organized by school district and contains information on High School Enrollment (HS_ADA), Average Comprehensive TAP scores (TAP), Total School Levies for Educational Purposes (TOTLEVY), Total District Property Value per ADA (PROPVALU), Secondary Teacher FTEs per ADA (FTE), Average Secondary Teacher Salary (SALARY), and Total Education Expenditures per ADA (EXP_ADA). Using 1991 enrollment data, the districts were coded 1-5 according to whether they had small high schools (enrollment< 200), small to medium high schools (200<=enrollment<400), medium high schools (400<=enrollment<600), large high schools (600<=enrollment<800), or very large high schools (enrollment>=800). Districts which had high schools fitting into more than one category were eliminated (district 82, 92, 151, 171, 215, 241). High school enrollment in districts with more than one high school of the same categorical size were averaged (for example, 1991 enrollment in Boise Senior High, Borah Senior High, and Capital Senior High were averaged to obtain the Boise districts High School enrollment figure).

For junior/senior high schools, the 1991 figure was multiplied by 2/3, since it was assumed enrollment figures included 7th and 8th graders. Unfortunately, high school enrollment figures for several small districts (District No.s 292, 314, 316,

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[1]In fact, Fowler and Walberg's 1991 study (see p. 7) found that socio-economic status was consistently and strongly correlated with measures of educational achievement. The next most consistent factor was percentage of low-income families in the school. School district size and school size ranked third and fourth, respectively.

3422, 382, 417) could not be obtained.

The second data set compares high school size (enrollment) with achievement at the University of Idaho (as measured by GPAs of all students from a particular high school enrolled at the UI). Independent variables were High School Enrollment (1994 enrollment) and High School Code (identical coding procedure as above). Average University GPA for introductory level courses (AVGPA) and average University GPA for all courses (TOTAV) were dependent variables.

Pearson correlations and simple linear regressions were run on a number of variables. Plots and test results are labeled and may be found in the Appendix A (results for data set 1) and Appendix B (data set 2). Actual data sets are contained in Appendix C. Summaries of findings follow.

Socio-economic Status in Idaho's Rural Areas:

Statistics compiled by the Governor's office indicate that residents of Idaho's rural counties[2] have a relatively low socio-economic status. Typically, rural areas have smaller percentages of college graduates (14.5% of rural residents have B.A.s; nearly 20% of urban residents have B.A.s) and lower per capita incomes than urban areas ($13,780; $2,700 below income levels in Idaho's urban areas). 16 percent of the rural population lives in poverty (18 percent of children under 18 years of age); urban areas have 13 percent poverty (16 percent of children under 18).[3]

Enrollment Growth in Idaho High Schools:

Using 1991 enrollment as a base, enrollment for the 5 school categories increased unevenly between 1991 and 1994. Small school growth was lowest (10%). Very large school growth was highest (19%).

SCHOOL SIZE	1991	1994	%CHANGE
Small	4,671	5,175	11%
Small-Med.	6,672	7,875	18%

[2]Defined as counties that do not have a city of twenty thousand or greater population.

[3]Idaho Department of Commerce, Division of Economic Development, Profile of Rural Idaho, Boise, ID: 1993. See "Education in the Context of Rural Communities" (p. 11) for discussion of rural communities, and "Consolidation in the Context of Rural Economies" (p. 22) for the effects of district reorganization on rural economies.

Medium	9,013	10,158	13%
Large	6,642	7,798	17%
Very Large	24,311	28,900	19%

Though small schools are growing, there may be pressure to shift limited education resources to larger schools, where school enrollment is growing at a much faster rate and where student volume is much greater. The implications of enrollment differentials may be especially important as educational reforms, such as reducing class sizes, are put in place.[4]

Data Set 1 (Appendix A)

Summary statistics by group are contained on pp. Ai-Aiii. High size (HS_ADA) and high school code (CODE) are plotted against TAP scores, total school levies, property values, secondary teacher FTE per ADA, average secondary teacher salary, and expenditures per ADA on pp. Aiv-Avi. Table I (Aiv) includes all districts. Table II (Av) includes districts with high school enrollments <=500. Table III (Avi) includes districts with high school enrollments >500. Similarly, correlation matrices for all districts, districts<=500, and districts>=500 may be found on pp. Avii-Aviii.

Simple linear regressions were run using high school size (HS_ADA) and groups (CODE) as independent variables and TAP scores as independent variables. There was no statistically significant relationship between size and TAP scores, independent of whether one considers all schools (R-squared=0.011, p-value is .322) or only schools with enrollment<=500 (R-squared=0.006, p-value is .540).

Regression analysis of high school size and expenditures per ADA, and secondary teacher FTE per ADA indicates very significant relationships. Small schools spend significantly more per ADA and have lower student/teacher ratios than do larger schools; results were particularly strong for schools with enrollments between 1 and 500. There sees to be little difference among schools with enrollments greater than 500 (see Plots, Table III, p. Avi).

Data Set 2 (Appendix B):

Summary statistics for the second data set are contained in Appendix B, pp. Bi-Bii. Plots of size by total enrollment (HS_ADA) and category (CODE) against average GPA for introductory courses (AVGPA) and average GPA for all courses

[4]See additional comments in on p. 23, "Consolidation and Education Reform."

(TOTAV) may be found on p. Biii-Bv. Table I (Biii) displays results for all schools. Table II (Biv) displays results for schools <=500. Table III (Bv) includes schools > 500.

Correlation matrices and regressions are displayed on pp. Bvi-Bvii. Results indicate no significant correlations between high school size and University grade-point averages.[5]

Conclusions:

Results did not show the large deficits in rural education that many expect. Preliminary investigations of high school size and achievement in Idaho are inconclusive. Small schools showed much larger variation on TAP scores.[6] These variation differences may have resulted from differences in testing samples, since TAP averages at large schools reflect the mean of several hundred students, while small school averages (often) reflect the mean of under 30 students. On the other hand, large variation among small schools may result from the caliber of students in a particular region or from the abilities of particular schools to educate. In any case, further investigation of the sources of variation could yield useful results.

Curiously, ranges for both GPA measures seemed to decrease as school enrollment approached 500, and then increase thereafter (see plots, Appendix B, p. Biii).

Mean differences in achievement were not evident between schools of various sizes; however, the real story may lie in the variations within groups. In addition, including socio-economic variables in the analysis may show (as has been shown in other instances) that small schools actually contribute to higher levels of achievement.[7]

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[5]For all schools R-squared=0.000 and the p-value=.984; for schools<=500, R-squared=0.000 and the p-value=.904 (see Appendix B, p. Bvi)

[6]For example, the smallest school group (less than 200 students) TAP scores ranged from 204.0 to 175.7 (Range=28.3), while the scores for the largest schools (over 800 students) ranged from 199.5 to 187.5 (Range=11.5).

[7]Refer to p. 7, "Student Achievement."

CONSOLIDATION AND RURAL SCHOOLS

Research on school size has important implications for rural America. Critics charge that some rural schools are too small to be educationally effective. Others maintain that rural schools burden local taxpayers and the state, because per pupil operating expenses are simply too high.

Proponents of school consolidation see it as a remedy to discrepancies in program equity (all schools should offer comprehensive programs) and school efficiency (schools should operate at a low per pupil cost). An expanded lists of benefits (Perry and Harmon, 1992; Nelson, 1985) might include:

- o Solution for declining school revenues (expanded tax base)
- o Expanded quality of curricular offerings
- o More technologies available
- o More effective use of new or existing facilities
- o Capital and maintenance outlays reduced
- o Fewer administrative personnel
- o Fewer teachers (and correspondingly larger classes)
- o School identity in community strengthened
- o Sports and extracurricular activities flourish

Paradoxically, opponents of consolidation often claim opposite outcomes--that consolidation leads to a *loss* of community/school identity, for example.[1] Usually, arguments against consolidation are made on the basis of the educative benefits of small schools as discussed in section I. This section addresses the resurgent drive toward school consolidation from an economic and financial perspective.

Consolidation of Small Schools:

The early history of American education is largely a story of small, one-room schools. Even in the early 1940s, approximately 200,000 one-room school houses existed in the United States; today, fewer than 800 exist. 115,493 school districts existed in 1941. The number was reduced to 71,094 by 1951, 35,676 by 1961, 17,995 in 1970 and 15,912 in 1981.[2]

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[1]See comments on rural school identity, p. 11 and discussion below , "Consolidation Pitfalls."

[2]Lutz, Frank "Trends and Options in the Reorganization or Closure of Small or Rural Schools and Districts," ERIC Digest, ERIC Clearinghouse on Rural Education and Small Schools, September 1990: 1

Idaho mirrors national school consolidation trends. In the early 1940s, Idaho had 1,082 school districts. The number was pared to 116 by the late 1950s and to 113 (its current level) by 1989.[3] Consolidation and reorganization of rural schools accounted for most of the decline.

Though consolidation has slowed considerably since the 1970s, efforts to reorganize schools to achieve curricular advantage and economies of scale persist based on derivations of James Conant's original claim that bigger is better and bigger is cheaper.[4] Conant's main assertion, that curricular offerings is of central import and thus necessitates consolidation of small schools, is challenged from an educational perspective by Haller et al (1990) and from an economic perspective by Haller and Monk (date unknown):

> This leads us to infer that the principal curricular effect of school consolidation efforts is to make it possible for a relatively small number of students to take advanced and alternative courses. Perhaps we are obtuse, but why the state should have an overriding interest in consolidating schools so that a few students are able to study calculus, physics, and a fourth year of German--to say nothing or rock poetry--eludes us.[5]

The idea that large schools are required to offer advanced courses efficiently (in strictly financial terms), is questioned by Haller and Monk (date unknown) in the context of state graduation requirements under school reform proposals. It is not clear whether state course requirements (2 years of a foreign language, for example) will necessarily impose additional burdens on small schools. Mandating requirements forces the school to reallocate resources, but also creates a demand for a particular course:

> If they meet the requirements by foregoing released time, there will be no net savings to the district (although there may be a gain in how efficiently instruction is provided). In contrast, if these students take fewer other courses, teaching resources could be released, and over

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[3]Evans, Jerry. Idaho School Profiles 1991-1992, State Department of Public Instruction, Boise, ID (1992): 1.

[4]See summary of Conant's arguments on p. 2. Cost arguments are particularly persuasive as legislators grapple with ways to finance education reform. See discussion below, "Consolidation and Education Reform."

[5]Haller et al, 1990 as cited in Fowler, W.J. "What Do We Know About School Size? What Should We Know?" Paper presented to the American Educational Research Association at their annual meeting in San Francisco, CA (April 1992): 4.

the long run this could lead to savings for the small school.[6]

The drive toward ever-bigger schools has been tempered somewhat by the discovery that school cost curves appear to be curvilinear; that is, per pupil operating costs decrease as school enrollment moves from small to medium, but increase as enrollment climbs from medium to large. However, "optimal size" and economy of scale arguments are still frequently employed to force consolidation of small schools.

