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## Course Offerings: A Function of Reimbursement Rates

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COURSE OFFERINGS: A FUNCTION OF REIMBURSEMENT RATES

by  
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A Dissertation

Submitted to the Graduate Faculty

of the

University of North Dakota

in partial fulfillment of the requirements

for the degree of

Doctor of Education

Grand Forks, North Dakota

May  
1979

This dissertation submitted by Gerald Roth in partial fulfillment of the requirements for the Degree of Doctor of Education from the University of North Dakota is hereby approved by the Faculty Advisory Committee under whom the work has been done.

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This dissertation meets the standards for appearance and conforms to the style and format requirements of the Graduate School of the University of North Dakota, and is hereby approved.

A. William Johnson  
Dean of the Graduate School

Permission

Title COURSE OFFERINGS: A FUNCTION OF REIMBURSEMENT RATES  
Department Center for Teaching and Learning  
Degree Doctor of Education

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Date

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## ABSTRACT

### Purpose

The purpose of this study was to investigate relationships among variables important in policy analysis for the state financing of secondary education. Basic to this task was analyzing the relationship among variables presently considered in school finance policy. To guide the analysis of the variable relationships the following study questions were generated:

1. Is there a relationship between per pupil expenditure and the number of courses offered in secondary schools?
2. Is there a relationship between foundation support and the number of courses offered in secondary schools?
3. Is there a relationship between foundation support and per pupil expenditure in secondary schools?
4. Does school size reduce the correlation between per pupil expenditure and the number of course offerings?
5. Can the number of courses offered by a district be predicted by one or more of the following: student enrollment, per pupil valuation, student density, leeway mills and faculty positions?

### Procedure

The SPSS SCATTERGRAM SUBPROGRAM (Nie et al., 1975) was utilized in treating the data pertinent to the first three questions. Question 4 was answered by computing a partial correlation with the SPSS PARTIAL CORR SUBPROGRAM (Nie et al., 1975). Stepwise forward multiple regression, which is a product of the SPSS REGRESSION PROGRAM (Nie et al., 1975), was used as the statistical test in question 5.

The study population consisted of all public high school districts operating during the 1976-1977 school term, with the exception of those districts contracting for services with the Bureau of Indian Affairs. In the analysis process the individual district data were related to the total population data and comparable size district data. Total population was referred to as the Total Group. The total population was also broken down into four subgroups: enrollment size 1-74 as Subgroup I (N=94); enrollment size 75-149 as Subgroup II (N=78); enrollment size 150-449 as Subgroup III (N=60) and enrollment size 550 and greater as Subgroup IV (N=15).

#### Findings

1. A limited linear relationship existed between the variables per pupil expenditures and course offerings.
2. A strong linear relationship existed between the variables foundation support and course offerings for the Total Group and the four size subgroups.
3. A variation was found in the relationship between the variables per pupil expenditure and foundation support among the Total Group and the four size subgroups.
4. The correlation between the variables per pupil expenditures and course offerings was altered through controlling the influence of size on the relationship.
5. The variable faculty consistently accounted for the largest amount of the variance in course offerings in comparison to high school enrollment, per pupil valuation, density and leeway mills for the Total Group as well as the four size subgroups.

## Conclusions

1. Per pupil expenditure had limited value as an indicator of course offerings.
2. The strong linear relationship between the variables foundation support and course offerings for the Total Group and the four size subgroups suggested that foundation support was a useful indicator of course offerings.
3. Because of the large variation in the data reported for the Total Group and the four size subgroups it was not possible to arrive at a general conclusion relative to the relationship between foundation support and per pupil expenditure.
4. The correlation between the variables per pupil expenditure and course offerings was altered by controlling for size as a variable.
5. The number of faculty positions is a better indicator of the number of courses offered in a school than high school enrollment, per pupil valuation, density and leeway mills. This observation applies to the Total Group and the four size subgroups.

## CHAPTER I

### INTRODUCTION TO THE STUDY

#### Background of the Study

Increasing fiscal support for elementary and secondary education has been a major goal of the North Dakota State Legislature in this decade. Fundamental to this increased support has been a greater concern for equal educational opportunities for all students. Viewed as basic to equalizing educational opportunity was an adequate minimum fiscal support level for each child in the school district.

The state legislature set the support level for each year of the biennium based on the anticipated cost of providing a minimally adequate instructional program. This support level was referred to as the foundation level or per pupil support payment and was awarded on the basis of the average daily membership. Classified as a foundation program, this state school finance system was intended to facilitate equal opportunities by utilizing state funds to provide a minimally adequate instructional program for each child.

Although the state legislature has not defined equal educational opportunities, it has identified the criteria for a minimally acceptable secondary program. The first criterion specifies the minimum training for classroom teachers. The second criterion prescribes the type and minimum number of courses which must be offered by a district to qualify for foundation support (North Dakota Century School Code, 1977).

Designing a school finance system that was responsive to the financial needs of all school districts in this state could be considered a difficult task. Basic to achieving such a goal was designing a state finance program which would accommodate the numerous variations in the school districts. Some of these variations were reflected in the individual school program--number of course offerings, enrollments and faculty positions. Other variations included district characteristics of student density, geographic size, per pupil valuation, per pupil expenditures and school district effort represented by the number of tax mills levied in the district.

The 1973 Legislative Assembly, after recognizing sparsity as a variable which impacted the cost of providing an educational program in a school district, accommodated this variable in the state school finance legislation. The reader should note that sparsity used in this context was synonymous with enrollment and should not be confused with density which is defined as the number of secondary students per section of land in the district. As a result of the inclusion in the legislation of the sparsity variable, districts with smaller school populations received a higher per pupil support level than districts with larger school populations.

With the exception of sparsity, the impact of the variation of the other variables on course offerings has not been addressed in the state school finance plan. Several reasons may be offered for this circumstance. Among those reasons may be a lack of awareness of the potential influence of other variables. Another may be the lack of a defined methodology to discern the extent of the influence.



### Need for a Study

The design of the school finance system should facilitate the district effort in responding to the needs of the students. Critical to this goal must be a provision in the design which allows for an ongoing review and necessary revision of the system. The review and revision processes were to include the gathering of data and the identification of analysis procedures which were not presently reflected in the finance system.

### The Purpose of the Study

The purpose of the study was to investigate relationships among some variables important in policy analysis for the state financing of secondary education.

### Definition of Terms

Foundation Level. The monetary figure used to present the amount of financial support necessary per pupil to provide a minimally adequate program. A foundation level of \$690.00 was supported by the legislature for the 1976-1977 school year.

Foundation Support. The total funds received by the district through the foundation program.

Leeway Mills. Mills levied by a district in addition to those allowed without the expressed consent of the electorate. In this study the mills levied above 24 mills, the "maximum levy," were regarded as leeway mills.

Per Pupil Expenditure. The average per pupil cost for educating a student in the district. This figure was obtained by dividing the total

expenditures for education (exclusive of costs for capital outlay, debt services, school activities, school lunch, and transportation) by the number of students in average daily membership at that expenditure level. Only expenditures in grades 9-12 and enrollment figures for grades 9-12 were used in determining the per pupil expenditure at the secondary level.

Per Pupil Valuation. This figure represented that amount of taxable valuation supporting the students in a district. It was determined by dividing the total taxable valuation in a district by the number of residents from the age of six through seventeen. Taxable valuation is one-half of assessed valuable of the taxable property in the district.

Pupil Density. The total number of secondary students per section of land in the district.

State Foundation Program. The system established by the state legislature to disburse state and county funds to the local school district for the support of elementary and secondary education.

Student Sparsity. Total students enrollment grades 9-12 in a school or in a school district. Sparsity is the term used in the state school finance legislation to denote enrollment.

#### Delimitation of the Study

The variables which impact the number of courses offered in a school district may be innumerable. In this study the impact of per pupil expenditures, foundation level, per pupil valuation, leeway mills, sparsity, density, geographic size and faculty positions on course offerings was considered. The variable data for the 1976-1977 school year were selected because it was the most recent year for which all of the necessary information was available.

### The Study Questions

The following questions were designed to address the purpose of the study.

1. Is there a relationship between per pupil expenditure and the number of courses offered in secondary schools?
2. Is there a relationship between foundation support and the number of courses offered in secondary schools?
3. Is there a relationship between foundation support and per pupil expenditure in secondary schools?
4. Does school size reduce the correlation between per pupil expenditures and the amount of course offerings?
5. Can the number of courses offered by a district be predicted by one or more of the following: student enrollment, per pupil valuation, student density, leeway mills and faculty positions?

### Organization of the Study

Chapter II included a historical review of the related literature, expert opinion and applicable research. Chapter III described the methods used in gathering and treating the data and the supporting rationale for these procedures. Chapter IV reported the narrative, statistical and graphic treatment of the data. Chapter V contained a summary of the major findings, conclusions from the findings and recommendations based on the analysis of the findings.

## CHAPTER II

### REVIEW OF THE LITERATURE

#### Public School Education--A State Responsibility

The responsibility for the education of the citizenry of a state by that state has been a long accepted principle in public education. This principle was endorsed by the framers of the State Constitution as reported (North Dakota State Constitution 1889):

The legislative assembly shall provide at their first session after the adoption of this Constitution, for a uniform system of public schools throughout the state, beginning with the primary grades and extending through all grades up to and including the normal and collegiate courses.

The legal bases for that section of the North Dakota State Constitution is found in the quote (United States Constitution 1787):

"The powers not delegated to the United States by the Constitution nor prohibited by it to the States, are reserved to the State respectively, or to the people."

In the approximately ninety years since the adoption of the North Dakota State Constitution, the state legislature has passed numerous pieces of legislation which had delineated the role of the State and of the local district in financially supporting the operation of the public school. One of the most notable pieces of legislation, relative to the support of education, was passed by the 1973 Legislative Assembly. This legislation reads (North Dakota Century School Code 1973): "It is the intent of the legislative assembly to support elementary and secondary

education in this state from state and county funds based on the educational cost per pupil."

The legislation quoted above, which in essence recognizes the responsibility of the state for the financial support of education, is characteristic of legislative action taken by a number of states in this decade. Odden (1978, p. vii) reports:

Although 1976 was a quiet year for school finance reform, many states enacted new laws in 1977, making a total of 25 states that have enacted reforms of their elementary and secondary education finance structures during the 1970s.

Callahan and Wilken (1976) had identified several powerful forces to which were attributed the demand for greater state involvement in funding public education. He identified among the forces: a substantial increase in property tax, a long-simmering dissatisfaction with local property tax, and an inconsistent pattern in the collection and distribution of state revenue. However, Callahan and Wilken recognized the major force as being the decisions rendered by the state and federal courts which had given the proponents of school finance reform a powerful lever for change. Callahan and Wilken (1976, p. 1) stated:

From the landmark Serrano decisions of 1971 to more recent rulings in Robinson and Horton, the courts have made it clear: public school finance laws which make the quality of a child's education dependent on local wealth are constitutionally suspect and vulnerable to judicial challenge.

The following observation was offered by Talbot (1974, p. 3):

Inequality frustration brought on by an inability to solve school financial problems, a growing disenchantment of the public with public education, political expediencies, and many other factors have given rise to the current demands for school finance reform. However, the chief and basic course for the sudden flurry to do something about school finance is the rising cost of education.

A comparison of the various state finance systems which had been legislated as a result of the forces listed above indicated some very similar features. Callahan and Wilken (1976, p. 1) suggested the following central features of the new state role in public school finance:

First, most state with new laws have assumed substantial increases in raising public school dollars, by tapping budget surpluses, and by raising the rates of traditional state taxes. Second, many of the states with new laws have cut local school tax rates and in several instances have reduced property tax bills substantially. Third, all of the school finance reform states of the last five years have taken steps to insure a considerably closer fit between the distribution of state school aid and the presence of unusual educational needs or costs, these steps being visible in the comprehensive pupil weightings systems implemented in five states. And finally, the great majority of post-Serrano reform states have imposed systematic control on the growth of local school budgets, either by setting strict limits on local tax or by establishing ceilings on school expenditures.

Odden (1978) identified as the key features of recent school finance legislation a revised general aid equalization formula that distributes more state aid to school districts low in property wealth, increased attention to student populations requiring school programming, recognition of the financial problems of many central city school districts as well as unusual cost of school districts in poor and isolated rural areas, increasing interest in and enactment of income factors, increasing interest in cost-of-education adjustments on state aid, and the growing use of tax and expenditure controls to stabilize property tax rates which prevent education expenditures from increasing too rapidly.

In 1978, the Education Commission of the States published a chart entitled School Finance at a Third Glance. This chart reported a brief synopsis of the major facets of the state school finance systems in the

fifty states. The information contained in this source supported the comparative analysis made by Callahan and Wilken (1976) and Odden (1978).