Economies of Scale:

Though few administrators are comfortable reducing education to dollars and cents, cost savings through economies of scale is a powerful argument for school consolidation, especially as state legislators are faced with increasingly tight budgets, tax-payer revolt,[7] claims of inequitable school funding, and education reforms aimed at reducing class size, expanding opportunities for students, increasing certification standards, and increasing services.

Theoretically, cost savings associated with lower facilities maintenance (including heat), fewer teachers and administrators, and shared resources will more than offset additional transportation costs (discussed below), and the short-run cost of building new facilities or enlarging existing structures.

There are obviously fixed costs that must be paid whether a school houses 20 students or 2,000 students and per pupil expenditures are typically higher in small schools. In Idaho, per ADA expenditures is highly correlated with high school size (though there is no noticeable difference for schools with enrollments greater than about 400 students).[8] However, consolidation proponents who uphold these

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[6]Haller, E.J. & Monk, D.H. "New Reforms, Old Reforms and the Consolidation of Small Rural Schools," (date unknown), 13-14. The financial burden placed on small schools may be great, however, depending on specific state requirements. Small schools typically have fewer "frill" courses from which resources can be reallocated. Reforms may therefore require new expenditures or reallocation of resources from, for example, vocational courses. See related discussion of school reform below.

[7]Including, for example, the abolition of property taxes in Michigan and Idaho's on-going 1 percent initiative debate.

[8]See p. 17 and Appendix A, Avi. Per pupil expenditures in rural schools may reflect costs beyond traditional school expenditures. In its role as community center, it is not uncommon for a school to own properties that would normally be city or county responsibilities. For example, a school may own snowplow equipment that is leased or loaned to the town. A similar situation may exist for recreation facilities

statistics fail to make a distinction between spending efficiency and production efficiency.

With the rise of Outcomes Based Education (OBE) techniques, and general agreement that America's schools are not adequately preparing students (especially in math and science), arguments in the school size debate have shifted from the cheapest expenditure to the highest achievement. Considering that small schools typically produce higher achieving students, it is reasonable to assume that scale economies of larger schools may come at the expense of the efficient production of educational outcomes.

Transportation Issues:

Not only does distance from school correlate with student participation in extracurricular activities and parental involvement in school, but several psychological studies indicate that students who live far from school achieve at lower levels than those who do not (Lee, 1957; Lu and Tweeten 1973).

Moreover, transportation costs in rural areas have become significant, substantially reducing the cost savings that can be expected from consolidation. Hallanan (1992) suggests that transportation costs would increase by a multiple of four as a result of increased bussing. If one adds to this the lost opportunity costs of students who are required to spend considerable time on busses, cost increases are great indeed.

Consolidation in the Context of Rural Economies

Kay (1982) suggests that in addition to traditional considerations for evaluating proposals for school consolidation, policy-makers must address consolidation effects on communities which are served by the school. Kay argues that one must look beyond the schools as well as at them when considering how to organize schools to promote education most effectively.

> A school system considering school consolidation ought to investigate the nature, extent, and strength of other community institutions and social service agencies serving any community facing possible loss of its school. In places where the school is relatively solitary in providing community services and a means for community identification, the

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(playing fields, swimming facilities, etc.).

impact of the loss of the school would be great...[9]

For rural areas already experiencing economic decline, loss of a school can be devastating. Some studies assert that after school closures, population decline, out-migration and neighborhood deterioration are set in motion, and support for public education diminishes.[10]

Several programs in the Northwest, notably Foxfire, REAL, and the McREL's Rural Institute, have demonstrated the advances that can be made when schools directly serve the needs of the community.[11] This has important implications for education reform and education finance in Idaho. If the trend toward community service is to continue, state education agencies must support rural schools in their expanded role.

Consolidation and Education Reform:

"When your favorite tool is a hammer, every problem is a nail"

Education reform efforts have renewed interest in school consolidation. Since reform costs money, there is an impetus to squeeze every education dollar out of the system--since small, rural schools are usually more expensive to run and operate, they are attractive targets.

In a sense, the current education funding lawsuit (*Frazier et al. v. Idaho*) may be contributing to the general impetus to reduce education to monetary terms.[12]

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[9]Kay, Steve. "Considerations in Evaluating School Consolidation Proposals," The Small School Forum 4, n. 1 (Fall 1989): 9.

[10]Andrews et al. (1974) as cited in Rincones, R. "Exploring Alternatives to Consolidation," ERIC Digest. Eric Clearinghouse on Rural Education and Small Schools (ED296817), January 1988: 2.

[11]Miller, Bruce "Distress and Survival: Rural Schools, Education, and the Importance of Community," Northwest Regional Educational Laboratory, Rural Education Program, Portland, OR, December 1991: 32.

[12]Most school finance litigation centers around adequate financial inputs, since defining the resources necessary for adequate educational outcomes remains elusive. In West Virginia's funding lawsuit, for example, Judge Recht wrote that every consideration about education flows from a common denominator--money. (cited in Perry, W.J. & Harmon, H.L. "Costs and Benefits of an Investment in Rural Education: the Perspective of a Rural State," Journal of Rural and Small Schools, 5, n. 1 (1992): 3)

The attempt to define the characteristics of a constitutionally mandated "thorough" education, chiefly in terms of the resources necessary to meet State Board regulations, has prompted threats from the Idaho Attorney General's office (on behalf of state legislators):

> Additionally, the A.G. lists numerous other conditions that may have to be met before the state provides additional funds: elective courses may need to be sacrificed in order to meet mandated student/teacher ratios; *some school districts may be forced into consolidation with others if they cannot raise enough money locally*; schools with crowded classrooms may be required to adopt year-round use of facilities before new facilities are built; and teacher salaries--which are not prescribed in the Board of Education regulations--may be frozen in order to meet constitutional standards.[13]

Findings in previous sections indicate that consolidation may be a misguided tool of school reform. It has not been shown that large schools display either academic or economically productive benefits.

Many of the methodological and instructional reforms advocated by states have been practiced in small schools for decades. The structure and characteristics of small districts and small schools, which are associated with the benefits discussed in the previous sections, may result in a higher achievement level per dollar than even medium-sized schools. According to Haller and Monk (date unknown):

> ...(L)arge, complex and bureaucratic schools are inimicable to the social and moral goals sought by reformers. It would be sadly ironic, then, were a successful reform movement to spawn in the nation's small rural schools some of the very pathologies that the reformers were seeking to cure.

Several large schools, recognizing the benefits of smallness, have moved to reduce school size. New York City, for example, advocates creating "schools within schools" as a method to capture the advantages of small schools.[14]

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[13]Kearney, J. Public Education in Idaho, Unpublished paper presented to the College of Education, University of Idaho (August 6, 1993): 53.

[14]Public Education Association, "Making Big Schools Smaller: A Review of the Implementation of the House Plan in New York City's Most Troubled Schools," Public Education Association (1989).

Consolidation Pitfalls:

The manner in which consolidation of schools is attempted cannot be overvalued. Consolidation efforts must be geared toward each individual case and efforts must be made to build a consensus among teachers, administrators, students, and communities.

The importance of consensus building is discussed by Boyd (1987), Sher (1986, 1988) and Monk and Haller (date unknown) among others. State officials often contend that rural residents resist mergers because they don't understand the benefits that will accrue to their children or for capricious reasons such as unwillingness to lose sports teams or to preserve a relative's job at the school.[15] These attitudes betray a fundamental ignorance of the role and often symbolic importance of schools in rural communities, especially in areas that have experienced severe economic distress.

Often, as was the case in North Carolina, policy-makers seem determined to force consolidation regardless of the wishes of local residents.[16] A less overt tactic, and one that seems to be gaining adherents, is summarized by the following statement:

> Legislation is the only answer. Albany in conjunction with the District Superintendents should decide which schools are too small to operate efficiently. Legislation should be enacted that would greatly reduce aid for the inefficient. Then only those who could afford it would want to or should be able to remain small.[17]

The idea that only wealthy districts be allowed to remain small, while poor ones are starved into submission, negates the fundamental arguments behind, for example, Idaho's current education funding lawsuit. Funding equity and educational adequacy demand that more be done to bring poor school districts up to the level of richer districts.

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[15]Haller, E.J. & Monk, D.H. "New Reforms, Old Reforms and the Consolidation of Small Rural Schools," (date unknown): 9-10.

[16]For discussion of North Carolina's school consolidation plan, see Sher, J. "Heavy Meddle: A Critique of the North Carolina Department of Public Instructions's Plan to Mandate School District Mergers Throughout the State," Rural Education and Development, Inc. Chapel Hill, N.C. April 1986.

[17]Davis, 1986: 63-64 as cited in Haller, E.J. & Monk, D.H. (date unknown): 11.

Alternatives to Consolidation:

Because consolidation may have ill effects on rural communities, and because the benefits of consolidation are not assured, it is wise to explore alternatives.

Partial school reorganization may allow a middle of the road approach. District Clusters, a concept presented by Paul Nachtigal of McREL, provides ways for schools to cooperate in providing higher quality educational programs. In the South Dakota small school cluster, for example, cooperative efforts have included:

> ...sharing teachers/specialists in specialized subject areas; two schools sharing students to continue a boys' football and girls' basketball program; sharing textbooks, as well as sharing teaching materials, educational technology, software, and transportation; implementing a block schedule to increase course offerings and decrease teacher preparations; the expansion of community education programs with more adult course offerings; greater use of community resources; sharing of ideas among teachers in the same subjects among schools; and increased use of strategies by individual teachers to capitalize on small class size, such as individualization of instruction and recognition of learning styles in the teaching process.[18]

Schools may also share services, equipment, and personnel in less formal ways.[19] Partial reorganization may be encouraged by state education agencies (SEAs) as the are in Washington State, for example, where laws ensure that schools maintain state funding levels even if they share resources.

Advances in distance education may alleviate many of the problems of isolation in rural areas. Instructional television, audio-teleconferences with microcomputers, interactive television, and student networking make it possible for small schools to have access to a broad range of information and curricular offerings, and expand learning opportunities without losing the advantages of small size. The prospects for increased use of telecommunications technologies in rural

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[18]Jensen, D. & Widvey, L. "The South Dakota Small School Cluster," The Rural Educator, 8, no. 1 (Fall 1986): 7-8.

[19]Sarah Hanuske summarizes some of the advantages and problems with sharing resources in Hanuske, S. "Shared Services for Rural and Small Schools." Rural Education Digest, ERIC Clearinghouse on Rural Education and Small Schools (1984).

areas are great.[20]

Other alternative approaches could include multiple teacher certification, community-designed reorganizations, application of computer modelling results, and state financial aide.[21]

Additional energy and transportation cost savings might be achieved through alternative schooling schemes such as moving to a tri-mester system or a four-day school week.[22]

Conclusion:

Though consolidation is upheld as a necessary reform to achieve curriculum diversity and cost savings that could then be applied to other reforms, it is unclear that the alleged benefits of consolidation outweigh those of small schools. Recent research indicates that small schools may be more economically productive than large schools.

The desire for economic efficiency must not outweigh considerations for the plight of rural areas as a whole. Where consolidation is pursued as an acceptable solution to improve education, efforts must be made to foster a consensus among school personnel, administrators, students, and the community to enable a smooth transition and to the extent possible preserve community involvement in schools.