A comparative analysis between the North Dakota finance system and that of the other states showed a number of similar features. The similarities among the various state school finance systems would suggest some commonalities basic to their development. These commonalities can be better understood through a study of the historical development of school finance.

#### School Finance - A History of Reform

In this section, the writer drew heavily from the writings of Cubberley. Reasons for this practice included a limited source of literature by other finance theorists and a general acceptance of Cubberley as a reputable school finance theorist.

School finance reform was certainly not a new concept. The present school finance system of the fifty states represented approximately three hundred and twenty-five years of school finance reform.

#### The Conception of Public Tax Supported Schools

Public school finance has been in a constant state of transition since its conception in the Massachusetts Colony during the mid seventeenth century. Dissatisfied with the home instruction or tutorial instruction as a viable means for preparing children to take their place in the church and in society, the Massachusetts legislative assembly passed the Old Deluder Satan Law in 1667. This legislation mandated every town having at least fifty households to appoint and financially support a teacher of reading and writing. Towns of 100

households were ordered to provide Latin schools to prepare students for the university. A penalty was set for failing to carry out the mandate (Cubberley, 1919).

The dialogue leading up to and following the passage of this legislation may have had an immeasurable effect on present educational philosophy. It stimulated the formulation of educational principles recognized to this day. Martin, a historian of the Massachusetts public schools, articulated these principles. Cubberley (1919, p. 18) paraphrases Martin as follows:

- "1. The universal education of youth is essential to the well being of the State.
- "2. The obligation to furnish this education rests upon the parent.
- "3. The State has a right to enforce this obligation.
- "4. The State may fix a standard which shall determine the kind of education, and the minimum amount.
- "5. Public money, raised by a general tax, may be used to provide such education as the State requires. This tax may be general, though the school attendance is not.
- "6. Education higher than the rudiments may be supplied by the State. Opportunity must be provided, at public expense, for youths who wish to be fitted for the university."

In the years of struggle to make free public education a reality for all children in this country, these early principles were somewhat modified and expanded. However, a comparison of these principles with those endorsed by the National Educational Finance Project showed a marked similarity (Johnson and Alexander, 1971b, p. 2).

We believe the opportunity to obtain a public education should be substantially equal for all children and youth and should be appropriate to their needs.

We believe public education should strive to remove class and caste barriers and to promote social mobility in our society.

We believe that every American child, regardless of race, national origin or the economic condition of his parents should be given an equal opportunity in the public schools to develop his talents to their fullest extent in order that he may have



full access to the benefits of the American social, economic and political system.

We believe in American democracy and are convinced that a broadly based and adequately supported system of public education for all children is essential to its preservation.

We believe that by raising the educational level we not only contribute to the success of popular government, but also to the reduction of poverty, crime and dependence upon programs of public welfare.

And most importantly, we believe that the educational opportunity of every individual should be a function of the total taxable wealth of the state and should not be limited to the taxing ability of a local school district.

The principles listed above were identified in a nationwide study of school finance by the National Educational Finance Project, a federally funded research project carried out in the late sixties and early seventies.

#### The Struggle for Public Support

The principles set forth by the Massachusetts Colony were fundamental to the development of concepts of state support of education. Burke (1957, p. 237), having completed a comprehensive study of school finance, noted the following trends:

The long term trends in public school revenue sources may be summarized as (1) a gradual abandonment of many early non-tax sources of revenue; (2) the growth and decline of income from permanent school funds; (3) the growth of local, county, and state property-tax support for schools; (5) the decreasing importance of earmarked state school taxes and the spread of state general-fund educational appropriations; (6) the growing potency of the federal tax structure and the provision of annual revenues for public school from federal tax sources; and (7) the development of local or county nonproperty taxes to supplement or reduce property taxes.

Burke (1957, p. 235) supported the initial sources of public school financial support as income derived from land endowments and rents, lotteries, gifts and bequests, rate bills and services in lieu of rate bills or taxes. By 1825 it became obvious that these sources

would not provide the resources necessary to educate a very rapidly expanding population. It was at this point that taxation of local property by the local school district for the support of public education was recognized as a viable alternative. The concept of taxing all local property for the education of all children was not accepted without a very bitter struggle.

Cubberley (1919, p. 119) stated:

Excepting the battle for the abolition of slavery, perhaps no question has ever been before the American people for settlement which caused so much feeling or aroused such bitter antagonisms. Old friends and business associates parted company over the question, lodges were forced to taboo the subject to avoid disruption, ministers and their congregations often quarreled over the question of free schools, and politicians avoided the issue. The friends of free schools were at first commonly regarded as fanatics, dangerous to the State, and the opponents of free schools were considered by them as old-time conservatives or as selfish members of society.

Some arguments offered by the proponents and opponents of public tax-supported schools are reported by Cubberley (1919, p. 120):

- "I. Arguments for public tax-supported schools
  - "1. That education tends to prevent pauperism and crime.
  - "2. That education tends to reduce poverty and distress.
  - "3. That education increases production, and eliminates wrong ideas as to the distribution of wealth.
  - "4. That a common state school, equally open to all, would prevent that class differentiation so dangerous in a Republic.
    - .....
  - "8. That education as to one's civic duties is a necessity for the intelligent exercise of suffrage, and for the preservation of republican institutions.
    - .....
  - "10. That the free and general education of all children at public expense is the natural right of all children in a republic.
  - "11. That the social, moral, political, and industrial benefits to be derived from the general education of all compensate many times over for its cost.
    - .....
  - "13. That the taking over of education by the State is not based on considerations of economy, but is the exercise

of the State's inherent right to self-preservation and improvement.

"14. That only a system of state-controlled schools can be free to teach whatever the welfare of the State may demand.

"II. Arguments against public tax-supported schools.

"1. Impractical, visionary, and "too advanced" legis-

"2. Will make education too common, and will educate people out of their proper position in society.

"3. Would not benefit the masses, who are already as well cared for as they deserve.

"4. Would tend to break down long-established and very desirable social barriers.

"5. Would injure private and parochials schools, in which much money had been put and "vested rights" established.

"6. Fear of the churches that state schools might injure their church progress and welfare.

"7. Fear of the non-English speaking classes that state schools might supplement instruction in their languages.

"8. The "conscientious objector" claimed that the State had no right to interfere between a parent and his child in the matter of education.

"9. That those not having children to be educated should not be taxed for schools.

"10. That taking a man's property to educate his neighbor's child is no more defensible than taking a man's plow to plow his neighbor's field.

"11. That the State may be justified in taxing to defend the liberties of a people, but not to support their benevolences.

"12. That the industries would be taxed to educate the indolent.

"13. That taxes would be so increased that no State could long meet such a lavish drain on its sources."

A comparison between the Principles of Education offered by the Massachusetts Colony (Cubberley, 1919) and the arguments proposed by the proponents of property tax supported education (Cubberley, 1919) suggested a basic relationship. A comparison of the Principles of Education offered by the National Educational Finance Project (Johns and Alexander, 1971b) and the arguments proposed by the promoters of public tax-supported schools (Cubberley, 1919) would suggest that some of the points of argument had a lasting quality. In the latter discussion

on the equality of educational opportunity, the reader will note that many of the arguments used by the supporters of greater state funding for education in this era were the same arguments proposed by the proponents of the public tax-supported school during the early 1800s.

#### Early Efforts in the Distribution of State Funds

After the acceptance of the concept of public tax-supported schools another area of controversy developed. Between approximately 1825 and 1900 there surfaced numerous positions relative to the distribution of state and federal funds. These funds were received by the local districts from the state and added to what was raised through local property taxation.

The practice of distributing school funds to a local school originated in the Massachusetts Colony prior to its statehood. The concept was soon adopted by the other states. Cubberley (1919) and Burke (1957) identified the early revenue sources to be land endowments, license taxes, occupational taxes, lotteries and bank taxes. Johns and Morphet (1975) credited the land grants provided to the states by the federal government in the Ordinance of 1787 and the Action of Congress in 1802 as the major sources of state support to the local school districts in the latter part of the nineteenth century.

Burke (1951) identified the bases for distribution to be the number of houses, number of families, number of able-bodied males over twenty-one years, number of pupils, assessed valuation, equal distribution among all districts and the providing of reserves to help poor districts. By the early part of the twentieth century the number of

options for distribution had been reduced to those most responsive to the needs of the districts.

Brown (1957) identified the three major options utilized in the various states for the distribution of state funds. The first option distributed the state funds on the basis of the amount of taxes paid by the district. This approach was also to serve as an incentive to districts to make a greater effort. The second option distributed state funds in relation to state participation; however, the bases varied. Some states used average daily membership while others used average daily attendance. A third option supported the distribution of state funds according to the wishes of pressure groups hoping to advance special projects. These special projects often included vocational programs, kindergarten programs or special education programs.

#### School Finance in the Twentieth Century

Prior to the twentieth century no notable school finance theorists surfaced. However, within the first quarter of the century several theorists received recognition for their work. The first was Ellwood P. Cubberley, a graduate of Teachers College, Columbia University. His dissertation, entitled, School Funds and Their Apportionment, was considered classic in school finance literature.

Cubberley (1905, p. 17) criticized the practices utilized by the states in the distribution of state funds in his dissertation. In a discussion on the support of education he wrote:

A far more fundamental question, however, is whether or not the money now at hand for distribution is distributed in the best manner possible, and whether or not, by a change in the method of distribution, the burdens of support could not be

greatly decreased and the minimum requirements at the same time increased, and this without doing any real injustice to any one.

Cubberley (1905, p. 18) further stated:

While the different forms of taxation for education must of necessity be considered, our primary concern will be rather with the methods of distribution. An equal per-capita distribution of funds, as at present required by so many of our state constitutions and state laws, is not necessarily an equitable distribution, whatever school funds it may have for distribution as to equalize, as nearly as is practicable, the common educational advantages to all, and to give an incentive toward and to place a premium on school advantages.

In the period of time from the adoption of tax-supported education to the beginning of the twentieth century major changes took place in the nation. The country changed from an agrarian-based society in which the population and wealth were quite evenly distributed to an industrial society resulting in great centers of wealth and population. Changes had not been made in the systems for the distribution of state funds nor in the procedures for obtaining local tax revenue. Cubberley (1905, p. 22) described the situations as follows:

Population and wealth are no longer diffused with comparative equality throughout the state or county, but are, to a large degree concentrated at a number of centers of trade and industry. Whether or not these changes in living and in the distribution of population and wealth have been advantageous or otherwise it is not our province to discuss, nor would the conclusion arrived at make any particular difference. Our purpose is to point out the effect of the growth of these inequalities upon the matter of the proper distribution of the income from school funds and the results of taxation for education. As it is to-day, some communities have come to have a far greater per-capita wealth than have others; some communities are constantly increasing their per-capita wealth, while in other communities there is an actual or a relative decrease; and in so many other states an increasing impoverishment of certain communities is taking place while other communities are rapidly increasing their per-capita wealth.

Cubberley (1905, p. 6) recognized that not all states would be able to provide, "quite so good or quite so extensive an education for their children," as may be found in other states. He admitted that variations within states would be natural. He defended his position in the following manner (Cubberley, 1905, p. 16):

These conditions are inevitable and must be considered by the state in formulating its demands and in apportioning its funds. Theoretically all the children of the state are equally important and are entitled to have the same advantages; practically this can never be quite true. The duty of the state is to secure for all as high a minimum of good instruction as is possible, but not to reduce all to this minimum; to equalize the advantages to all as nearly as can be done with the resources at hand; to place a premium on those local efforts which will enable communities to rise above the legal minimum as far as possible; and to encourage communities to extend their educational energies to new and desirable undertakings.

Cubberley (1905) suggested a means for reducing some of the inequity in programming among the various districts. He proposed that the state should determine those advantages that all children should have and require the district to provide them regardless of financial resources of the district. Recognizing that his proposal would place demands on some districts to which they not respond, he suggested the following (Cubberley, 1905, p. 19):

By making greater demands that can be met the state places itself under obligations to help its poorer members to comply with demands which are for the general good but which are beyond the power of these poorer communities to meet. This is not only justice, but it is demanded by sound public policy.

Cubberley's notion that state resources should be used in supporting education in districts lacking sufficient resources to provide an adequate program introduced a new dimension to the existing school finance theory. For all practical purposes it declared the state responsible for providing equal educational opportunities for each

child in the state. It also challenged the concept of relating the child's educational opportunities to the resources which could be raised through local property taxation.

As part of his dissertation, Cubberley did a comprehensive study of the various state school finance systems in operation at that time. A major focus of the study was the bases observed by the various states for the distribution of school funds. After a thorough study of the various state practices, Cubberley (1905, p. 252) concluded: "That more equitable results could be obtained by distributing all funds on the basis of teachers actually employed than on any other single basis."

#### Teacher Unit--A Basis of Need

As a result of Cubberley's research, the concept of developing an objective measure of educational need was introduced. He emphasized that the primary function of an equitable school finance system would be the distribution of funds to enhance the common educational advantages for all students. A secondary goal of the system he proposed would be to encourage the communities to develop new and desirable additional school programs. It was his conclusion that the apportionment of school funds in relation to the number of teachers actually employed in school districts would achieve those goals.

The work done by Cubberley was fundamental to much of the research which followed. Updegraff (Johns, Alexander and Jordan, 1972), building on Cubberley's work, suggested that the number of teacher units rather than the number of teachers be the basis of need for the distribution of state funds. Using data gathered through an extensive study of the New York state rural schools, he identified for the different levels,



types and classes of schools, a standard number of pupils per teacher which he considered a teacher unit. Updegraff was also concerned with the individual needs of the child. Johns and Morphet (1975, p. 208) paraphrased Updegraff as follows:

The purpose of state aid should be not only to protect the state from ignorance, to provide intelligent workers in every field of activity, and to educate leaders, but also to guarantee to each child, irrespectively of where he happens to live, equal opportunity to that of any other child for the education which will best fit him for life.

Updegraff was successful in introducing the teacher unit as a basis of need. Brown (1957) noted that in 1935 the North Dakota State Legislature adopted legislation which distributed state funds to the school districts on a teacher unit bases.

Although Strayer and Haig (1923, p. 176) did not define need, they suggested that the grants of state aid to school districts be based on ". . . the best obtainable knowledge of the cost of the satisfactory minimum of schooling, and the best obtainable measures of the economic resources of the several school units." Strayer and Haig were also very concerned with the concept of equal educational opportunity. They suggested the following approach to equalization:

To carry into effect the principle of "equalization of educational opportunity" and "equalization of school support" as commonly understood it would be necessary (1) to establish schools or make other arrangements sufficient to furnish the children in every locality within the state with equal educational opportunities up to some prescribed minimum; (2) to raise funds necessary for this purpose by local or state taxation adjusted in such a manner to bear upon the people in all localities at the same rate in relation to their tax-paying ability, and (3) to provide adequately either for the supervision and control of all schools, or for their district administration, by a state department of education (Strayer and Haig, 1923, p. 174).

It was the work done by Mort which became the basis for the more recent studies on measuring educational need. Mort (1925) studied the procedure utilized in the New York state school system to estimate the number of pupils assigned to the "typical teacher." Statistical estimates of the number of pupils assigned to teachers in different grade levels, rural schools and one-teacher schools were employed. Through the use of a regression equation, Mort concluded that the average daily attendance of any size school could be used to estimate the number of "typical teachers" or teacher units as they are now referred to. Through the use of formulas and multiplication factors he converted the teacher units to weighted pupil units. He emphasized that the expenditure per weighted pupil was a good basis for comparing the cost of educational offerings in different types of communities or comparing the cost of offerings in high schools and elementary schools in the same community.

Mort and Reusser (1951, p. 491) provided this later analysis of the weighted-pupil unit as a basis of need for distributing state funds:

The weighted-pupil unit (or its mathematical equivalent--the weighted classroom) is the most systematically refined of all measures of educational need and has been in practical use for a quarter of a century in state-aid laws, in expenditure comparisons of various types of districts, and in comparisons of ability to support schools. During this period it had been subjected to continuous refinement. It still falls considerably short of the demands of a perfectly satisfactory measure of educational need but approaches these demands more closely than any other available measure.

Mort's concept of "weighting pupils" was later extended to include weighting pupils enrolled in vocational education, exceptional education, and compensatory education in order to provide for the extra costs of these special programs (Mort and Reusser, 1951).

School Finance Studies in the Last Fifty Years

In 1931, Mort directed a national study of state support systems in education. Johns and Morphet (1975, p. 214) cited a summary of the major findings as printed in the survey report, State Support for Public Education:

- "1. In all but a few states, the actual minimum status of education was determined by the economic ability of local districts to support schools rather than the social needs for education.
- "2. The minimum program actually guaranteed was in nearly every state far below the program provided in communities of average wealth.
- "3. An analysis of the methods used by the different states to measure educational need revealed that no state was using as refined measures as were available. Measures in use were equitable in one or more of the following aspects: treatment for variation of size of school, treatment of districts of the same size, caring for the higher costs of high schools, caring for non-residence, consideration of costs of living, consideration of transportation, and consideration of capital outlays."

Although the study of school finance continued, it was nearly forty years before another major study was made of state practices in financing education. In June, 1968, the United States Office of Education agreed to fund the National Educational Finance Project (NEFP) a very extensive study in school finance.

According to Johns and Alexander (1971a, p. vii) the purposes of the National Educational Finance Project were to:

- (1) identify the dimensions of educational need in the nation;
- (2) identify target populations with special educational needs;
- (3) measure cost differentials among different educational programs;
- (4) relate the variations in educational needs and costs to the ability of school districts, states and the federal government to support education;
- (5) analyze economic factors affecting the financing of education;
- (6) evaluate present state and federal programs for the financing of education; and
- (7) construct alternative school finance models, both state and federal, and analyze the consequences of each.

The project was administered through the Florida State Department of Education and the University of Florida at Gainesville. The state departments of all fifty states participated in the project by providing information to the NEFP research team.

As a result of the NEFP work a cost differential approach for weighting pupils for the distribution of funds was further developed. A rationale and justification for the distribution of funds on the bases of weighted pupils were provided (Institute for Educational Finance, 1974, p. 6):

- "1. Local school districts have greater flexibility in program operation because funding is based on the pupil to be educated rather than a standardized self-contained unit, thereby encouraging exploration of alternative instructional methods based on educational needs.
- "2. A uniform and comprehensive system of funding is established for all administrative levels within a given educational system. Variations in allocations are dependent only on the differences in educational need among children and schools.
- "3. Funding through the cost differential method of weighting pupils increases the rationality and objectivity of the distribution system because allocation is based on actual cost analysis of educational programs in the given educational system rather than the politics; geography or personality of administrator, teacher, parent or community.
- "4. A balanced program is created whereby the entire program is interactive with each component of the unit cost of the basic program, thus a definitive relationship exists among all elements of the entire educational program.
- "5. The function of the state education agency is shifted to emphasize assistance to local school district program development.
- "6. The cost differential method of weighting pupils creates a complete system whereby allocation, program costs and pupil costs are all related and subject to evaluation. Adoption of the system facilitates constant evaluation of the cost differentials and permits rational change and yearly adjustment. The system also provides the basis for the establishment of an Educational Resource Management System."

Following a comprehensive discussion of the allocation dimensions of school finance models, Alexander (1969) suggested the inclusion of an educational need component in the state school finance model. The elements of this need component would include those educational need variables which research indicated represented deviate programs requiring special consideration in a financing scheme. The allocation model proposed by Alexander (1969, p. 225) is presented in Figure 1. The second component of the model addressed fiscal disparities among states or school districts. This was also a vital facet of equalizing educational opportunity across districts.

#### Equal Educational Opportunity--The Focus of the Present Decade

Johns and Salmon (1971, p. 120) noted that for the purpose of the NEFP Study the following definitions of equalization were used:

Financial equalization is most nearly accomplished when the following two factors are met: (1) the varying educational needs of the student population are taken into consideration before the allocations are made, and (2) the variation of the ability of the local school districts to support education is reduced or eliminated through the utilization of state resources.

Cohn and Millman (1974, p. 25), building on that definition, suggested that most states had finance programs which were labeled as equalizing; however, the extent of equalization depended in part on the following factors: "(1) consideration of educational needs; (2) absolute number of dollars devoted to equalization; (3) the existence of flat grants, and categorical grants; (4) encumbering ceiling, minimum, and save-harmless provisions."

Cohn and Millman (1974, p. 26) suggested that two questions must be answered before the specific plans for accomplishing educational

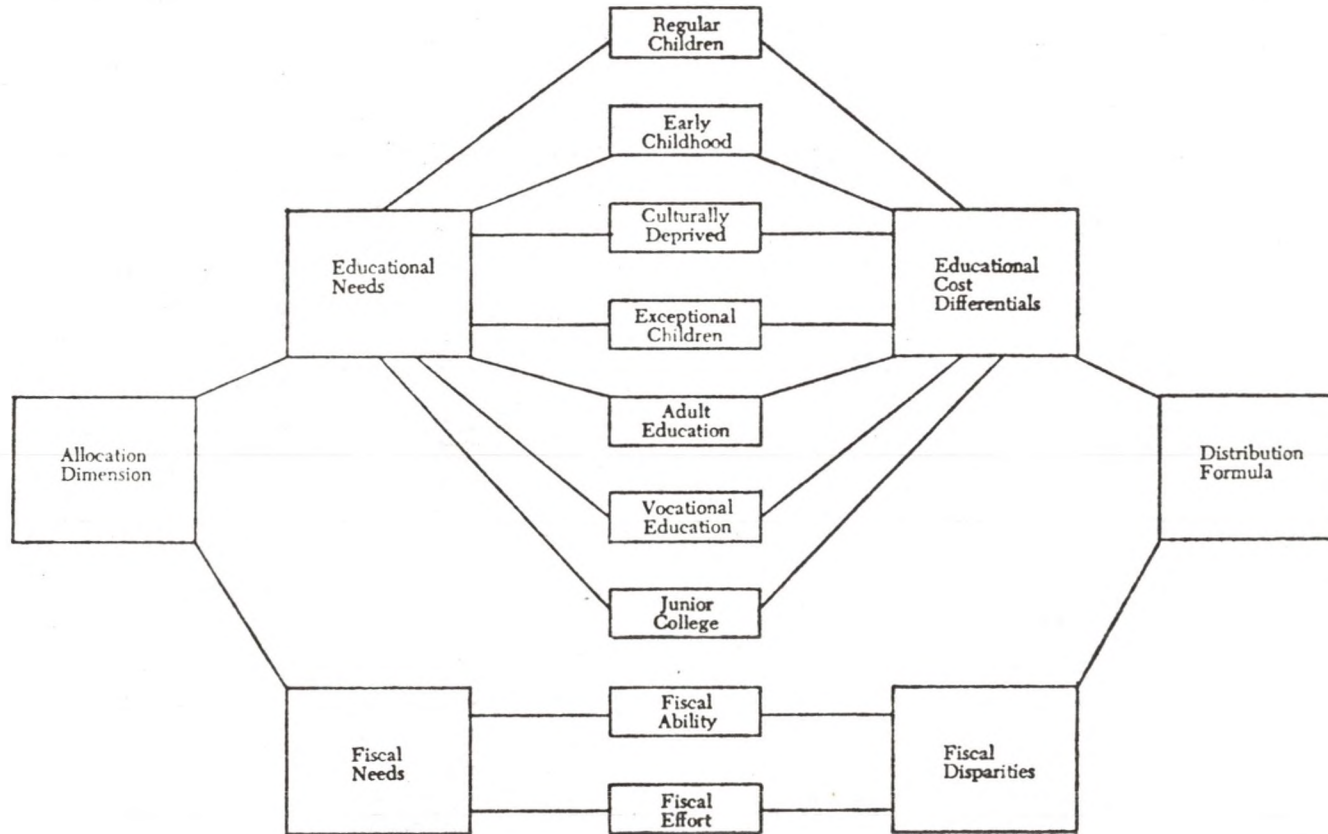


Fig. 1. Allocation Model.

equalization can be discussed. The questions were: "What is equalization?" and "Among which units is equalization to occur?" Acknowledging that there was limited consensus on the response to the first question, they suggested that the alternative be considered in the form of "input" and/or "output" factors:

INPUTS

Equalization of resources  
 Equalization of "educational opportunity"  
 Equalization of tax effort per educational expenditure  
 Equalization of program options

OUTPUTS

Equalization of student achievement  
 Equalization of student economic/non-economic benefits  
 Equalization of societal economic/non-economic benefits  
 (Cohn and Millman, p. 26).

Cohn and Millman (1974, p. 26) suggested the following alternatives to the question "Among which units is equalization to occur?":

Equalization among states  
 Equalization among districts within each state  
 Equalization among schools within each district  
 Equalization among families (in regard to educational expense)

Achieving Equal Educational Opportunity  
 Through the Courts

The alternatives suggested above by Cohn and Millman, reflected the results of extensive efforts to define the concept of equal educational opportunity and then design mechanisms for its application. Potential achievement of these goals was greatly enhanced by several major related events. One such event was the intervention of the judiciary in the school finance systems utilized in several states. The advocates of equal educational opportunity turned to the courts after legislative attempts seemed futile. However, the initial effort through this approach was also unsuccessful.