The Idaho Education Project Report (1990), which was incorporated into Schools for 2000 and Beyond: An Action Plan for Idaho, maintains:

> Meeting the needs of all Idaho students and the effectiveness of school personnel residing in rural areas will not be limited by the size of the

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[20]On the federal level, billions of dollars have been poured into grant programs that will enable schools to gain access to computer technologies. The National Science Foundation, for example, has announced a multi-million dollar initiative to build a networking infrastructure for education; next year, NSF will accept applications for Rural Systemic Change proposals, which will reform math and science education in rural areas and includes monies for integrative technologies.

[21]Rincones, R. "Exploring Alternatives to Consolidation," ERIC Digest, ERIC Clearinghouse on Rural Education and Small Schools (January 1988).

[22]Analysis of the four-day school week in Shelley, Idaho may be found in Sagness, R. & Salzman, S. "Evaluation of the Four-Day School Week in Idaho Rural Schools," Paper presented to the annual meeting of the Northern Rocky Mountain Educational Research Association, October 1993, Jackson, Wyoming.

communities involved, the size of the school districts, geographic location of the schools and/or other factors associated with being rural.[23]

In order to remain true to that vision, and meet the needs of Idaho's rural students, legislators must balance reform options carefully and weigh the evidence of research on school size, rural schools, and consolidation.

[23]The Idaho Education Project: Developing an Action Plan for Idaho Education, September 1990.

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APPENDIX A

SYSTAT FILE VARIABLES AVAILABLE TO YOU ARE:

DISTRICT	CODE	HS_ADA	TAP	SUPLEVY
TOTLEVY	PROPVALU	FTE	SALARY	EXP_ADA

STATISTICS FOR ALL SCHOOLS

TOTAL OBSERVATIONS: 94

	DISTRICT	CODE	HS_ADA	TAP	SUPLEVY
N OF CASES	94	94	94	94	0
MINIMUM	1.000	1.000	47.000	175.700	.
MAXIMUM	433.000	5.000	1938.000	204.500	.
RANGE	432.000	4.000	1891.000	28.800	.
MEAN	229.032	2.340	425.761	192.600	.
STANDARD DEV	132.175	1.418	416.499	5.667	.

	TOTLEVY	PROPVALU	FTE	SALARY	EXP_ADA
N OF CASES	94	94	94	94	94
MINIMUM	0.333	58575.000	6.000	19970.000	2967.000
MAXIMUM	1.490	830893.000	21.000	32283.000	8775.000
RANGE	1.157	772318.000	15.000	12313.000	5808.000
MEAN	0.701	162584.085	14.787	26972.202	4334.574
STANDARD DEV	0.200	116641.691	3.222	2379.286	977.194

ENROLLMENT <=200

TOTAL OBSERVATIONS: 37

	DISTRICT	CODE	HS_ADA	TAP	SUPLEVY
N OF CASES	37	37	37	37	0
MINIMUM	11.000	1.000	47.000	175.700	.
MAXIMUM	433.000	1.000	188.000	204.000	.
RANGE	422.000	0.000	141.000	28.300	.
MEAN	242.054	1.000	117.189	191.257	.
STANDARD DEV	122.096	0.000	43.963	7.189	.

	TOTLEVY	PROPVALU	FTE	SALARY	EXP_ADA
N OF CASES	37	37	37	37	37
MINIMUM	0.333	79963.000	6.000	19970.000	3470.000
MAXIMUM	1.036	493101.000	20.000	30126.000	8775.000
RANGE	0.703	413138.000	14.000	10156.000	5305.000
MEAN	0.629	205168.703	12.270	25595.838	4920.432
STANDARD DEV	0.175	103691.282	2.864	2056.012	999.058

200<ENROLLMENT<=400

TOTAL OBSERVATIONS: 21

	DISTRICT	CODE	HS_ADA	TAP	SUPLEVY
N OF CASES	21	21	21	21	0
MINIMUM	58.000	2.000	215.000	186.500	.
MAXIMUM	421.000	2.000	390.000	203.600	.
RANGE	363.000	0.000	175.000	17.100	.
MEAN	277.810	2.000	283.667	193.962	.
STANDARD DEV	122.790	0.000	54.294	4.326	.

	TOTLEVY	PROPVALU	FTE	SALARY	EXP_ADA
N OF CASES	21	21	21	21	21
MINIMUM	0.441	68082.000	12.000	25317.000	3321.000
MAXIMUM	1.124	496674.000	20.000	32078.000	7085.000
RANGE	0.683	428592.000	8.000	6761.000	3764.000

MEAN	0.701	135947.857	15.667	27963.619	4211.571
STANDARD DEV	0.193	90845.783	2.436	1868.461	986.274

400<ENROLLMENT<=600

TOTAL OBSERVATIONS: 16

	DISTRICT	CODE	HS_ADA	TAP	SUPLEVY
N OF CASES	16	16	16	16	0
MINIMUM	3.000	3.000	413.000	187.100	.
MAXIMUM	431.000	3.000	598.000	204.500	.
RANGE	428.000	0.000	185.000	17.400	.
MEAN	196.563	3.000	496.250	193.563	.
STANDARD DEV	157.287	0.000	56.857	5.189	.

	TOTLEVY	PROPVALU	FTE	SALARY	EXP_ADA
N OF CASES	16	16	16	16	16
MINIMUM	0.459	59425.000	13.000	23822.000	2967.000
MAXIMUM	1.490	830893.000	18.000	32283.000	5014.000
RANGE	1.031	771468.000	5.000	8461.000	2047.000
MEAN	0.780	163355.000	16.125	27365.250	3862.563
STANDARD DEV	0.270	187152.999	1.928	2508.443	614.229

600<ENROLLMENT<=800

TOTAL OBSERVATIONS: 7

	DISTRICT	CODE	HS_ADA	TAP	SUPLEVY
N OF CASES	7	7	7	7	0
MINIMUM	52.000	4.000	621.000	187.500	.
MAXIMUM	261.000	4.000	748.000	195.700	.
RANGE	209.000	0.000	127.000	8.200	.
MEAN	178.429	4.000	683.000	191.386	.
STANDARD DEV	75.060	0.000	48.076	3.212	.

	TOTLEVY	PROPVALU	FTE	SALARY	EXP_ADA
N OF CASES	7	7	7	7	7
MINIMUM	0.573	58575.000	13.000	25255.000	3226.000
MAXIMUM	1.088	169036.000	21.000	31714.000	4779.000
RANGE	0.515	110461.000	8.000	6459.000	1553.000
MEAN	0.765	95837.714	17.143	27839.286	3643.857
STANDARD DEV	0.181	35936.835	2.795	2461.612	544.557

800<ENROLLMENT

TOTAL OBSERVATIONS: 13

	DISTRICT	CODE	HS_ADA	TAP	SUPLEVY
N OF CASES	13	13	13	13	0
MINIMUM	1.000	5.000	876.000	188.000	.
MAXIMUM	411.000	5.000	1938.000	199.500	.
RANGE	410.000	0.000	1062.000	11.500	.
MEAN	180.385	5.000	1308.269	193.692	.
STANDARD DEV	147.150	0.000	332.613	3.414	.

	TOTLEVY	PROPVALU	FTE	SALARY	EXP_ADA
OF CASES	13	13	13	13	13
INIMUM	0.608	64135.000	15.000	26102.000	3197.000
AXIMUM	1.013	245163.000	21.000	32056.000	4628.000

RANGE	0.405	181028.000	6.000	5954.000	1431.000
MEAN	0.772	119401.000	17.615	28337.385	3818.692
STANDARD DEV	0.132	59573.524	1.502	2062.242	465.454

TABLE I

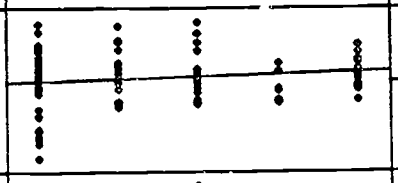
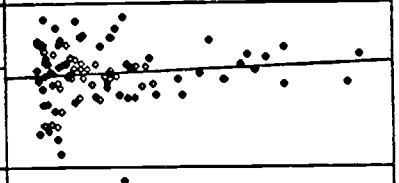
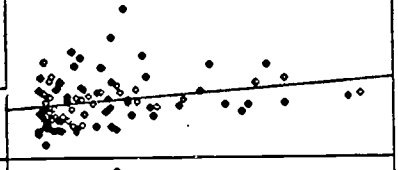
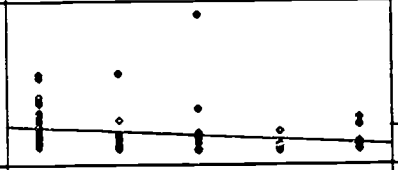
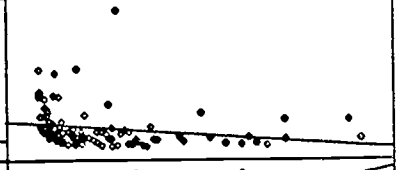
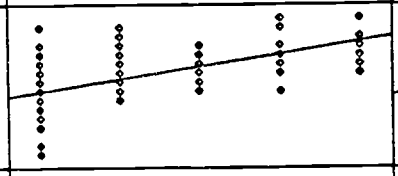
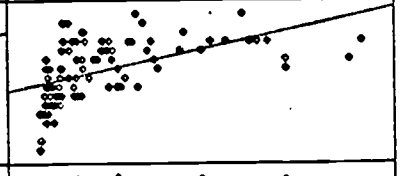
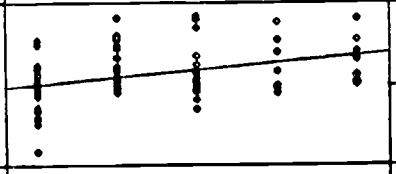
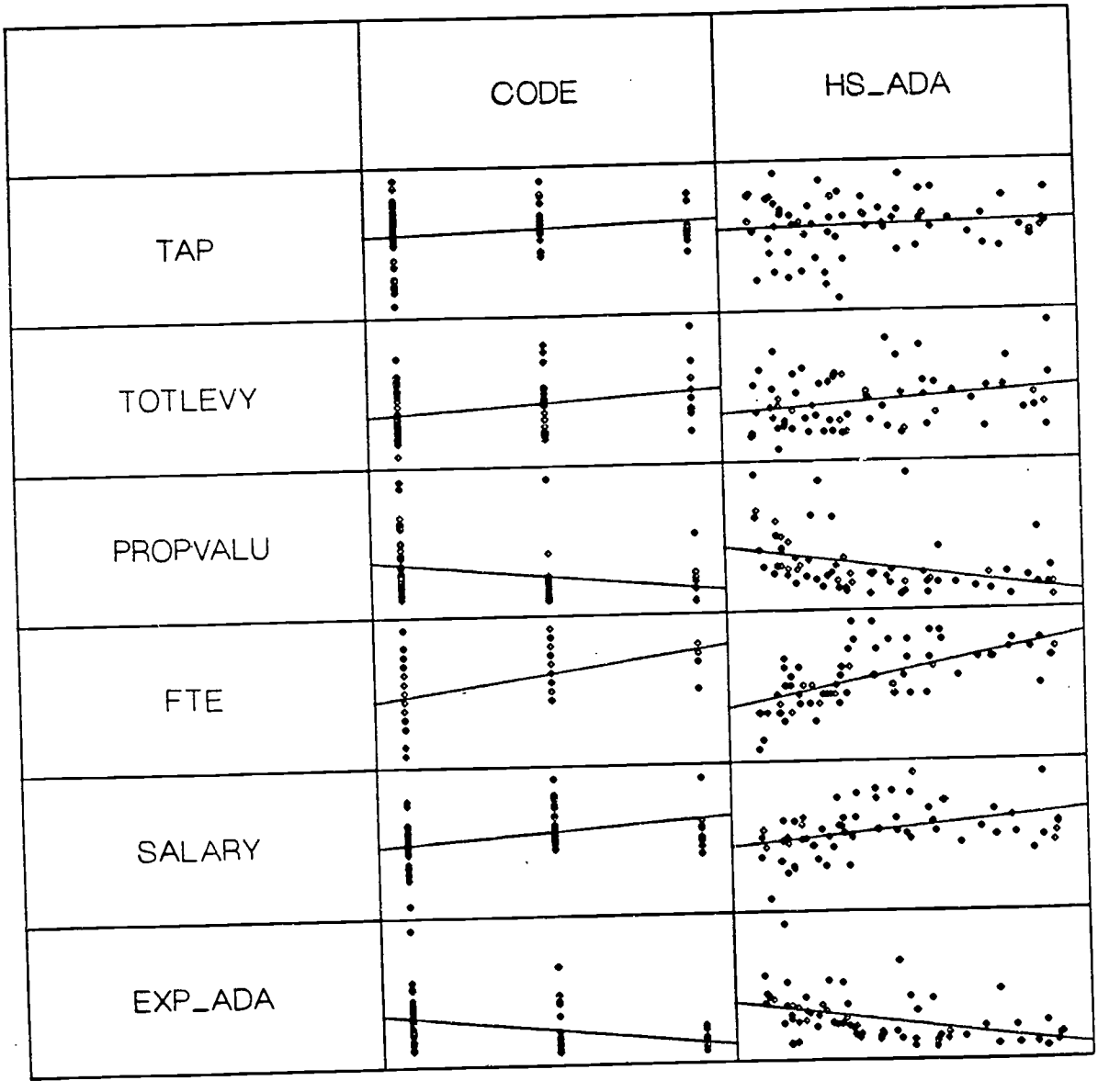
	CODE	HS_ADA
TAP		
TOTLEVY		
PROPVALU		
FTE		
SALARY		
EXP_ADA		