Heard in Illinois in 1968, the McInnis V. Ogilvie Case was the first case in which the plaintiffs claimed that a state school finance system which did not distribute funds on the basis of student needs was unconstitutional because a child may be denied equal opportunity. Pincus (1977) reported that the court dismissed the case because the plaintiffs were unable to suggest an acceptable means of measuring educational needs.

The breakthrough for the advocates of equal educational opportunity came with the landmark Serrano V. Priest decision. On August 30, 1971, the California Supreme Court determined that the California school finance system was unconstitutional. The court maintained that the system denied all children in the state equal protection under the law because the system produced major disparities in the amount of revenue available per student among the districts.

Wise (1971, p. 2) reported, in part, the text of that decision:

We are called upon to determine whether the California public school financing system, with its substantial dependence on local property taxes and resultant wide disparities in school revenue, violates the equal protection clause of the Fourteenth Amendment. We have determined that this funding scheme invidiously discriminates against poor because it makes the quality of a child's education a function of the wealth of his parents and neighbors. Recognizing as we must that the right to an education in our public schools is a fundamental interest which cannot be conditioned on wealth, we can discern no compelling state purpose necessitating the present method of financing. We have concluded, therefore, that such a system cannot withstand constitutional challenge and must fall before the equal protection clause.

The advocates then had a basis for spreading "reform" efforts to other states. Sherman (1976, p. 2) noted:

In the wake of Serrano, school finance laws in Texas, Minnesota, Kansas, New Jersey, Arizona and Michigan were struck down in rapid succession and challenges to similar laws were brought



in more than 30 states. The decision also stimulated a response by many state legislatures. New school finance laws were adopted in states such as Colorado, Florida, Kansas, Maine, Michigan and Wisconsin.

The momentum in school finance reform directed at bringing about greater equality in educational opportunity was slowed down as a result of the decision in the case of San Antonio Independent School District V. Rodriguez in March, 1973. The U. S. Supreme Court ruled that education was not a fundamental interest under the federal constitution thus reversing the lower court decision that the Texas system of school finance violated the U. S. Constitution (Sherman, 1976).

It was suggested by the U. S. Supreme Court action that future litigation of the Rodriguez type case be heard at the state level. The court also identified the state constitution or the state statutes as the basis for the litigation, rather than the U. S. Constitution. Sherman (1976, p. 3) noted the impact of the U. S. Supreme Court dictate:

Since Rodriguez, all pending legal challenge to state systems of school finance have been moved to state courts. The arguments in these cases have been grounded on two types of state constitution clauses; first, a state "equal protection" clause; and second, an "educational establishment" clause.

Odden (1978, p. 9) reported on the success of efforts to obtain greater equalization through the state courts. He noted:

Thus far, two states supreme courts have held education to be a fundamental interest of the state. In both the 1976 decision, of the California Supreme Court decision in the Horton V. Meskill case, the courts ruled, under the state equal protection clauses, that education was a fundamental interest of the state and that the then current education finance structures fulfilled no compelling state interest. The courts ordered both states to develop new laws that did not make education opportunity a function of local wealth.

Odden (1978) identified the basics for a number of suits either pending or recently heard. Basic to the litigation had been equal protection, fiscal neutrality, special needs, and the education establishment clause in the state constitution. On occasion the litigation had focused on a combination of the above.

#### A Definition of Equality

Although the courts had, in certain cases, delineated a definition for equal opportunity and had specified strategies for implementation, no universal definition or implementation strategy existed as indicated by a study of the related literature. Cubberley (1905, p. 17) had expressed the historic perception of equal educational opportunity when he stated, "Theoretically all children of the state are equally important and are entitled to have the same advantages." His later writings reaffirmed this same perception: "The evaluation of the principle in American educational philosophy that schools should provide equal opportunity to all youths regardless of social or economic background was firmly established by the early part of the twentieth century" (Cubberley, 1919, p. 491).

In the most recent literature the theorists focused more directly on the needs of the individual. Johns and Morphet (1969, p. 164) expressed this point of view when they wrote?

Equality of educational opportunity for all does not mean that every student should have the same program of education. Instead, it means that every person should have the opportunity for the kind and quality of education that will best meet his needs as an individual and as a member of the society in which he lives.

Pincus (1977, p. 1) recognized that the emphasis on student needs was basic to the discussion of the definition of equal educational

opportunity. He presented this observation: "Two different strands of argument have emerged--one about equal educational opportunity as defined by student need criteria, the other about differences in tax base per pupil among different school districts within a state."

Talbot (1974, p. 4) takes exception to the theory that equal educational opportunity can be expressed in terms of uniformity of curriculum or financial expenditures. He delineates how the individual needs of the student are to be met:

Equal educational opportunity does not imply uniformity of curriculum or financial expenditure. To the contrary, equal opportunity requires expenditures in relation to specific needs as determined by student characteristics and geographic locations of school units to guarantee student advancement in personal and academic goals as well as preparation for life's work.

The narrow definition of equality of educational opportunity as measured in terms of equal expenditures or services also drew criticism from Berke and Kelly (1971, p. 91):

. . . that acceptance of a definition of equal opportunity in terms of equal expenditures or services for all children is in opposition to what we know about the differential learning aptitudes of children; or, what we take to be a dominant goal of American education, that is furthering social mobility.

The definitions of equality by Talbot (1974) and Jordan (1976) and Pierce et al. (1975) concurred with the one offered by Wise (1971, p. 1) presented below:

A minimal definition of equality of educational opportunity is that (at least within a given state) the quality of a child's education should not depend upon where he happens to live, how wealthy the local school district is, or how highly his neighbors are willing to tax themselves for education.

Chambers, Odden and Vincent (1976, p. 1) apparently offered the broadest definition of equal educational opportunity: "There are,

however, at least three kinds of equalization: equalization of property wealth differences, equalization focused on student need and equalization of cost differences."

#### Defense for Inequalities

Chambers (1976) viewed equalization of property wealth, equalization on student need and equalization of cost differences as input factors which may reflect on the educational quality of the system. He then offered another dimension to the definition of equal educational opportunity. Maintaining that because no system exists to measure the contribution level of the various input factors, that equality be measured in terms of what is desired by the consumer as reflected in consumer choice. Chambers (1976, p. 4) posed the following propositions:

If consumers do not have a particular good or service, or are unwilling to purchase it at the offered price, that good or service will go unsold. Applied to the market for school inputs this analysis suggests that we rely upon the judgement, as revealed through market behavior, or local school decision-making (i.e., those who represent the consumers of educational services) regarding which school inputs do or do not contribute to educational quality.

It can be assumed that the approach suggested above could lead to disparities in the distribution of input and output factors. Other school finance theorists suggested circumstances under which disparities in put and output factors are acceptable.

Laverne (1972, p. 205) suggested justifiable unequal expenditures under the following circumstances:

- higher funding level for students with special handicaps and needs;
- higher funding for socially and economically disadvantaged children and/or those with health problems; and
- higher funding for high cost districts, such as sparsely populated rural areas that lack economics of scale or densely populated urban areas where land, teachers salaries, and other costs are high.

Jack Leppert et al. (1976) identified several different kinds of inequalities of need which create differential educational costs. These included difference in inherent learning ability or in readiness to learn in children; physical, emotional or mental disabilities which interfere with learning; learning disabilities resulting from environmental factors and the differences in the costs of certain programs for normal students.

#### The Relationship Between Cost and Quality

There has been a great deal of research investigating the relationship between costs/expenditures and the quality/amount of educational services. Much of the research has been directed towards confirming whether the observation supported by Berke and Callahan (1972, p. 136) is defensible:

Cost differentials account for some of the differences in expenditures; different salary levels for teachers of equal quality may explain away another portion of the disparity. Yet after all the discounts are made, one is left with the belief that disparities of these magnitudes must imply substantial differences in the quality of education received by students within each State.

In a study conducted by Finch (1967) sixteen different methods of computing educational costs were developed and correlated with a cluster of "quality related" factors which he referred to as quality related composite (QRC). The data for the correlation was obtained from 1,055 city school districts in 48 states. The QRC was composed of staffing adequacy variables, measures of teacher quality, and provisions for instructional materials. It was concluded in this study that the best predictor of educational quality was the total expenditure less capital outlay and transportation.

In a study which focused on the relationship between expenditures and student achievement, Brazer's (1974, p. 90) conclusion was: ". . . differences among school districts in levels of expenditure per pupil may or may not be associated with similar differences in such measures of output as achievement test scores or dropout rates."

Mort (1952), however, suggested a more positive relationship between input and output. He maintained that the studies on the relationship between expenditure level and quality of education add to the presumption that the relationship is strong. Mort (1952, p. 9) stated: "Studies or relationship . . . suggest that schools that spend more contribute more to the lifelong personal happiness of their charges and to the social and economic strength of Americans as a people."

Mort further suggested that the presumptive relationships appeared to hold at all expenditure levels. In addition he noted the relationship to be accelerating in nature. Increasing the expenditures ultimately increased the productive value to the nation. Mort (1952, p. 21) summarized a multitude of study results for both elementary schools and high schools on two major points:

- "1. School districts which spend more tend to buy more of the sorts of things which are at the time considered good by education in general.
- "2. Schools which spend more get a higher quality from administrators, supervisors, and classroom services as gauged by the best thinking of the time as to what is effective behavior for administrators, supervisors, classroom teachers, and other persons providing school services, even when no relationship is apparent between the pattern of behavior and the amount of money spent."

Carrington (1973) reporting on a study made by the California Senate Committee on school finance, indicated that the bulk of the funds spent by rich school districts went into the school payroll.

About two-thirds of the differences was spent on lowering the class size and another fifth on higher salary scales. It was his conclusion that in the final analysis it was the teachers, not the students, who were the beneficiaries of increased expenditures. He was concerned that the extra funds were used to make the job of the teachers easier rather than making the student program more responsive.

Fuller (1976) identified four areas where cost differentials were apparent--small schools, special education, vocational education, and staff costs. He then went on to identify salaries for professional personnel as the highest cost factor for any school district. It was also noted that the variance among districts of the average amount of professional training and practical experience of instructional and administrative personnel had a disequalizing effect.

Ching and Detering (1973) carried out a study to determine which factors influenced educational expenditures in the Nevada school districts. They found an inverse relationship existed between expenditures per student and the size of the districts. A negative relationship was determined between expenditures and rural urban status. They also found that if the average years of teaching faculty experience was accepted as a measure of quality of educational input, then expenditures and input quality were positively related. A direct positive relationship between wealth and expenditures was also determined.

A review of the studies on cost/quality relationships indicated a great variance in the variables considered by the researchers and the techniques utilized in the analysis. Based on personal experience in the field of school finance research, Chambers, Odden and Vincent (1976)

provided some insights to the analysis process. They begin by differentiating between educational costs and educational expenditures:

Education costs refer to the prices, including the differences in prices that school districts must pay for a specific level and quality of education services. Education expenditures, on the other hand simply refer to what different school districts spend, irrespective of the level and quality of services bought with those expenditures. Although variations in the costs of education resources constitute one portion of the variation in education expenditures, variations in the level and quality of education services as well as variations in pupil need also contribute to expenditure variation (Chambers, Odden and Vincent, 1976, p. 3).

Chambers, Odden and Vincent (1976) suggested two ways of measuring the differences in educational costs. The one approach measured the differences in the cost of living and assumed that these differences approximated the differences in costs of education. The second approach what economists call the market price schedule dealing directly with measures of price variations and the sources of those variations. The first approach was being utilized in the Florida State Education Finance System in 1978.

Chambers, Odden and Vincent attributed the differences in education expenditures across local districts to the variation in the amount (or quality) of education services purchased and the variation in the cost of providing those education services. It was important to note that generally speaking, the districts had an option on the quality or amount of service. However, the option on cost was much more limited.

There were a number of factors which impacted the variation in the amount or quality of services. Community interests and commitment and the price of competitive goods and services influenced the amount or quality of educational services. Chambers, Odden and Vincent (1976,



p. 7) reported that economic studies of school district spending patterns had revealed the following relationships, holding all else equal in each case:

- (1) communities facing higher relative costs of education services tend to purchase somewhat lower levels of services.
- (2) higher income communities tend to purchase relatively higher levels of education services,
- (3) communities that receive larger amounts of state and/or federal aid tend to spend more on education services and
- (4) communities with large amounts of commercial compared to residential property . . . tend to purchase larger amounts of education services.

The cost of producing a given quality of education services could also be influenced by various factors. Chambers, Odden and Vincent (1976) identified two factors--those affecting the supply of school inputs and those affecting the technology of education production. Supply factors included those aspects of the environment that influenced the supply, and thus the price of school inputs. The salaries of personnel were most susceptible to the influence of supply. Factors which influenced salaries were the attractiveness of the district and conditions in the general labor market in the district.

Chambers, Odden and Vincent (1976) recognized technology factors as a second set of factors that affected the cost of producing a given quality of education services. They maintained that the two components of the technology factors, pupils need and the scale of district operation, affected the perceived physical relationship between educational outcomes and the school inputs used to produce the outcomes. A given quality of education services unique to the needs of a particular group of children might be obtained by providing a particular combination of different kinds of school inputs. Specifically, the combination of school inputs used to provide a given level of education services

usually varied systematically with the characteristics of the student population and with the scale of operation of the school district. This concept was further explored in the next section.

#### The Relationship Between Size, Quality and Cost

The determination of an optimum school district size was the focus of much research. Optimum size would be characterized by the greater economies of scale without sacrificing the quality of the program. Basic to this goal was recognizing and dealing with the inefficiency expressed by Johns and Alexander (1971b, p. 22): "At least 80% of the 18,000 school districts in various states do not have sufficient enrollments to provide even minimally adequate programs and services without excessive costs. However, this generalization does not apply equally to all states."

The research had been focused on the relationship between such input and output factors as enrollment size, expenditures, student services, scope of program and achievement on standardized tests.

Sabulao and Hickrod (1971, p. 178) cited an abundance of research which showed a linear relationship between the size of a district and the services provided. They noted, ". . ., small schools provide less services and larger schools provide more services." Based on their research, they placed the optimum high school size relative to achievement on standardized tests in the range from 1200 to 1600 students in average daily membership. A U-shaped relationship between size and output measured in achievement scores was determined. However, when the variables of socioeconomic background of the students and the expenditures per pupil were included in the analysis, the relationship became linear and negative.

In essence, larger schools were associated with lower achievement test scores. They concluded that the lack of specific findings necessitated future study of the relationship between these variables.

Sabulao and Hickrod (1971, p. 179) analyzed a large number of studies on cost-size relationships. Their conclusions were:

A great many of these studies have suggested that the cost-size relationship is not linear. Specifically they have reported that high per-pupil costs are usually associated with both small schools and very large ones, with minimal costs for those in between. This is in keeping with economic theories of the firm where one expects to find both "economies and diseconomies of scale." That is, unit cost is usually higher for a small unit or output, but as the unit of output is increased unit cost per unit output decreases. However, as the unit of output is increased a point is reached where unit costs start to climb. Several reasons are advanced for this in the economic literature but they tend to boil down to (a) the indivisibility of some factors of production and (b) greater productivity resulting from a greater division of labor and specialization.

They noted in essence, that the increased cost for larger operations were often attributed to the cost of coordinating and managing the larger production processes.

Two studies reported by Sabulao and Hickrod (1971) were of particular interest. The first was done by Riew in Wisconsin in which it was determined that the optimum high school size, relative to cost, had an average daily membership of 1675 students. The second done by Cohn in Iowa, found the optimum size, in relation to costs, to have an average daily membership of approximately 1500 students. Sabulao and Hickrod (1971) conducted a study on the relationship between size and cost in Illinois school districts. They found the most economical district to be one made up of both elementary and secondary schools with a combined average daily membership of approximately 1500 students. They

also noted, as previous research had, that the U-shaped curve was present when observing the relationship between costs and size.

Chambers, Odden and Vincent (1976) found the optimal size for school districts in Missouri in relation to the economies of scale to be approximately 2500 students. Their observation was that numerous school districts with smaller student population as well as many of the larger districts were operating under diseconomies of small and large size.

Several of the studies looked at economies-of-scale in the relation to district size rather than building size. Johns (1975), after developing and applying a school finance model for the state of Florida, found the optimum economy of scale was attained after a district reached the size of from 25,000 to 50,000 students. Osborn (1970) conducted a study on the relationship between size and per pupil expenditure and a number of other variables. He concluded that the school district with an enrollment of approximately 1500 students provided the greatest economies of scale. Size was found to be the best predictor of cost.

Hill (1964, p. 49) offered this observation relative to the literature on cost-size-quality studies:

A review of literature on this subject revealed the general conclusion that as sizes of schools had increased, the quality of education increased; that increases in expenditure had resulted in increase in the quality of education; as size increased, expenditures decreased. The general conclusion, however, was not without contradictory evidence.

Hill (1964) carried out a study designed to determine the influence of size of school and school expenditure on the character of education in those North Dakota school districts providing a grade one through

twelve program. School character was determined by comparing the school's performance with the school accreditation standards established by the Department of Public Instruction and the responses on the Community School Criteria checklist which was sent to all school administrators. Hill (1964, p. 52) reported the following conclusions:

- "1. In North Dakota 12-grade school districts there was a highly significant negative relationship between cost and size. In school systems of equal character, smaller schools cost more.
- "2. Non-significant positive correlations between cost and each of the two measures of character were found when size was partialled out. When size was not controlled, however, negative correlations between cost and the two measures of character were revealed. The two results appeared contradictory and resulted in opposite presumptions of meaning; the first result, however, was based on more precise investigation. Therefore, statistically controlling the size variable in the size range represented in North Dakota schools was considered imperative in any future study of North Dakota schools.
- "3. Highly significant relationships between size and each of the two measures of character were found. Schools with larger enrollment possessed more characteristics deemed predictive of educational quality than did schools with smaller enrollments.
- "4. Size differentials were more potent determiners of high character scores than were cost differentials. Small schools were not necessarily assured of significant increased character scores with increased expenditures when size remained constant."

Cohen and Hu (1973) after analyzing the costs of operating 108 vocational programs in Michigan schools rejected the concept of economies of size by district and proposed that program-by-program analysis be made. They concluded that school consolidation for example, may not reduce per pupil costs unless enrollments increased in programs for which scale economies apply.

#### Factors Which Contribute to Added Costs

Johns (1975) attributed the increased cost of education in small schools not only to the low pupil/teacher ratio and the dispersion of the

students, but also the increased administrative and maintenance costs and increased costs of materials because of a lack of volume buying.

Pierce et al. (1975) studied the effects of the school finance system of various states on urban school systems. They noted that central cities frequently had high property wealth per student, high costs, low school tax rates, high non-educational costs and a low percentage of voters with children in the public school. They contended that state finance system which equalized fiscal ability tended to reduce state funds to the urban areas.

Pierce et al. (1975) attributed the financial problems of urban schools to four general factors: higher costs, greater need, higher noneducational taxes and discriminatory state aid system. They suggested that land, buildings, teacher salaries and maintenance were more costly in urban areas than in rural areas. The percentage of school children needing special educational programs was also recognized as being greater. The competition for available funds for non-educational services had been responsible for diverting funds away from educational services. They recognized, however, that since the Serrano decision in 1971, twenty two states had revised their state school finance systems. In the majority of the states the changes had resulted in major benefits for the urban areas.

A review of the research on optimum size would not be complete without giving recognition to the ominous warning posed by Sabulao and Hickrod (1971, p. 190):

One final warning is in order. Even if research in the economics of education clearly demonstrated that increased size resulted in cost saving, better services, and perhaps even better output (where output was measured in terms of

student achievement scores) a blanket edict to school districts to grow larger might still not be justified. Size, after all, is also related to faculty morale, student climate, innovation or the lack of innovation, and a great number of other administrative concerns. Furthermore, each of these relationships may well be curvilinear rather than rectilinear and thus greatly complicate the analysis. "Optimum size," it seems is a veritable Pandora's Box and once opened it may take a host of skilled researchers a very long time indeed to close the lid.

It can be concluded from the study of the literature that certain conditions as: Special student programs, cost-of-living, teacher salaries, geographic location and student dispersion may contribute to the atypical cost of providing education in a district. As a result, these conditions may adversely affect the quality of the educational program in the school, and thus the educational opportunities of the students in the district. The focus of much of the research of the late sixties and early seventies was to develop a means of nullifying the negative impact of these conditions on the educational opportunities of the students in school districts.

#### Weighting--A Means of Accommodating the Variation in Needs

It was noted (Johns and Alexander, 1971a) that among the major goals of the National Educational Finance Project (NEFP) was the identification of target populations with special educational needs and the measurement of cost differentials among different educational programs. The NEFP accepted the weighted pupil unit as the means for comparing the differences in cost between the regular and special programs in a school.

Johns and Alexander (1971a, p. 270) described the procedure for setting the weighting under the weighted pupil technique:

The weighted pupil technique is based on the assumption that the pupil-teacher ratio is less and operating costs are higher

for certain special programs and under certain conditions than for typical elementary school programs. The method usually used is to start the weighting of pupils by assigning the weight of 1 to the cost per pupil of regular pupils enrolled in elementary schools. If it is found that the cost of educating exceptional pupils (handicapped pupils) is approximately twice the per pupil cost of educating regular pupils because the per pupil-teacher ratio is only one-half of the per pupil-teacher ratio for regular elementary pupils and operating and capital outlay costs are also about twice the amount per pupil needed for regular elementary pupils, then the equivalent full time pupils enrolled in exceptional education classes are given a weight of two. Approximate weights are also assigned to pupils enrolled in the other high cost programs. It costs more per pupil to provide educational opportunities for pupils enrolled in small isolated schools which because of distance or geographical barriers cannot be consolidated with other schools. The pupils enrolled in small, isolated schools can also be appropriately weighted.

Weightings were converted to dollar amounts by multiplying the cost of educating the regular elementary pupil by the weighting assigned to students in special categories. If the cost of educating a regular elementary student was \$500 the cost of educating a student with a weighting of "2" would be \$1000 (Johns and Alexander, 1971b).

A second method for determining differential costs was in the "adjusted instruction unit" technique. Under this technique the regular elementary classroom was considered an "instructional unit" and is weighted rather than individual students. An arbitrary student number is assigned to that unit. If a number of 25 is assigned, and a determination is made that the class size for compensatory education should be one-half that of the regular classroom, then approximately 12.5 students would be assigned to the compensatory program (Johns and Alexander, 1971b). It was noted that the instructional unit of measurement was not often referred to in the literature. It should also be noted, however, that the terms of "index" and "indices" were often used as synonyms for the term "weightings."



Jordan (1976, p. 535) observed that states which had adopted weightings often arrived at those weightings through one of the following two means: "Sample districts have been drawn from a state and cost accounting studies conducted to determine the appropriate indexes, or data from other state and national studies have been homogenized into 'reasonable ranges.'" Jordan (1976, p. 535) suggested that a third method be considered:

Educational theorists have been intrigued by the possibility of a third alternative in which a team of experts would identify the level of funding which should be provided for a basic educational program and the supplements required for the adequate funding of various special programs.

Leppert et al. (1976) supported three similar approaches for setting the weightings. The first utilized an acceptable cost accounting procedure to determine what is being spent on different programs. The average of the many samples became the weighting. The second simply set the weights by legislative judgements. Leppert et al. (1976, p. 14) preferred the third:

A third method of setting weights and the best one if the weighted student system is to be fully used to establish educational policy, requires that key persons from the appropriate body conduct a study of anticipated program costs based on a set of desired or exemplary program delivery systems. Such a study must begin at the program level and decisions must be made as to how to gain optimum performance from deaf, blind or average pupils. Although details of staffing and materials selection are best left to local education agencies, some central administrative judgements must be made, based upon a determination of the most cost-effective delivery system for each program funded. The best neutral talent should be organized to establish the elements of these systems. When these judgements have been made the programs can be costed out, again by neutrals, and ratios between programs then can be derived to provide the pupil weights.

Mort and Reusser (1951, p. 496) suggested that the following steps be observed by the individual states in determining the appropriate pupil weightings:

- "1. Determining the expenditures ratio between high school and elementary pupils.
- "2. Determining the sparsity correction—either as a single overall sparsity correction to take care of both small schools and transportation or as a small-school correction and a transportation correction.
- "3. Determining the cost-of-living correction.
- "4. Determining what treatment shall be given debt service and capital outlay."

Mort and Reusser (1951) recognized three areas or categories of weighting: secondary, sparsity, and cost of living. McLoone (1965) observed similar categories of weightings: those associated with differences among grade levels, those associated with school district size and those associated with the training and experience of teachers. Leppert et al. (1976, p. 14), having completed a survey of weighting being used in the various states, noted the following general practices:

Several varieties of weighted funding programs are being established across the country. Although none is simple, all fall into several basic categories.

One category involves the selection of an age group or grade level group and designation that any member of that group be entitled to a distinct weight regardless of the program offered or of the specific need abilities of that person.

A second type of program grouping is based on specific programs offered, say a certain type of vocational education, and then providing a special weight to any student taking that program.

A third system involves qualifying the student based on the student's ability and knowledge, or lack thereof, or on the student's physical characteristics, as in the case of most exceptional child programs.

A fourth alternative is funding a supplement or giving an additional weight based on local demographic characteristics such as lack of family wealth, high local cost of school operations or sparse population. This alternative is usually in the form of gross district-wide adjustments over and above basic student weightings.