TABLE II



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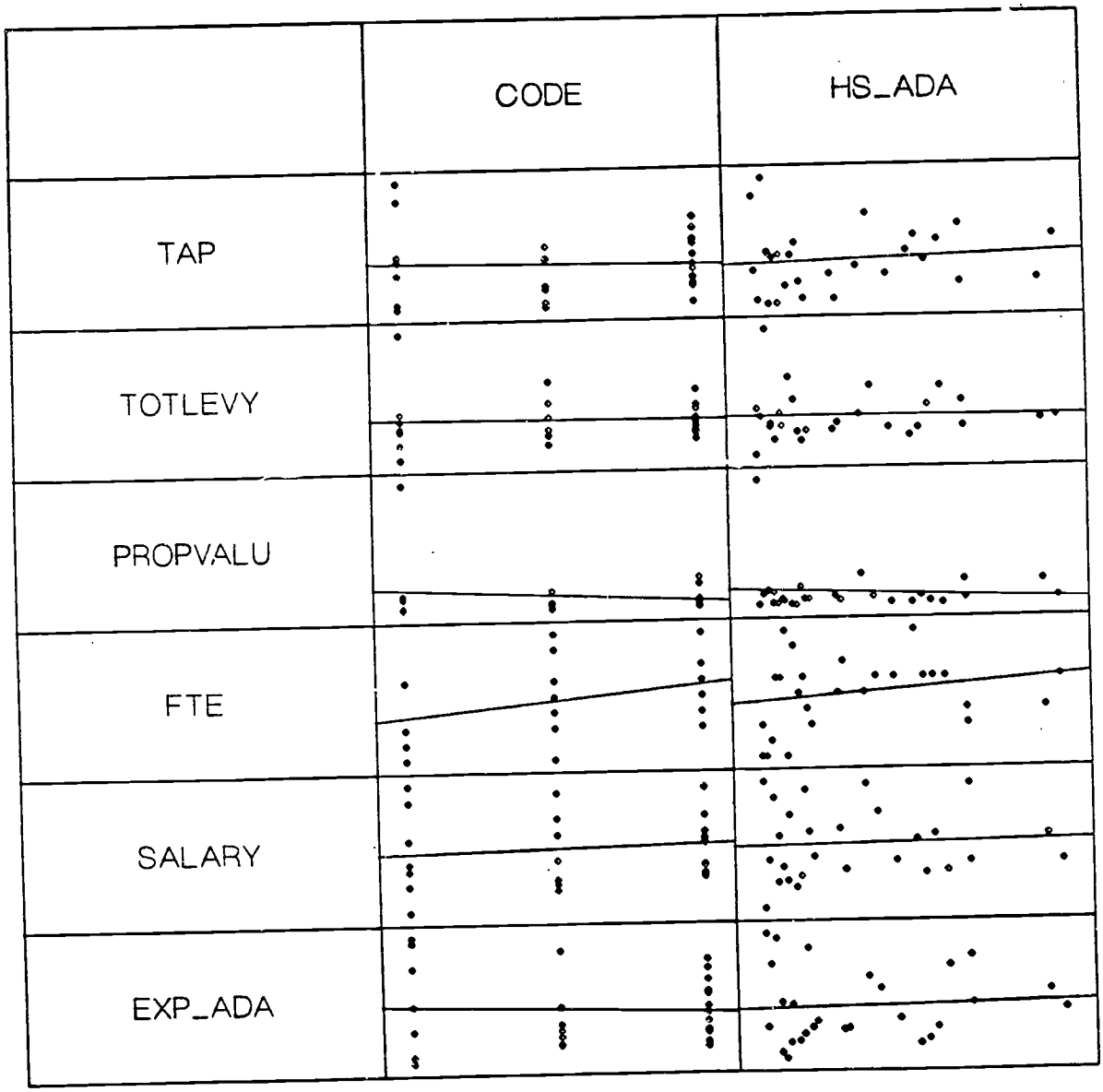


ALL SCHOOLS

PEARSON CORRELATION MATRIX

	CODE	HS_ADA	TAP	TOTLEVY	PROPVALU
CODE	1.000				
HS_ADA	0.920	1.000			
TAP	0.121	0.103	1.000		
TOTLEVY	0.288	0.239	0.063	1.000	
PROPVALU	-0.272	-0.237	0.126	-0.359	1.000
FTE	0.606	0.522	0.065	0.148	-0.521
SALARY	0.391	0.328	0.242	0.183	0.086
EXP_ADA	-0.458	-0.374	-0.121	0.092	0.523

	FTE	SALARY	EXP_ADA
FTE	1.000		
SALARY	0.341	1.000	
EXP_ADA	-0.667	-0.134	1.000

NUMBER OF OBSERVATIONS: 94

ENROLLMENT<=500

PEARSON CORRELATION MATRIX

	CODE	HS_ADA	TAP	TOTLEVY	PROPVALU
CODE	1.000				
HS_ADA	0.937	1.000			
TAP	0.147	0.076	1.000		
TOTLEVY	0.268	0.243	-0.048	1.000	
PROPVALU	-0.329	-0.406	0.038	-0.388	1.000
FTE	0.562	0.634	0.085	0.069	-0.594
SALARY	0.357	0.373	0.151	0.166	-0.115
EXP_ADA	-0.428	-0.475	-0.199	0.174	0.542

	FTE	SALARY	EXP_ADA
FTE	1.000		
SALARY	0.420	1.000	
EXP_ADA	-0.625	-0.214	1.000

NUMBER OF OBSERVATIONS: 67

ENROLLMENT>=500

PEARSON CORRELATION MATRIX

	CODE	HS_ADA	TAP	TOTLEVY	PROPVALU
CODE	1.000				
HS_ADA	0.802	1.000			
TAP	-0.043	0.088	1.000		
TOTLEVY	-0.033	-0.011	0.361	1.000	
PROPVALU	-0.223	-0.123	0.416	-0.267	1.000
FTE	0.374	0.201	-0.232	-0.002	-0.415
SALARY	0.090	0.034	0.505	0.016	0.562
EXP_ADA	-0.084	0.046	0.507	0.280	0.577

	FTE	SALARY	EXP_ADA
FTE	1.000		
SALARY	-0.344	1.000	

EXP_ADA	-0.549	0.708	1.000

NUMBER OF OBSERVATIONS: 27

REGRESSIONS FOR ALL SCHOOLS

DEP VAR: TAP N: 94 MULTIPLE R: 0.103 SQUARED MULTIPLE R: 0.011
ADJUSTED SQUARED MULTIPLE R: .000 STANDARD ERROR OF ESTIMATE: 5.667

VARIABLE	COEFFICIENT	STD ERROR	STD COEF	TOLERANCE	T	P(2 TAIL)
CONSTANT	192.002	0.838	0.000	.	229.059	0.000
HS_ADA	0.001	0.001	0.103	1.000	0.996	0.322

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
REGRESSION	31.858	1	31.858	0.992	0.322
RESIDUAL	2955.062	92	32.120		

DEP VAR: TAP N: 94 MULTIPLE R: 0.121 SQUARED MULTIPLE R: 0.015
ADJUSTED SQUARED MULTIPLE R: .004 STANDARD ERROR OF ESTIMATE: 5.656

VARIABLE	COEFFICIENT	STD ERROR	STD COEF	TOLERANCE	T	P(2 TAIL)
CONSTANT	191.465	1.130	0.000	.	169.446	0.000
CODE	0.485	0.413	0.121	1.000	1.172	0.244

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
REGRESSION	43.967	1	43.967	1.374	0.244
RESIDUAL	2942.953	92	31.989		

DEP VAR: FTE N: 94 MULTIPLE R: 0.522 SQUARED MULTIPLE R: 0.272
ADJUSTEL SQUARED MULTIPLE R: .264 STANDARD ERROR OF ESTIMATE: 2.764

VARIABLE	COEFFICIENT	STD ERROR	STD COEF	TOLERANCE	T	P(2 TAIL)
CONSTANT	13.068	0.409	0.000	.	31.969	0.000
HS_ADA	0.004	0.001	0.522	1.000	5.867	0.000

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
REGRESSION	262.966	1	262.966	34.425	0.000
RESIDUAL	702.778	92	7.639		

DEP VAR: EXP_ADA N: 94 MULTIPLE R: 0.374 SQUARED MULTIPLE R: 0.140
ADJUSTED SQUARED MULTIPLE R: .131 STANDARD ERROR OF ESTIMATE: 911.087

VARIABLE	COEFFICIENT	STD ERROR	STD COEF	TOLERANCE	T	P(2 TAIL)
STANT	4708.429	134.750	0.000	.	34.942	0.000
ADA	-0.878	0.227	-0.374	1.000	-3.871	0.000

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
REGRESSION	.124390E+08	1	.124390E+08	14.995	0.000
RESIDUAL	.763674E+08	92	830080.357		

DEP VAR: EXP_ADA N: 94 MULTIPLE R: 0.523 SQUARED MULTIPLE R: 0.274
ADJUSTED SQUARED MULTIPLE R: .266 STANDARD ERROR OF ESTIMATE: 837.339

VARIABLE	COEFFICIENT	STD ERROR	STD COEF	TOLERANCE	T	P(2 TAIL)
CONSTANT	3622.045	148.683	0.000	.	24.361	0.000
PROPVALU	0.004	0.001	0.523	1.000	5.887	0.000

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
REGRESSION	.243019E+08	1	.243019E+08	34.661	0.000
RESIDUAL	.645045E+08	92	701136.286		

REGRESSIONS FOR ENROLLMENT<=500

DEP VAR: TAP N: 67 MULTIPLE R: 0.076 SQUARED MULTIPLE R: 0.006
ADJUSTED SQUARED MULTIPLE R: .000 STANDARD ERROR OF ESTIMATE: 6.147

VARIABLE	COEFFICIENT	STD ERROR	STD COEF	TOLERANCE	T	P(2 TAIL)
CONSTANT	191.532	1.464	0.000	.	130.853	0.000
HS_ADA	0.004	0.006	0.076	1.000	0.616	0.540

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
REGRESSION	14.327	1	14.327	0.379	0.540
RESIDUAL	2455.671	65	37.780		

DEP VAR: TAP N: 67 MULTIPLE R: 0.147 SQUARED MULTIPLE R: 0.022
ADJUSTED SQUARED MULTIPLE R: .007 STANDARD ERROR OF ESTIMATE: 6.097

VARIABLE	COEFFICIENT	STD ERROR	STD COEF	TOLERANCE	T	P(2 TAIL)
CONSTANT	190.329	1.808	0.000	.	105.287	0.000
CODE	1.250	1.041	0.147	1.000	1.200	0.234

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
REGRESSION	53.576	1	53.576	1.441	0.234
RESIDUAL	2416.421	65	37.176		

DEP VAR: FTE N: 67 MULTIPLE R: 0.634 SQUARED MULTIPLE R: 0.402
ADJUSTED SQUARED MULTIPLE R: .392 STANDARD ERROR OF ESTIMATE: 2.464

VARIABLE	COEFFICIENT	STD ERROR	STD COEF	TOLERANCE	T	P(2 TAIL)
CONSTANT	10.584	0.587	0.000	.	18.037	0.000
HS_ADA	0.015	0.002	0.634	1.000	6.604	0.000

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
REGRESSION	264.789	1	264.789	43.609	0.000
RESIDUAL	394.673	65	6.072		

DEP VAR: EXP_ADA N: 67 MULTIPLE R: 0.475 SQUARED MULTIPLE R: 0.226
ADJUSTED SQUARED MULTIPLE R: .214 STANDARD ERROR OF ESTIMATE: 909.474

VARIABLE	COEFFICIENT	STD ERROR	STD COEF	TOLERANCE	T	P(2 TAIL)
CONSTANT	5352.797	216.582	0.000	.	24.715	0.000
HS_ADA	-3.768	0.866	-0.475	1.000	-4.351	0.000

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
REGRESSION	.156570E+08	1	.156570E+08	18.929	0.000
RESIDUAL	.537643E+08	65	827143.127		

DEP VAR: EXP_ADA N: 67 MULTIPLE R: 0.542 SQUARED MULTIPLE R: 0.294
ADJUSTED SQUARED MULTIPLE R: .283 STANDARD ERROR OF ESTIMATE: 868.298

VARIABLE	COEFFICIENT	STD ERROR	STD COEF	TOLERANCE	T	P(2 TAIL)
CONSTANT	3592.958	211.312	0.000	.	17.003	0.000
PROPVALU	0.005	0.001	0.542	1.000	5.204	0.000

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
REGRESSION	.204151E+08	1	.204151E+08	27.078	0.000
RESIDUAL	.490062E+08	65	753941.687		

APPENDIX B

VARIABLES IN SYSTAT RECT FILE ARE:
HSNAME DISTRICT ENROLLME CODE AVGPA
TOTAV

TOTAL OBSERVATIONS: 105

	ENROLLME	CODE	AVGPA	TOTAV
N OF CASES	105	105	102	105
MINIMUM	30.000	1.000	1.060	1.060
MAXIMUM	2403.000	5.000	4.000	4.000
RANGE	2373.000	4.000	2.940	2.940
MEAN	538.495	2.657	2.602	2.734
STANDARD DEV	509.637	1.492	0.387	0.342

ENROLLMENT<=200

TOTAL OBSERVATIONS: 30

	ENROLLME	CODE	AVGPA	TOTAV
N OF CASES	30	30	29	30
MINIMUM	30.000	1.000	1.060	1.060
MAXIMUM	198.000	1.000	3.190	3.420
RANGE	168.000	0.000	2.130	2.360
MEAN	114.433	1.000	2.557	2.682
STANDARD DEV	42.051	0.000	0.414	0.403

200<ENROLLMENT<=400

TOTAL OBSERVATIONS: 28

	ENROLLME	CODE	AVGPA	TOTAV
N OF CASES	28	28	27	28
MINIMUM	201.000	2.000	1.730	2.120
MAXIMUM	384.000	2.000	4.000	4.000
RANGE	183.000	0.000	2.270	1.880
MEAN	291.107	2.000	2.711	2.827
STANDARD DEV	59.576	0.000	0.451	0.361

400<ENROLLMENT<=600

TOTAL OBSERVATIONS: 17

	ENROLLME	CODE	AVGPA	TOTAV
N OF CASES	17	17	16	17
MINIMUM	424.000	3.000	2.150	2.450
MAXIMUM	587.000	3.000	3.000	2.960
RANGE	163.000	0.000	0.850	0.510
MEAN	518.765	3.000	2.627	2.785
STANDARD DEV	47.584	0.000	0.228	0.165

600<ENROLLMENT<=800

TOTAL OBSERVATIONS: 8

	ENROLLME	CODE	AVGPA	TOTAV

N OF CASES	8	8	8	8
MINIMUM	634.000	4.000	1.890	1.890
MAXIMUM	800.000	4.000	2.970	3.120
RANGE	166.000	0.000	1.080	1.230
MEAN	719.625	4.000	2.474	2.646
STANDARD DEV	58.466	0.000	0.375	0.345

800<ENROLLMENT

TOTAL OBSERVATIONS: 22

	ENROLLME	CODE	AVGPA	TOTAV
N OF CASES	22	22	22	22
MINIMUM	816.000	5.000	1.350	1.490
MAXIMUM	2403.000	5.000	2.990	3.080
RANGE	1587.000	0.000	1.640	1.590
MEAN	1381.000	5.000	2.557	2.679
STANDARD DEV	426.010	0.000	0.361	0.323