### A Model for Developing Weightings

The National Education Finance Project developed a scale for weighting the pupils in average daily membership in a prototype school. The weights for the educational programs in the model were developed through studies as part of the project. The weights for pupils attending necessary isolated schools were developed by the research staff from current practices. Although all of the data was gathered in school systems considered to have good programs, the authors were quick to point out that what was considered a current practice at any one time may later become outdated (Johns and Alexander, 1971a). The model of a prototype weighting system for a state school finance program is shown in table 1 (Johns and Alexander, 1971a, p. 272).

Satellite studies, as part of the National Finance Educational Project, were conducted in a number of states including Delaware, Florida, Kentucky, South Dakota, Mississippi and Texas. In each of these studies, a scale of weightings was developed to accommodate the school finance needs of that state (Institute for Educational Finance, 1974).

A study of the literature showed that there may be both advantages and disadvantages to adopting a weighting system for distribution. Leppert et al. (1976, p. 12) cited the following specific advantages to a system based upon a weighted pupil unit:

- "1. An educational emphasis on the child.
- "2. A preciseness of support level.
- "3. Easy understanding for the layman.
- "4. More district independence from a central agency because requests for teacher units and the associated conditions may be minimized.

TABLE 1

## SCALES USED FOR WEIGHTING PUPILS IN THE PROTOTYPE STATE

Programs	Prototype State Target Population <sup>a</sup> (ADM)	Weighting For Cost Differential <sup>c</sup>	Weighted Pupils
Col. 1	Col. 2	Col. 3	Col. 4
Early Childhood			
3 year olds	30,946	1.40	43,324
4 year olds	50,813	1.40	71,138
Kindergarten (5 year olds)	56,231	1.30	73,100
Sub Total	<u>137,990</u>		<u>187,562</u>
Non-Isolated Basic Elementary and Secondary			
Grades 1-6	301,777	1.00	301,777
Grades 7-9	182,961	1.20	219,553
Grades 10-12	124,693	1.40	174,570
Sub Total	<u>609,431</u>		<u>695,900</u>
Isolated Basic Elementary and Secondary <sup>b</sup>			
Elementary Size			
150-200	6,332	1.10	6,965
100-149	3,155	1.20	3,786
less than 100	3,789	1.30	4,926
Junior High			
150-200	2,266	1.30	2,946
100-149	1,177	1.40	1,648
less than 100	1,299	1.50	1,948
Senior High			
150-200	849	1.50	1,273
100-149	381	1.60	609
less than 100	126	1.70	214
Sub Total	<u>19,374</u>		<u>24,315</u>
Special (Exceptional)			
Mentally Handicapped	16,089	1.90	30,569
Physically Handicapped	2,668	3.25	8,671
Emotionally Handicapped	19,696	2.80	53,149
Special Learning Disorder	5,335	2.40	12,804
Speech Handicapped	31,152	1.20	37,382
Sub Total	<u>74,940</u>		<u>144,575</u>

TABLE 1--continued

Programs	Prototype State Target Population <sup>a</sup> (ADM)	Weighting For Cost Differential <sup>c</sup>	Weighted Pupils
Compensatory Education			
Basic: Income under \$4,000	131,165	2.00	262,330
Vocational--Technical	46,502	1.80	83,704
Total All Categories (Preschool-Grade 12)	1,019,402		1,398,386

<sup>a</sup>Full time equivalent membership

<sup>b</sup>Elementary schools must be 10 miles or more by road from another elementary school in order to be weighted for isolation; junior high schools 15 or more miles from another junior high school and senior high schools, 20 miles or more from another senior high school.

<sup>c</sup>These weights vary slightly from the weights reported in Chapter 6 because a few additional districts were added to the sample from which the averages were computed.

- "5. Equalization based on student need since the incidence of
- "6. Adequate support for high-cost programs by providing proportionally greater state funding.
- "7. An opportunity to direct major program support policy from the level most responsible for."

The option of allowing a state to consolidate all previous categorical grants into a single funding plan was considered by Leppert et al. (1976) as the major advantage of the weighting system. Included in the consolidation could be such categorical programs as vocational education, special education and compensatory programs. A second equally important advantage was the flexibility allowed the district in designing programs to meet the needs of the special student. They

also noted that the districts may be given greater freedom to design and experiment with new programs.

Leppert et al. (1976) also recognized some disadvantages to a weighted pupil system. Districts with the freedom to plan the special programs may choose to keep the cost of a special program to a minimum and divert the funds to increase spending in the regular program. The lack of research data upon which the initial weightings could be based was a second concern. This was especially true in some areas of special education. A third concern was that children may be misclassified for fiscal gain.

In order to minimize potential abuse of the pupil weighting system, a number of states have legislated controls. Leppert et al. (1976, p. 13) noted:

To keep weighting systems fiscally manageable legislatures in several states also have instituted "special program caps" on their weighting systems. This places an upper limit on the number of students who will be eligible to receive the special weighting in any of the special program areas. These "caps" have been established for special education, vocational education, bilingual, and early childhood programs in New Mexico; for special education and overall expenditures in Utah; and in all exceptional vocational and adult programs in Florida. Minnesota, with a relatively simple weighting system, has reportedly not found "caps" to be a necessity. These caps, however, could work a hardship on districts with disproportionate shares of these students.

Rossmiller and Moran (1973, p. 76) listed the following limitations of cost indices (weightings): (1) the cost indices is a state average, thus one half of the districts spend more and one half spend less; (2) the cost indices typically reflect what is currently being done rather than what could or should be done; (3) cost indices reflect the differences in the cost of regular programming and

special programming without regard to how wisely and efficiently funds were expended; (4) local factors such as differences in salaries, instructional materials, pupil/teacher ratio and special transportation may impact costs and should be recognized in the weighting system.

Jordan (1976, p. 535) also expressed some concern relative to implementing the concept:

The basic problem is the willingness of the legislature to provide for periodic adjustments in the allocation indexes. Periodic adjustments facilitate the improvement of educational programs and prevent the weights from becoming so institutionalized that they bar educational change (as the classroom unit has in some instances). A further issue is whether or not the legislature will provide adequate funds to support the program after weights have been incorporated.

#### Alternative School Finance Systems

The state legislature in each state designs the school finance system for that state and then appropriates the necessary funding to carry out its implementation. Although this process in developing the state finance system led to a great variation in the plans, it was possible to make certain broad classifications of the alternative models.

Johns and Alexander (1971a) pointed out that school finance models have two major dimensions--the allocation dimension and the revenue dimension. They classified the principal types of state school finance models under the allocation dimension as:

- "1. Flat Grant Models. Under this type of model, state grants are allocated to local school districts without taking into consideration variations among the districts in local taxpaying ability. There are two major variations of this model as follows:
  - a. A uniform amount per pupil, per teacher or some other unit of need is allotted without taking into consideration necessary variations in unit costs of different educational programs and services.

b. Variable amounts per unit of need are allocated to local school districts which reflect necessary variations in unit costs.

"2. Equalization Models. Under this type of model state funds are allocated to local school districts in inverse proportion to local taxpaying ability. In other words, more state funds per pupil, per teacher, or other unit of need are allocated to the districts of less wealth than to those of greater wealth. As in the flat grants model, there are two main variations in the equalization model as follows:

a. In computing the cost of the foundation program equalized, a uniform amount is allowed per pupil, per teacher or other unit of need without giving consideration to necessary variations in unit costs of different educational programs and services.

b. Variable amounts per unit of need which take into consideration necessary variations in unit costs are used in computing the cost of the foundation programs (Johns and Alexander, 1971a, p. 268).

Johns and Alexander (1971a, p. 268) listed the principle types of state school finance models under the revenue dimension when federal funds are excluded as: "(1) Complete State Support Model, (2) Joint State-Local Support Model, and (3) Complete Local Support Model."

Johnson and Alexander (1971a, p. 269) added the additional revenue models when federal revenue was included: "(1) Federal-state support model, (2) Federal-state-local model, (3) Federal-local model, and (4) Complete federal support model."

Goertz, Moskowitz and Sinkin (1978, p. 14) proposed the following perception of a state school finance plan or program: "A state's school finance plan takes the form of one or more mathematical formulas, One plan can include an equalization formula, categorical aid program, and minimum or save-harmless grants."

Goertz, Moskowitz and Sinkin (1978) had identified the types of state aid formulas as: equalization formulas, non-equalizing general aid formulas and categorical aid. Under types of equalization formulas they had identified: minimum foundation program, guaranteed tax base,



percentage equalizing, and district power equalizing. Full state funding recognized as an option to the shared cost formulas listed above. Under a shared cost formula, aid is allocated in inverse proportion to wealth. They had identified minimum aid or flat grants and save harmless provisions as the major types of non-equalizing general aid formulas. State allocations designated to address specified educational needs, such as transportation, compensatory education, and vocational education were classified as categorical aid.

Garms, Guthrie and Pierce (1978) concurred with Jargowsky, Moskowitz and Sinkin (1976) who reported that since the turn of this century four major types of state school finance systems have emerged--minimum foundation, percentage equalizing, guaranteed valuations and power equalization. Garms, Guthrie and Pierce (1978) also supported the following observations by Jargowsky, Moskowitz and Sinkin (1976, p. e): "Although these alternatives differ in their conception of the state and local role, and in the attributes of equalization which are highlighted, they all are based on the same components--tax effort, tax yield and wealth." In this case wealth was defined as equalizing property valuation per pupil.

#### Allocation Models/Formulas

In the following section a description of the major categories of state school finance models or school aid formulas are presented. Two definitions were provided for the flat grant which was considered the major non-equalizing approach. Goertz, Moskowitz and Sinkin (1978, p. 14) provided this perception of flat grants:

A flat grant is a payment made by the state to local school districts based solely on the number of pupils enrolled and/or the number of personnel employed. Under the Flat Grant program, all districts receive the same amount of state aid per pupil. In this system, the wealth and effort of a district are not considered in the allocation of the aid.

Johns and Alexander (1971a, p. 44) added this dimension to the definition of the flat grants: "This model provides for a basic state grant to each district based on the number of students without taking into account variations among the districts in local taxpaying ability."

Garms, Guthrie and Pierce (1978, p. 189) has identified the following weaknesses of flat grant models:

There are, of course, practical problems with the way flat grants are administered. The principal difficulty is that there is no way of knowing how much education is minimally necessary. Consequently, there is no way to determine how much it costs. Instead, the size of the flat grant is determined by the political process, and, because there are many other demands on the state treasury it is inevitably lower than the level at which even flat grant proponents believe a minimal education can be purchased. Another problem we have already alluded to is that the flat grant typically lacks any consideration of the special needs of atypical children. Nor does it account for the fact that it costs more to provide a minimally adequate education in some school districts than in others. However, these are relatively technical problems that can be remedied.

School finance models generally categorized as equalization formulas were treated next. The most widely used formula is often referred to as the minimum foundation program or simply the foundation program. This formula is also referred to as the Strayer-Haig formula, thus, crediting the two individuals who attributed this concept of school finance. Strayer and Haig (1923, p. 174) provided the following rationale for equalizing the school finance system:

To carry into effect the principle of "equalization of educational opportunity" and "equalization of school support" as commonly understood it would be necessary (1) to

establish schools or make other arrangements sufficient to furnish the children in every locality within the state with equal educational opportunities up to some prescribed minimum; (2) to raise the funds necessary for this purpose by local or state taxation adjusted in such manner as to bear upon the people in all localities at the same rate in relation to their tax-paying ability, and (3) to provide adequately either for the supervision and control of all the schools, or for their direct administration, by a state department of education.

Strayer and Haig (1923, p. 174) offered the following rationale and procedure for the equalization of state fiscal resources:

The essentials are that there should be uniformity in the rates of school taxation levied to provide the satisfactory minimum offering and that there be such a degree of state control over the expenditure of the proceeds of school taxes as may be necessary to insure that the satisfactory minimum offering shall be made at a reasonable cost. Since costs vary from place to place in the state, and bear diverse relationships to the tax-paying abilities of the various districts, the achievement of uniformity would involve the following:

- (1) A local school tax in support of the satisfactory minimum offering would be levied in each district at a rate which would provide the necessary funds for that purpose in the richest district.
- (2) This richest district then might raise all of its school money by means of the local tax, assuming that a satisfactory tax, capable of being locally administered, could be devised.
- (3) Every other district could be permitted to levy a local tax at the same rate and apply the proceeds toward the costs of schools, but -
- (4) Since the rate is uniform, this tax would be sufficient to meet the costs only in the richest districts and the deficiencies would be made up by state subventions.