TABLE I

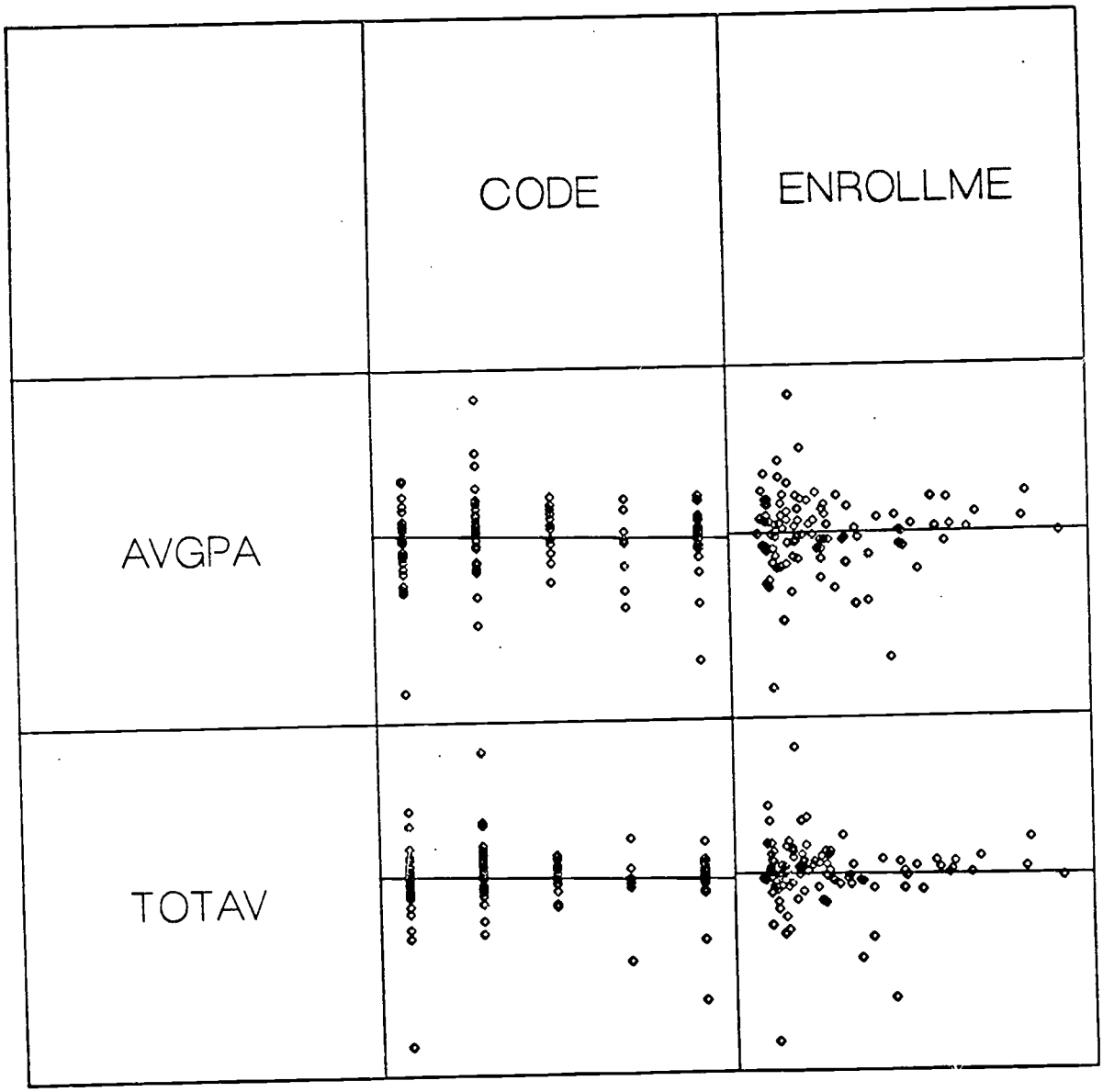


TABLE II

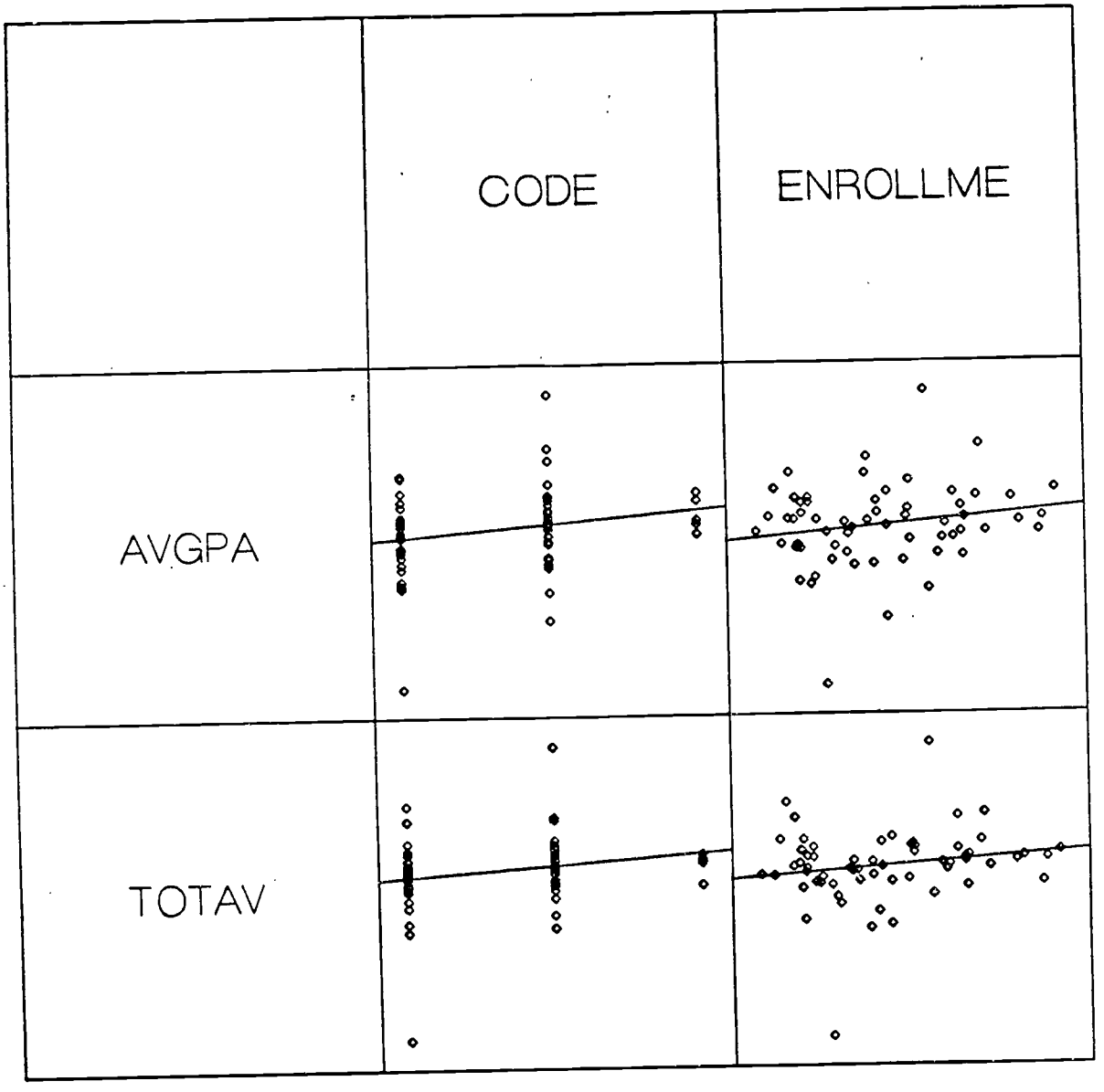
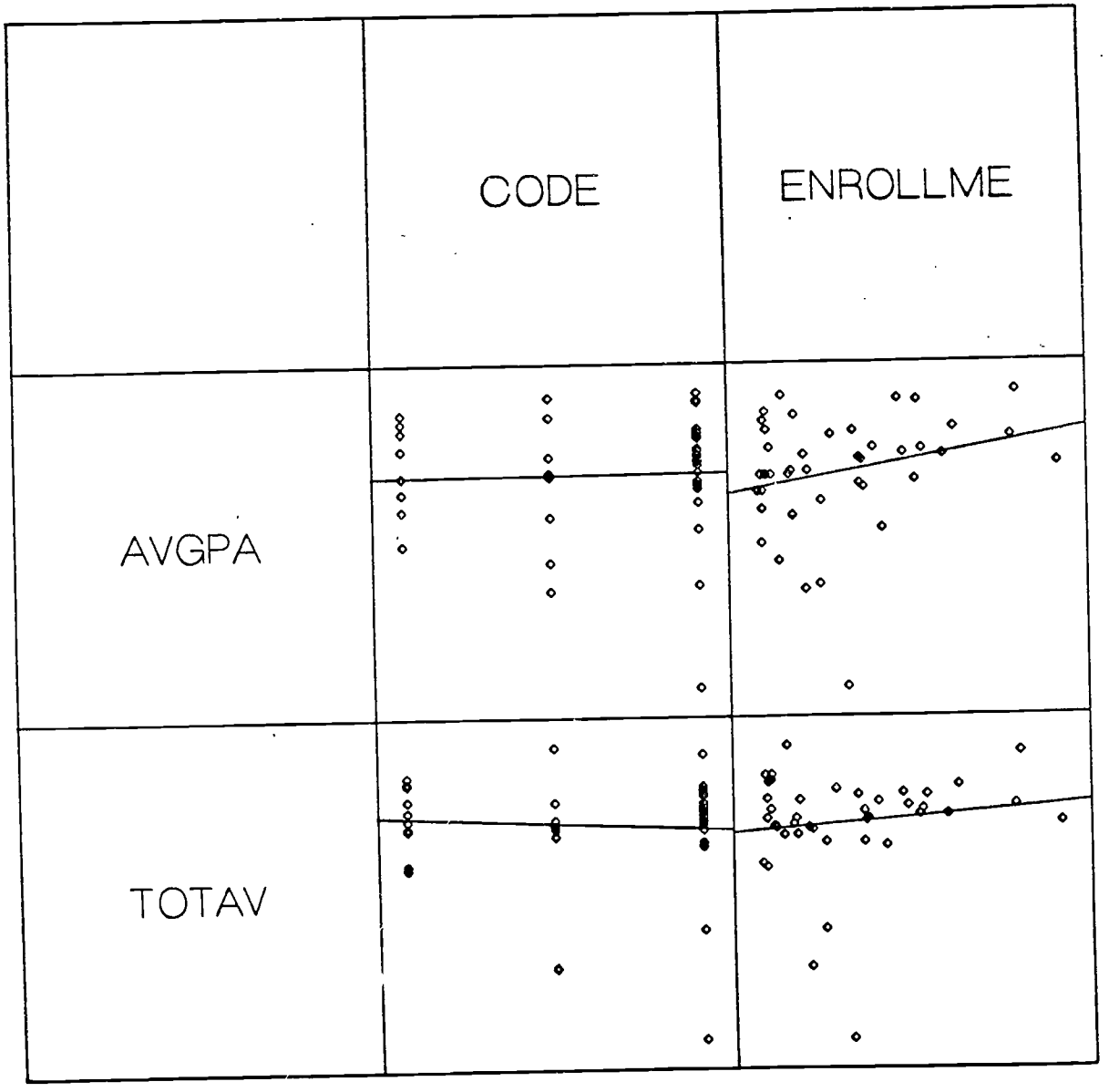


TABLE III



ALL SCHOOLS

PEARSON CORRELATION MATRIX

	ENROLLME	CODE	AVGPA	TOTAV
ENROLLME	1.000			
CODE	0.895	1.000		
AVGPA	0.002	-0.057	1.000	
TOTAV	-0.018	-0.059	0.800	1.000

NUMBER OF OBSERVATIONS: 102

ENROLLMENT<=500

TUE 2/08/94 9:35:17 AM A:\HIGHSCH.SYS

PEARSON CORRELATION MATRIX

	ENROLLME	CODE	AVGPA	TOTAV
ENROLLME	1.000			
CODE	0.914	1.000		
AVGPA	0.169	0.197	1.000	
TOTAV	0.160	0.192	0.756	1.000

NUMBER OF OBSERVATIONS: 61

REGRESSIONS FOR ALL SCHOOLS

DEP VAR: AVGPA N: 102 MULTIPLE R: 0.002 SQUARED MULTIPLE R: 0.000
ADJUSTED SQUARED MULTIPLE R: .000 STANDARD ERROR OF ESTIMATE: 0.389

VARIABLE	COEFFICIENT	STD ERROR	STD COEF	TOLERANCE	T	P(2 TAIL)
CONSTANT	2.602	0.056	0.000	.	46.271	0.000
ENROLLME	0.000	0.000	0.002	1.000	0.021	0.984

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
REGRESSION	0.000	1	0.000	0.000	0.984
RESIDUAL	15.139	100	0.151		

DEP VAR: TOTAV N: 105 MULTIPLE R: 0.012 SQUARED MULTIPLE R: 0.000
ADJUSTED SQUARED MULTIPLE R: .000 STANDARD ERROR OF ESTIMATE: 0.344

VARIABLE	COEFFICIENT	STD ERROR	STD COEF	TOLERANCE	T	P(2 TAIL)
CONSTANT	2.738	0.049	0.000	.	55.956	0.000
ENROLLME	-0.000	0.000	-0.012	1.000	-0.121	0.904

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
REGRESSION	0.002	1	0.002	0.015	0.904
:DUAL	12.176	103	0.118		

REGRESSIONS FOR ENROLLMENT<=500

DEP VAR: AVGPA N: 61 MULTIPLE R: 0.169 SQUARED MULTIPLE R: 0.029
ADJUSTED SQUARED MULTIPLE R: .012 STANDARD ERROR OF ESTIMATE: 0.418

VARIABLE	COEFFICIENT	STD ERROR	STD COEF	TOLERANCE	T	P(2 TAIL)
CONSTANT	2.513	0.113	0.000	.	22.319	0.000
ENROLLME	0.001	0.000	0.169	1.000	1.317	0.193

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
REGRESSION	0.304	1	0.304	1.734	0.193
RESIDUAL	10.333	59	0.175		

DEP VAR: TOTAV N: 63 MULTIPLE R: 0.117 SQUARED MULTIPLE R: 0.014
ADJUSTED SQUARED MULTIPLE R: .000 STANDARD ERROR OF ESTIMATE: 0.373

VARIABLE	COEFFICIENT	STD ERROR	STD COEF	TOLERANCE	T	P(2 TAIL)
CONSTANT	2.677	0.098	0.000	.	27.262	0.000
ENROLLME	0.000	0.000	0.117	1.000	0.924	0.359

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
REGRESSION	0.119	1	0.119	0.854	0.359
RESIDUAL	8.485	61	0.139		

REGRESSIONS FOR ENROLLMENT >=500

DEP VAR: AVGPA N: 41 MULTIPLE R: 0.241 SQUARED MULTIPLE R: 0.058
ADJUSTED SQUARED MULTIPLE R: .034 STANDARD ERROR OF ESTIMATE: 0.320

VARIABLE	COEFFICIENT	STD ERROR	STD COEF	TOLERANCE	T	P(2 TAIL)
CONSTANT	2.379	0.116	0.000	.	20.546	0.000
ENROLLME	0.000	0.000	0.241	1.000	1.548	0.130

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
REGRESSION	0.246	1	0.246	2.398	0.130
RESIDUAL	3.998	39	0.103		

DEP VAR: TOTAV N: 42 MULTIPLE R: 0.095 SQUARED MULTIPLE R: 0.009
ADJUSTED SQUARED MULTIPLE R: .000 STANDARD ERROR OF ESTIMATE: 0.294

VARIABLE	COEFFICIENT	STD ERROR	STD COEF	TOLERANCE	T	P(2 TAIL)
CONSTANT	2.644	0.104	0.000	.	25.353	0.000
ENROLLME	0.000	0.000	0.095	1.000	0.605	0.548

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
REGRESSION	0.032	1	0.032	0.367	0.548
RESIDUAL	3.464	40	0.087		

APPENDIX C

		DISTRICT TOTLEVY	CODE PROPVALU	HS_ADA FTE	TAP SALARY	SUPLEVY EXP_ADA
CASE	1	1.000	5.000	1493.000	198.000	.
CASE	1	0.888	206894.000	16.000	32014.000	4628.000
CASE	2	2.000	5.000	1938.000	196.400	.
CASE	2	0.757	99868.000	18.000	26856.000	3761.000
CASE	3	3.000	3.000	575.000	194.500	.
CASE	3	0.691	71501.000	18.000	25569.000	3065.000
CASE	4	11.000	1.000	79.000	186.000	.
CASE	4	0.554	277943.000	11.000	25624.000	5166.000
CASE	5	13.000	1.000	166.000	190.600	.
CASE	5	0.458	169732.000	11.000	26971.000	4574.000
CASE	6	21.000	3.000	478.000	200.100	.
CASE	6	0.863	103128.000	17.000	27067.000	3899.000
CASE	7	25.000	5.000	1326.000	193.200	.
CASE	7	0.854	77556.000	18.000	28698.000	3474.000
CASE	8	33.000	3.000	457.000	190.600	.
CASE	8	0.719	104092.000	18.000	25901.000	3296.000
CASE	9	41.000	3.000	413.000	187.100	.
CASE	9	0.778	141426.000	17.000	27864.000	4233.000
CASE	10	44.000	1.000	162.000	178.800	.
CASE	10	0.534	339859.000	13.000	27021.000	6155.000
CASE	11	52.000	4.000	663.000	189.900	.
CASE	11	1.088	66046.000	20.000	25255.000	3247.000
CASE	12	55.000	5.000	1144.000	191.300	.
CASE	12	0.671	71474.000	18.000	26930.000	3619.000
CASE	13	58.000	2.000	216.000	194.800	.
CASE	13	0.708	140855.000	14.000	29610.000	3763.000
CASE	14	59.000	2.000	265.000	195.500	.
CASE	14	0.728	78440.000	18.000	30140.000	3340.000
CASE	15	60.000	3.000	478.000	192.500	.
CASE	15	1.242	59425.000	17.000	27287.000	3863.000
CASE	16	61.000	3.000	506.000	202.000	.
CASE	16	0.459	830893.000	13.000	32283.000	5014.000
CASE	17	71.000	1.000	131.000	190.200	.
CASE	17	0.452	346513.000	9.000	23710.000	5170.000
CASE	18	73.000	1.000	60.000	179.800	.
CASE	18	0.902	168771.000	10.000	19970.000	5431.000
CASE	19	91.000	5.000	1055.500	199.500	.
CASE	19	1.013	105397.000	18.000	30174.000	4103.000
CASE	20	93.000	5.000	1388.000	195.900	.
CASE	20	1.010	64135.000	18.000	26255.000	4483.000
CASE	21	101.000	3.000	475.000	193.100	.
CASE	21	0.483	160484.000	16.000	26272.000	3807.000
CASE	22	111.000	2.000	220.000	192.000	.
CASE	22	0.535	143054.000	17.000	26624.000	3877.000
CASE	23	121.000	1.000	54.000	191.000	.
CASE	23	0.597	227102.000	7.000	24985.000	5554.000
CASE	24	131.000	5.000	1496.000	190.200	.
CASE	24	0.683	97022.000	15.000	26883.000	3856.000
CASE	25	132.000	4.000	748.000	188.100	.
CASE	25	0.650	96593.000	15.000	27244.000	3568.000
CASE	26	133.000	1.000	137.000	196.600	.
CASE	26	0.642	122741.000	11.000	26664.000	4916.000
CASE	27	134.000	3.000	510.000	192.000	.
CASE	27	0.832	64744.000	15.000	23822.000	3477.000
CASE	28	135.000	1.000	147.000	184.700	.
CASE	28	0.800	97231.000	12.000	25937.000	4395.000
CASE	29	136.000	1.000	168.000	193.900	.
CASE	29	0.845	117542.000	14.000	27752.000	5175.000
CASE	30	137.000	2.000	244.000	192.500	.
CASE	30	1.124	108414.000	13.000	27697.000	7085.000
CASE	31	139.000	4.000	708.000	195.700	.
CASE	31	0.645	169036.000	18.000	31714.000	4779.000
CASE	32	148.000	1.000	188.000	194.200	.
CASE	32	0.570	109396.000	18.000	30126.000	3900.000
CASE	33	149.000	1.000	87.000	192.000	.
CASE	33	0.690	234081.000	13.000	25370.000	5165.000
CASE	34	150.000	2.000	315.000	200.600	.
CASE	34	0.584	234278.000	18.000	29360.000	3945.000
CASE	35	161.000	1.000	48.000	199.000	.
CASE	35	0.446	341417.000	10.000	25960.000	5279.000
CASE	36	181.000	2.000	218.000	194.500	.
CASE	36	0.690	139861.000	14.000	26613.000	3984.000
CASE	37	182.000	1.000	107.000	186.100	.
CASE	37	0.606	199085.000	12.000	25710.000	4489.000
CASE	38	192.000	1.000	177.000	189.500	.
CASE	38	0.533	197432.000	12.000	23131.000	4142.000
CASE	39	193.000	4.000	629.000	194.100	.
CASE	39	0.694	85488.000	13.000	30070.000	3854.000

DATA SET 1

CASE	40	201.000	3.000	598.000	193.800	.
CASE	40	0.579	69804.000	18.000	26588.000	2967.000
CASE	41	202.000	1.000	170.000	198.600	.
CASE	41	0.870	91917.000	15.000	26340.000	4268.000
CASE	42	221.000	4.000	621.000	187.500	.
CASE	42	0.796	98288.000	21.000	25684.000	3226.000
CASE	43	231.000	2.000	302.000	194.700	.
CASE	43	0.496	120482.000	15.000	26479.000	3787.000
CASE	44	232.000	2.000	265.000	186.500	.
CASE	44	0.441	108337.000	16.000	25753.000	3624.000
CASE	45	233.000	1.000	86.000	204.000	.
CASE	45	0.333	171107.000	16.000	22479.000	3470.000
CASE	46	234.000	1.000	96.000	195.800	.
CASE	46	0.511	161688.000	10.000	22877.000	4428.000
CASE	47	242.000	1.000	153.000	202.300	.
CASE	47	0.455	134002.000	12.000	24983.000	4329.000
CASE	48	251.000	4.000	686.000	194.000	.
CASE	48	0.909	58575.000	17.000	25972.000	3365.000
CASE	49	252.000	2.000	215.000	198.600	.
CASE	49	0.741	71152.000	20.000	30553.000	3645.000
CASE	50	253.000	2.000	239.000	195.900	.
CASE	50	0.632	131645.000	18.000	30349.000	3985.000
CASE	51	261.000	4.000	726.000	190.400	.
CASE	51	0.573	96838.000	16.000	28936.000	3468.000
CASE	52	262.000	1.000	186.000	184.500	.
CASE	52	0.451	139240.000	20.000	27782.000	3728.000
CASE	53	271.000	5.000	1866.000	190.600	.
CASE	53	0.735	204799.000	16.000	28614.000	4066.000
CASE	54	272.000	3.000	578.000	187.400	.
CASE	54	0.712	139085.000	18.000	28646.000	3886.000
CASE	55	273.000	5.000	876.000	191.400	.
CASE	55	0.657	113557.000	17.000	29106.000	3428.000
CASE	56	274.000	1.000	78.000	189.300	.
CASE	56	0.765	327608.000	10.000	23631.000	8775.000
CASE	57	281.000	3.000	553.000	204.500	.
CASE	57	1.490	151310.000	14.000	31215.000	4932.000
CASE	58	282.000	1.000	86.000	197.200	.
CASE	58	0.641	273627.000	9.000	25958.000	4741.000
CASE	59	283.000	1.000	113.000	192.400	.
CASE	59	0.734	172792.000	13.000	25765.000	4831.000
CASE	60	285.000	1.000	160.000	181.400	.
CASE	60	0.810	146823.000	12.000	29721.000	4334.000
CASE	61	286.000	1.000	109.000	194.500	.
CASE	61	0.873	157273.000	11.000	27834.000	4910.000
CASE	62	291.000	2.000	387.000	194.500	.
CASE	62	0.481	139861.000	16.000	28441.000	3415.000
CASE	63	302.000	1.000	50.000	199.400	.
CASE	63	0.793	365636.000	10.000	26659.000	5691.000
CASE	64	304.000	1.000	180.000	199.600	.
CASE	64	0.444	92230.000	17.000	26114.000	3863.000
CASE	65	305.000	1.000	96.000	195.200	.
CASE	65	0.534	253855.000	14.000	27532.000	5065.000
CASE	66	312.000	1.000	123.000	193.000	.
CASE	66	0.911	132604.000	11.000	25161.000	4205.000
CASE	67	321.000	5.000	1242.000	194.500	.
CASE	67	0.608	70056.000	21.000	28334.000	3197.000
CASE	68	322.000	3.000	418.000	198.400	.
CASE	68	0.988	63633.000	18.000	26253.000	3455.000
CASE	69	331.000	5.000	900.000	188.000	.
CASE	69	0.711	86512.000	19.000	26364.000	3453.000
CASE	70	340.000	5.000	1001.000	192.500	.
CASE	70	0.783	245163.000	17.000	32056.000	4299.000
CASE	71	341.000	1.000	107.000	180.400	.
CASE	71	0.477	110236.000	15.000	27135.000	5521.000
CASE	72	351.000	2.000	313.000	191.600	.
CASE	72	0.800	106991.000	19.000	29326.000	3662.000
CASE	73	363.000	1.000	181.000	175.700	.
CASE	73	0.861	79963.000	15.000	25832.000	4238.000
CASE	74	365.000	1.000	126.000	181.900	.
CASE	74	0.550	190841.000	13.000	25132.000	4708.000
CASE	75	370.000	2.000	298.000	200.200	.
CASE	75	0.714	73073.000	19.000	27395.000	3572.000
CASE	76	371.000	2.000	390.000	187.700	.
CASE	76	0.771	83006.000	16.000	26055.000	5842.000
CASE	77	372.000	2.000	368.000	190.300	.
CASE	77	0.680	94263.000	16.000	26834.000	4214.000
CASE	78	373.000	2.000	297.000	193.500	.
CASE	78	0.815	109752.000	16.000	27298.000	3321.000
CASE	79	381.000	3.000	457.000	189.600	.
CASE	79	0.624	295794.000	13.000	31965.000	4395.000