Borson et al. (1978, p. IV-2) provided a more recent description of this school finance plan:

Under the foundation plan, the state guarantees a minimum or foundation level of expenditures to each district. To participate, a district must levy a state mandated local tax rate. The state supplies the local district with the difference between the foundation level of expenditures and the amount of local revenues that the district can raise.

Similar definitions were offered by Goertz, Moskowitz and Sinkin (1978), Garms, Guthrie and Pierce (1978) and Pierce et al. (1975). Johns and Alexander (1971a, p. 236), however, offered an expanded dimension:

a. Strayer-Haig Formula-Unweighted Measures of Need

Educational needs are calculated in terms of a uniform amount per pupil or per teacher or some other method that ignores the variation of educational needs of the student population and the yield of a required local tax effort in proportion to ability is deducted from the designated cost of the program in order to determine the state allocation.

b. Strayer-Haig Formula-Weighted Measures of Need

Educational needs are calculated in the terms of weighted unit costs such as weighted pupils or adjusted instruction units which take into consideration necessary unit cost variations and the yield of a required local tax effort in proportion to ability is deducted from the designated cost of the program, in order to determine the state allocation.

Garms, Guthrie and Pierce (1978) identified two major concerns relative to the foundation program formula. The first concern related to the assumption that the foundation amount is always large enough to support a minimally adequate educational program for all students in all districts. The foundation amount was based on the average of expenditures. Thus, it was possible to have schools expending above and below that amount. The second concern related to determining the appropriate local contribution. If it was set too low, the school district would be unable to raise a sufficient amount of resources. Goertz, Moskowitz and Sinkin (1978) noted that this model may allow a district to increase its local effort. Known as a "local leeway," this add-on may result in a disequalizing effect when the leeway was increased excessively.

A second equalization formula was the guaranteed tax base. Goertz, Moskowitz and Sinkin (1978, p. 18) provide this view of a guaranteed tax base formula:

While the Minimum Foundation Program emphasizes the state guaranteed spending level, the Guaranteed Tax Base Plan emphasizes the state-determined tax base and the district's local tax effort. First, the Guaranteed Tax Base Plan is designed to assure that every district in the state can act as though

it has a tax base the same as some state set level. Under a guaranteed tax base program the local base program the local school district chooses its tax rate for education. This tax rate is then applied to the guaranteed tax base and the actual tax base for the school district. State aid is the difference between what would be raised with the guaranteed tax base and what can actually be raised from the local tax base. The greater the differences between actual and guaranteed wealth, the larger the amount of state aid.

Boroson et al. (1978) supported the definition of guaranteed tax base provided by Goertz, Moskowitz and Sinkin (1978). Johns and Alexander (1971a, p. 237) offered another dimension to the design of the guaranteed tax base formula, that of the weighted or unweighted pupil or teacher unit:

Under this plan, the state guarantees to each district a fixed valuation or tax yield per pupil or per teacher unit. The pupil or teacher units may be weighted or unweighted. Basically, this model provides each district the difference between the yield of a given tax levy on its equalized assessed valuation, or the yield of the same tax levy on the valuation per pupil or per teacher unit which the state has previously guaranteed for the state. This plan is only a variable way of achieving the same results as the Strayer-Haig model.

A third equalization model was the percentage equalizing formula. A description of this formula by Jargowsky and Sinkin (1976, p. 4) was:

This formula stressed local dominance in expenditure decisions and was designed to assure that the state would support a share (or percentage) of locally determined educational costs in the average district. The state determined the proportion of school costs it would support, but the districts determined the expenditure level. This created an incentive for increased district expenditures, with poor districts receiving more from the state per unit of tax effort than rich districts.

Boroson et al. (1978), Johns and Alexander (1971a), Goertz, Moskowitz and Sinkin (1978) and Garms, Guthrie and Pierce (1978) shared similar interpretations of this model. Garms, Guthrie and Pierce (1978)

had identified several problems with this model. A major problem was that the state was obliged to match the local budget regardless of its size. This was an unattractive prospect for lawmakers and state officials, who feared the possibility of "wholesale" raids on the state treasury. Additional problems included the possibility that some districts would get no equalization money at all because it would be possible to raise the full amount locally. It was possible that some districts, which have large resources might spend a large amount of money knowing they would get some reimbursement from the state. Pierce et al. (1975) referred to the above plan as the available wealth equalization plan. They concurred both with the description provided by Jargowsky, Moskowitz and Sinkin (1976) and the concerns identified by Garms, Guthrie and Pierce (1978).

The fourth type of equalization formula was called power equalizing. The rationale behind the power equalization concept was verbalized by Coons, Clune and Sugarman (1970). They were credited for introducing this concept of school finance. Coons, Clune and Sugarman were, no doubt, influenced by the work of Updegraff (Johns, Alexander and Jordan, 1972) who wished a state finance program to encourage and reward local effort. Boroson et al. (1978), Jargowsky, Moskowitz and Sinkin (1976), and Garms, Guthrie and Pierce (1978) concurred with the interpretation of power equalizing as proposed by Goertz, Moskowitz and Sinkin (1978). Garms, Guthrie and Pierce (1978) noted that the rationale for district power equalizing was fundamental to the arguments advanced by the advocates of equal educational opportunity in the Serrano and other school finance "equal protection" cases. Goertz, Moskowitz and Sinkin (1978) presented the following description of the model:

District Power Equalizing (DPE) was one of the first modifications of an existing equalization plan to be introduced. DPE is thoroughly consistent with the "capacity equalization" tradition which distributes state aid in inverse proportion to local taxable resources. However, it is innovative in its emphasis and substance. DPE focuses on the effort factor and guarantees that for any given level of tax effort, all districts will be guaranteed an equal level of spending through a combination of local and state revenue.

District Power Equalizing assures that each district will receive an equal yield for an equal effort. This plan is usually presented as a table of guaranteed expenditure levels which correspond with tax efforts established by the state.

Jargowsky, Moskowitz and Sinkin (1976, p. 5) provided an interesting dimension to the study of the equalization formulas. They proposed this perception:

Although the equalizing ability of shared cost formulas based on these general approaches varies with specific implementations, in their pure form the formulas are conceptually the same. Aid in each of these formulas is allocated in inverse proportion to wealth, which is generally measured by property valuation per pupil. In addition, various formulas highlight different attributes of equalization. For example, Percentage Equalizing highlights the state share, the Foundation Program highlights the guaranteed expenditure level. Guaranteed value highlights the state guaranteed valuation and DPE highlights the effort factor.

Jargowsky, Moskowitz and Sinkin (1976) had developed a system of formulas which supported their contention mathematically. Boroson et al. (1978) supported the perceptions offered by Jargowsky, Moskowitz and Sinkin (1976).

It was noted that some finance theorists presented full state funding as an alternative equalization formula. Johns and Alexander (1971a) placed full state funding under the revenue dimensions of funding rather than under the allocation dimension. Goertz, Moskowitz and Sinkin (1978, p. 24) recognized full state funding or full state assumption as an equalization formula and describe it as follows:

Full State Assumption has been offered as an alternative to shared cost formulas. Theoretically, Full State Assumption is a situation in which the state contributes 100% of the educational expenditures in the state, and the local districts contribute 0%. Variations in educational expenditures are based on the need rather than the wealth of the local districts.

The basic difference between Full State Assumption and a shared cost formula is that the state determines the ultimate level of education expenditures in the district. Also, the revenue raised under Full State Assumption is somewhat more flexible. Local school districts primarily depend on the property tax to raise funds. If the state assumes full responsibility for funding education it could levy a state wide property tax or it could take the additional revenues from its treasury through its existing tax structure.

Garms, Guthrie and Pierce (1978, p. 199) added the following perception to full state funding:

Full state funding, on the other hand, permits no geographical variation in school expenditure. It does not, however, preclude adjustments for offering educational needs or differences in the cost of producing education of equivalent quality. It does mean that, other things being equal, students will be recipients of equal monetary provisions. The only means by which this can be accomplished operationally is for the state to mandate the expenditure level, and equity demands that the expenditures be supported by statewide taxation. (The state could mandate an expenditure level but require it to be supported solely by local taxation. The resulting large differences in tax rates would be manifestly unfair and would not constitute wealth equalization.) Therefore, this method of financing the schools has become known as full state funding, or full state assumption.

Odden (1978) had reviewed the changes made in the various state finance systems beginning in 1970. He grouped the various formulas into three major categories. After each category he listed the state whose finance system would fall into that major category. The results were as follows:

- "1. High-level foundation programs such as those in Arizona, Florida, Indiana, Iowa, Minnesota, New Mexico, North Dakota, South Carolina, Tennessee, Utah and Washington.
- "2. Foundation programs augmented by guaranteed tax base or guaranteed yield programs for districts choosing to spend



above the foundation level, such as those in California, Maine, Missouri, Montana, South Dakota and Texas.

"3. District power equalization, guaranteed tax base, guaranteed yield or percentage equalization programs that provide equal revenues from state and local sources for equal tax rates such as those in Colorado, Connecticut, Illinois, Kansas, Michigan, New Jersey, Ohio and Wisconsin (Odden, 1978, p. vii)."

#### Planning the State School Finance System

The school finance system of a state details the plan for financing elementary and secondary education in that state. The procedures followed by the states in developing their state school finance system was a focus of some school finance theorists. Morphet (1970, p. 23) noted:

Few people would attempt to defend the present provisions for financing schools in any state or at the federal level as much more than the results of a series of expedient decisions and actions that have often been based on indefensible demands by pressure groups, compromises, and attempts to meet the most pressing or obvious needs. Of course, there has been some planning in a number of states and some provisions are reasonably defensible under present conditions, but even the most defensible will not suffice to meet emerging needs. Fortunately the current National Educational Finance Project studies should help to highlight existing inequities and inadequacies and direct attention to some of the most promising possibilities for the future. But few of these findings and recommendations will be implemented meaningfully unless in every state and at the federal level there is much more serious effort to undertake systematic long-range planning than is evident at the present time.

Odden (1978, p. 27) recognized the increasing complexity of designing the state school finance system when he stated:

Although many of the substantive issues surround school finance are economic, education finance policy is made by state legislators who must allocate the scarce resources of the states among numerous functional areas. In this light, it is important to note the changes that have occurred and are occurring in the politics of public education policy making. No longer do state legislators rely solely on the education lobby for advice on the policy changes that need to be enacted each

year. The politics of education is becoming increasingly complicated and fragmented with competition both within the education circle and between educators and noneducation groups that are demanding other governmental services.

Odden (1978) requested that a cross-state study of the politics of school finance reform be carried out in either a policy making construct or political science construct or both. He suggested that the results of the study could be: "(1) useful to policy makers in non-reform states, (2) helpful in explaining the elements of reform apart from individual state characteristics, and (3) a contribution to the developing constructs of the politics of education" (Odden, 1978, p. 28).

Johns and Alexander (1971a, p. 269) have identified the following major policy decisions that every state legislature must make in respect to financing the public schools:

- "1. What educational programs and services will be funded in the states' school finance plan and for whom will these programs be provided?
- "2. Will state funds be apportioned on the flat grant basis which ignores differences in the wealth of local school districts or on the equalization basis which provided more state funds per unit of educational need to districts of less wealth than to districts of greater wealth?
- "3. Will necessary variations in unit costs of different educational programs and services be recognized or ignored in allocating state funds on either the flat grant or equalization basis?
- "4. What proportion of school revenue will be provided by the state and what proportion from local sources?
- "5. How progressive (or regressive) will be the state's tax structure?
- "6. To what extent will the state provide for financial equalization of educational opportunity among school districts of the state?
- "7. What are the financial needs of the public schools and how nearly can those needs be met taking into consideration needs for other governmental services and the financial ability of the state?"

Talbot (1974, p. 5), former State Superintendent of Public Instruction of Utah and State Superintendent at the time Utah adopted a new

school finance system which included a variety of weightings suggested that the following concerns be addressed in the school finance system:

- "1. An identification, measurement and interpretation of differences in educational need among students.
- "2. A deliberate attempt to relate variations of educational need to the ability of a school district to finance appropriate educational programs so that state equalization may have a greater impact.
- "3. A search for target populations which possess or may develop a unique need for special kinds of programs.
- "4. A recognition of cost differentials among various types of programs within each target group and among levels of education.
- "5. A determination of kinds and types of incentive measures to bring greater efficiency and economy considerations as well as to encourage greater financial effort at the local and state level.
- "6. A projection of balance between financing foundation or "regular" programs and programs of a categorical nature.
- "7. A determination of an appropriate ratio between expenditures for direct instructional programs and those necessary support areas.
- "8. A probing of means to effectuate cost-benefit analysis which would permit priorities to be set and selections to be made of alternative programs for attaining the goals and purposes of education.
- "9. A means of finding sources for and allocating more funds to education.
- "10. A method of using all resources to equalize educational opportunity, including federal dollars for education programs."