DATA SET 1

CASE	80	391.000	3.000	529.000	188.000	.
CASE	80	0.773	128874.000	13.000	27056.000	4514.000
CASE	81	392.000	1.000	80.000	198.600	.
CASE	81	1.036	170822.000	10.000	27574.000	6214.000
CASE	82	393.000	2.000	292.000	187.400	.
CASE	82	1.073	144010.000	12.000	28591.000	5450.000
CASE	83	401.000	2.000	246.000	191.600	.
CASE	83	0.489	155277.000	12.000	26464.000	3681.000
CASE	84	411.000	5.000	1282.000	196.500	.
CASE	84	0.670	109780.000	18.000	26102.000	3276.000
CASE	85	412.000	3.000	443.000	191.900	.
CASE	85	0.610	127191.000	17.000	24671.000	3473.000
CASE	86	413.000	2.000	339.000	193.500	.
CASE	86	0.741	107398.000	14.000	25317.000	3780.000
CASE	87	414.000	2.000	259.000	193.700	.
CASE	87	1.000	68082.000	14.000	26259.000	5559.000
CASE	88	415.000	1.000	95.000	194.700	.
CASE	88	0.496	138487.000	13.000	23124.000	3532.000
CASE	89	418.000	1.000	75.000	198.200	.
CASE	89	0.629	144198.000	12.000	23579.000	4391.000
CASE	90	421.000	2.000	269.000	203.600	.
CASE	90	0.469	496674.000	12.000	32078.000	4912.000
CASE	91	422.000	1.000	142.000	192.500	.
CASE	91	0.569	470607.000	12.000	23054.000	6245.000
CASE	92	431.000	3.000	472.000	191.500	.
CASE	92	0.645	102296.000	16.000	25385.000	3525.000
CASE	93	432.000	1.000	86.000	181.600	.
CASE	93	0.480	223740.000	15.000	25842.000	4564.000
CASE	94	433.000	1.000	47.000	193.300	.
CASE	94	0.423	493101.000	6.000	24007.000	6494.000

DATA SET 1

		HSNAME	DISTRICT	ENROLLME	CODE	AVGPA	TOTAV
CASE	1	.	58.000	266.000	2.000	3.100	2.900
CASE	1	.	381.000	491.000	3.000	3.000	2.910
CASE	2	.	101.000	531.000	3.000	2.440	2.830
CASE	2	.	412.000	471.000	3.000	2.720	2.840
CASE	3	.	55.000	1289.000	5.000	2.230	2.570
CASE	3	.	93.000	1145.000	5.000	2.620	2.760
CASE	4	.	1.000	1680.000	5.000	2.640	2.740
CASE	4	.	1.000	1747.000	5.000	2.750	2.900
CASE	5	.	33.000	559.000	3.000	2.780	2.960
CASE	5	.	151.000	737.000	4.000	2.860	2.820
CASE	6	.	111.000	257.000	2.000	2.290	2.640
CASE	6	.	121.000	50.000	1.000	2.740	2.680
CASE	7	.	271.000	2110.000	5.000	2.740	2.790
CASE	7	.	2.000	2143.000	5.000	2.990	3.080
CASE	8	.	82.000	100.000	1.000	2.880	2.750
CASE	8	.	181.000	178.000	1.000	2.620	2.730
CASE	9	.	161.000	69.000	1.000	2.470	3.420
CASE	9	.	432.000	95.000	1.000	2.460	3.040
CASE	10	.	13.000	121.000	1.000	2.130	2.600
CASE	10	.	1.000	1548.000	5.000	2.670	2.850
CASE	11	.	422.000	124.000	1.000	2.710	2.660
CASE	11	.	132.000	902.000	5.000	2.380	2.590
CASE	12	.	241.000	216.000	2.000	2.770	2.760
CASE	12	.	151.000	349.000	2.000	2.340	2.560
CASE	13	.	221.000	698.000	4.000	2.530	2.690
CASE	13	.	59.000	321.000	2.000	2.660	2.780
CASE	14	.	413.000	375.000	2.000	3.460	3.300
CASE	14	.	373.000	346.000	2.000	2.570	2.810
CASE	15	.	231.000	334.000	2.000	2.970	2.930
CASE	15	.	71.000	91.000	1.000	2.930	2.930
CASE	16	.	282.000	89.000	1.000	2.710	2.800
CASE	16	.	192.000	201.000	2.000	3.340	2.810
CASE	17	.	148.000	231.000	2.000	1.730	2.180
CASE	17	.	241.000	351.000	2.000	2.720	2.870
CASE	18	.	415.000	99.000	1.000	2.420	2.710
CASE	18	.	305.000	114.000	1.000	2.060	2.610
CASE	19	.	25.000	1523.000	5.000	2.940	2.770
CASE	19	.	370.000	346.000	2.000	2.830	2.850
CASE	20	.	91.000	1237.000	5.000	2.680	2.810
CASE	20	.					

DATA SET 2

DATA SET 2

CASE	40	.	261.000	794.000	4.000	2.640
CASE	40	2.670				
CASE	41	.	304.000	202.000	2.000	2.690
CASE	41	2.670				
CASE	42	.	414.000	296.000	2.000	2.010
CASE	42	2.480				
CASE	43	.	283.000	110.000	1.000	2.930
CASE	43	2.960				
CASE	44	.	391.000	530.000	3.000	2.340
CASE	44	2.720				
CASE	45	.	274.000	93.000	1.000	2.430
CASE	45	2.550				
CASE	46	.	3.000	658.000	4.000	2.970
CASE	46	3.120				
CASE	47	.	340.000	1107.000	5.000	2.770
CASE	47	2.850				
CASE	48	.	272.000	556.000	3.000	2.880
CASE	48	2.930				
CASE	49	.	341.000	147.000	1.000	2.300
CASE	49	2.460				
CASE	50	.	321.000	1063.000	5.000	1.350
CASE	50	1.490				
CASE	51	.	421.000	317.000	2.000	2.510
CASE	51	2.730				
CASE	52	.	134.000	540.000	3.000	2.830
CASE	52	2.920				
CASE	53	.	433.000	30.000	1.000	2.590
CASE	53	2.690				
CASE	54	.	11.000	82.000	1.000	3.190
CASE	54	3.270				
CASE	55	.	2.000	2403.000	5.000	2.590
CASE	55	2.690				
CASE	56	.	331.000	1145.000	5.000	2.480
CASE	56	2.590				
CASE	57	.	182.000	100.000	1.000	2.770
CASE	57	2.870				
CASE	58	.	136.000	232.000	2.000	2.980
CASE	58	3.060				
CASE	59	.	351.000	334.000	2.000	2.520
CASE	59	3.270				
CASE	60	.	363.000	211.000	2.000	2.260
CASE	60	2.310				
CASE	61	.	21.000	578.000	3.000	2.680
CASE	61	2.680				
CASE	62	.	281.000	554.000	3.000	2.530
CASE	62	2.770				
CASE	63	.	193.000	714.000	4.000	2.550
CASE	63	2.720				
CASE	64	.	392.000	80.000	1.000	2.720
CASE	64	2.770				
CASE	65	.	215.000	215.000	2.000	2.890
CASE	65	3.010				
CASE	66	.	149.000	79.000	1.000	.
CASE	66	2.760				
CASE	67	.	131.000	1503.000	5.000	2.500
CASE	67	2.740				
CASE	68	.	372.000	267.000	2.000	2.500
CASE	68	2.960				
CASE	69	.	302.000	59.000	1.000	3.020
CASE	69	3.040				
CASE	70	.	151.000	139.000	1.000	2.580
CASE	70	2.580				
CASE	71	.	171.000	384.000	2.000	2.580
CASE	71	2.760				
CASE	72	.	273.000	968.000	5.000	2.750
CASE	72	2.880				
CASE	73	.	25.000	1398.000	5.000	2.950
CASE	73	2.860				
CASE	74	.	242.000	167.000	1.000	2.680
CASE	74	2.740				
CASE	75	.	82.000	502.000	3.000	2.440
CASE	75	2.470				
CASE	76	.	137.000	264.000	2.000	2.810
CASE	76	2.990				
CASE	77	.	201.000	722.000	4.000	2.300
CASE	77	2.630				
CASE	78	.	285.000	181.000	1.000	2.250
CASE	78	2.620				
CASE	79	.	371.000	465.000	3.000	2.580
CASE	79	2.600				

CASE	80	.	251.000	894.000	5.000	1.920
CASE	80	2.100				
CASE	81	.	365.000	152.000	1.000	2.440
CASE	81	2.390				
CASE	82	.	252.000	373.000	2.000	.
CASE	82	2.120				
CASE	83	.	150.000	424.000	3.000	2.920
CASE	83	2.820				
CASE	84	.	215.000	634.000	4.000	2.050
CASE	84	2.630				
CASE	85	.	60.000	523.000	3.000	2.530
CASE	85	2.960				
CASE	86	.	312.000	137.000	1.000	1.060
CASE	86	1.060				
CASE	87	.	91.000	1160.000	5.000	2.610
CASE	87	2.710				
CASE	88	.	291.000	370.000	2.000	2.940
CASE	88	3.020				
CASE	89	.	241.000	97.000	1.000	2.090
CASE	89	2.230				
CASE	90	.	52.000	800.000	4.000	1.890
CASE	90	1.890				
CASE	91	.	82.000	1172.000	5.000	2.460
CASE	91	2.720				
CASE	92	.	41.000	435.000	3.000	2.680
CASE	92	2.860				
CASE	93	.	322.000	547.000	3.000	.
CASE	93	2.960				
CASE	94	.	411.000	1429.000	5.000	2.650
CASE	94	2.790				
CASE	95	.	171.000	172.000	1.000	2.560
CASE	95	2.820				
CASE	96	.	286.000	110.000	1.000	2.880
CASE	96	2.860				
CASE	97	.	401.000	291.000	2.000	4.000
CASE	97	4.000				
CASE	98	.	139.000	816.000	5.000	2.550
CASE	98	2.660				
CASE	99	.	262.000	170.000	1.000	2.370
CASE	99	2.720				
CASE	100	.	393.000	231.000	2.000	2.640
CASE	100	2.610				
CASE	101	.	431.000	526.000	3.000	2.150
CASE	101	2.450				
CASE	102	.	232.000	310.000	2.000	2.360
CASE	102	2.800				
CASE	103	.	253.000	261.000	2.000	2.730
CASE	103	2.970				
CASE	104	.	133.000	198.000	1.000	3.170
CASE	104	2.140				
CASE	105	.	61.000	587.000	3.000	2.530
CASE	105	2.670				

DATA SET 2