Morphet (1970, p. 23) emphasized the need for long-range planning but also placed the planning for finance in proper perspective in relation to other types of planning:

Systematic long-range planning for the improvement of provisions for financing education is as essential in every state and in the country as is such planning for all other aspects of education. But, as indicated above, planning for improvement of provisions for financial support must be closely related to planning for the improvement of the entire system of education. Only under these conditions will it be possible to determine and defend meaningfully the amount and sources of support proposed and the purposes and manner in which the funds are to be utilized.

Morphet (1970, p. 22) also provided advice relative to the planning process not only as it pertains to school finance, but education in general:

In view of what we know about planning and change in education, I propose the following criteria for careful consideration by everyone concerned: (a) The appropriate agency, board, or representatives of the people in every state and community should select a competent group or committee to develop the policies and guide the planning activities. (b) This group or committee should obtain the services of competent authorities needed to make or guide the technical studies and to assist in developing and evaluating the plans. (c) Seldom, if ever, should any community or state contract with any person or group to develop the plans (do all the planning) and prepare and submit a report and recommendations without any other obligations.

Goertz, Moskowitz and Sinkin (1978) suggested that the purpose of state aid was to improve the quantity and quality of school services. They perceived the two major roles of state aid to be that of serving as a stimulant for the adoption of particular educational programs and to equalize the differing abilities among districts to support education. It was their conclusion that school finance systems had two major goals: ". . . to distribute state and local educational resources in a way that insures a measure of equality of educational opportunity (student equity), and to raise educational revenue in an adequate and equitable manner (tax payer equity)" (Goertz, Moskowitz and Sinkin, 1978, p. 7).

Goertz, Moskowitz and Sinkin (1978, p. 8) noted that several questions must be answered before these goals can be translated into a school finance program. The questions were as follows:

- . What is the definition of equity?
- . What is to be equalized?
- . How is the equalized resource defined?
- . What degree of equality must be attained?

Goertz, Moskowitz and Sinkin (1978) noted that policy makers faced two problems in designing a school finance plan that would raise

and distribute state and local revenues in a way which fulfilled the goals of the state plan. The problems were as follows:

First, the success of the plan depends upon the extent to which local districts are legally bound to conform to state-determined limitations or constraints. Second, a plan which achieves student equity often is at odds with taxpayer equity, and a plan which achieves taxpayer equity often violates student equity. The one exception to this could be totally state-financial system (Goertz, Moskowitz and Sinkin, 1978, p. 14).

Johns and Alexander (1971a, p. 231) stated that comprehensive state school finance plans should be developed only after decisions were made on the following policy issues:

- "1. The educational objectives.
- "2. The scope, content and quality of the program to accomplish the objectives.
- "3. The organizational arrangements for providing public schooling.
- "4. The level of financing that is required to provide the program desired.
- "5. The extent to which educational opportunity within the state will be equalized.
- "6. The degree of progressivity or regressivity of the tax structure used to finance schools."

Morphet (1970) anticipated that the National Educational Finance Project (NEFP) would identify techniques and proceduree that could assist states in planning their school finance systems. The NEFP did produce a set of criteria designed to assist the various states in evaluating their school finance programs. Three areas were addressed by the criteria--program, organization and finance. A delineation of the areas and criteria follows (Johns and Alexander, 1971a, p. 232):

- "A comprehensive state school finance plan must deal with at least three major types of public policy issues:
- "1. The scope, content and quality of the public school program;
  - "2. The organizational arrangements for providing public schooling
  - "3. The level and method of financing public schools.

"For convenience of presentation, criteria for state school finance plans may be grouped under these headings as they are below; however, the interrelated nature of the criteria should not be ignored when they are used in making a state study.

#### "Program Criteria

The state school finance plan should:

- "1. Provide local school systems a level of support for an educational program commensurate with the relative financial ability of the state.
- "2. Include provisions for innovation and improvement in instructional programs.
- "3. Include provisions for the identification and evaluation of alternative methods of accomplishing educational objectives.
- "4. Provide a system for local districts to develop program and financial data which permit accountability to the public.
- "5. Substantially equalize educational opportunity throughout the state.

#### "Organizational Criteria

The state school finance plan should financially penalize or at least not financially reward:

- "6. The establishment or continuation of small inefficient school districts;
- "7. The establishment or continuation of small inefficient enrollment centers, except in cases resulting from geographical isolation;
- "8. The continuation or establishment of school districts which segregate pockets of wealth or leave pockets of poverty in the state or result in the segregation of pupils by race or socio-economic class;
- "9. The continuation or establishment of school enrollment centers which result in the segregation of pupils by race, religion or socio-economic class.

#### "Finance Criteria

The state school finance plan should:

- "10. Include all current expenditures as well as capital outlay and debt service to facilitate equitable budgetary planning for all phases of each district's educational program.
- "11. Recognize variations in per pupil program costs for local school districts associated with specialized educational activities needed by some but not all students, such as vocational education, education of exceptional or handicapped pupils, and compensatory education.

- "12. Recognize differences in per pupil local district costs associated with factors such as sparsity and density of population, e.g., pupil transportation, extra costs of isolated schools, variations in cost of living.
- "13. Be funded through an integrated package which facilitates equitable budgetary planning by the local school district.
- "14. Utilize objective measures in allocating state school funds to local school districts.
- "15. Be based on a productive, diversified and equitable tax system.
- "16. Integrate federal funds with state funds and allocate to local districts in conformance with the criteria herein set forth to the extent permitted by federal laws and regulations."

The literature addressed to this point of the study concentrated on the national development of school finance. The remainder of the study focused on the development of school finance in North Dakota. A brief analysis of the present state school finance system was also presented.

#### Education and School Finance in North Dakota

The development of education in this part of the nation paralleled the development of the other aspects of society. A great deal of progress has been made towards providing educational services prior to North and South Dakota being granted statehood.

#### Education Prior to Statehood

Palmer (1932) noted that the first public school operated in the Dakota Territory was located at Bon Homme, South Dakota. Nine students were enrolled in the program in 1860, the first year of operation.

The number of public schools increased very rapidly as settlers moved into the Territory. The railroads facilitated this growth in

the number of public schools by shipping lumber, free of charge, used in building schools. Between 1853 and 1889, 1,362 public schools were opened in the Territory (Federal Writers Project, 1950).

The first school in the area which now makes up the state of North Dakota was a mission school established in 1818 at Pembina, under the auspices of the Bishop of Quebec. The initial enrollment included sixty children. The school was closed in 1823 because many families moved north following the determination of the international boundary. In 1848, Father George Belcourt reopened the Pembina Mission School and founded another mission school at St. Joseph. The school at St. Joseph which was operated by the Sisters of Propagation of the Faith received aid from the federal government, the first federal support given to education in this state (Federal Writers Project, 1950). Pearson, Fuller and Edgar (1969) noted the amount of aid to be \$500 and that it was appropriated through the U.S. Commissioner of Indian Affairs. St. Joseph was located on the present site of Walhalla, North Dakota.

#### Education-Part of Statehood

A concern for public education can be traced back to the creation of the Dakota Territory. Pearson, Fuller and Edgar (1969) noted that the first Territorial Assembly in 1862 passed legislation requiring support for the common schools. It also declared that the schools were to be open and free to all white children over the age of five and under the age of twenty-one. In 1868 the restriction to white children was dropped.



The Territorial Government provided for an Office of the Superintendent of Public Instruction. The office was filled through appointment by a Territorial Board of Education. Pearson, Fuller and Edgar (1969) recognized Beadle as the most outstanding territorial superintendent. Beadle, a former surveyor-general, was superintendent during the drafting of the enabling legislation which established the state of North Dakota and South Dakota. It was upon his insistence that two provisions were placed in the Enabling Act. These provisions were later placed in both the North Dakota and South Dakota State Constitution. The provisions read:

...That upon the admission of each of said states into the union sections numbered sixteen and thirty-six in every township of said proposed states, are hereby granted to said states, for the support of common schools....  
...That all lands granted by this act shall be disposed of only at public sale after advertising - tillable lands capable of producing agricultural crops for not less than \$10 per acre....  
(U.S. Congress, Enabling Act, 1889)

The legislation which created the Dakota Territory, granted sections numbered sixteen and thirty-six in every township to the territory for the support of the common schools. Including the same language in the Enabling Act reserved this financial resource to the states as a permanent source of revenue for the support of the public schools. The provisions that the good land not be sold for less than \$10.00 per acre prevented an exploitation of the public school lands.

#### Initial Efforts at School Finance

Numerous references are made in the following section to a study completed by Brown. The author chose Brown's study as a major resource on the history of North Dakota school finance because it was the most

comprehensive of all studies found on this topic. Additionally, it was also noted that numerous other authors had utilized Brown's study as a major resource which added credibility to his work.

Various types of school aid were supported by both the Dakota Territory legislatures and later the North Dakota State Legislatures. Brown had identified the following major types of aids:

- "1. County aids.
- "2. State tuition funds.
- "3. State aid for high schools.
- "4. State aid for agricultural schools.
- "5. State aid for elementary schools.
- "6. State aid for county agricultural and training schools.
- "7. State aid for vocational schools.
- "8. State aid for evening schools.
- "9. State equalization fund.
- "10. State aid on a teacher-unit basis.
- "11. State aid on a pupil-unit basis.
- "12. State aid for correspondence courses.
- "13. State aid for special education of exceptional children.
- "14. State school construction fund.

The aids #6 to #14 inclusive came, or at some time had come, from the equalization fund."

Although all of the types of aids identified by Brown were important to the development of education in North Dakota, not all of these are treated in the following section. Selected for further analysis were those forms of aid which the writer perceived as contributing to the development of the present state school finance system for elementary and secondary education.

#### County Aid

The first type of aid and that of greatest duration was county aid. Brown (1957) noted that the first legislature of the Territory established a county tuition fund in 1862 for elementary students. He identified the first sources of money for the fund as the proceeds from

finances, forfeitures and the sale of estrays. The legislature added a poll tax of one dollar and a two mill tax on all taxable property as additional sources of revenue for the fund in 1870-1871. Although this fund was dropped when the state achieved statehood, it was reestablished within a decade.

Support for secondary education through county aid was not provided until the middle of the twentieth century. In 1951, the state legislature created a county high school equalization fund. The same legislature appropriated \$900,000 of state funds to support the county high school equalization fund (North Dakota School Laws, 1951). Wax (1962) noted that the county elementary tuition fund and the county high school equalization fund were discontinued in 1959 with the adoption of a state foundation program.

#### State Tuition Fund

The state tuition fund became a second source of aid to the schools. This fund, also known as the endowment fund or state apportionment fund, was created as a result of provisions in the State Constitution. This fund was the product of work done by Beadle during the drafting of the enabling legislation. Section 153 and Section 154 of Article IX, North Dakota State Constitution, 1889, read in part, as follows:

Section 153. All proceeds of the public lands that have heretofore been, or may hereafter be granted by the United States for the support of the common schools in this state; all such per centum as may be granted by the United States on the sale of public lands; the proceeds of property that shall to the state by escheat; all gifts, donations, or the proceeds thereof that come to the state for support of the common schools, or not otherwise appropriated by the terms of the

gift and all other property otherwise acquired for common schools, shall be and remain a perpetual trust fund for the maintenance of the common schools of the state. Only the interest and income of the fund may be expended and the principal shall be retained and devoted to the trust purpose....

Section 154. The interest and income of this fund together with the net proceeds of all fines for violation of state laws and all other sums which may be added thereto by law, shall be faithfully used and applied each year for the benefit of the common schools of the state, and shall be for this purpose apportioned among and between all the several common school corporations of the state in proportion to the number of children in each of school age....

A general summary of the enumeration of school children and of apportionment of the state fund is reported in table 2. Because of the extensiveness of the data, the information was reported in ten year intervals beginning with June 30, 1891 the first year the apportionment was made. The most recent apportionment was also reported.

State law dictated the basis for the distribution of the state tuition funds. Subsection 04, CHAPTER 15-44, SCHOOL FUNDS, reads in part (North Dakota Century School Code, 1977): ". . ., the county superintendent of schools shall apportion the state tuition fund in proportion to the number of children residing in each district over six years of age and under eighteen years of age...."

#### State Aid for High School

The first state aid expressly designed for secondary education appeared in 1899. That session of the legislature provided aid to the high schools and agricultural schools in the state. This form of aid was continued through the 1931-33 Biennium. Under this aid system, the support level varied with the number of years of education provided in the high school.

TABLE 2  
SUMMARY OF ENUMERATION OF SCHOOL CHILDREN AND APPORTIONMENT  
OF STATE FUNDS

For Year Ending	Enumeration	Amount of Apportionment
June 30, 1891	43,129	\$ 56,067.70
June 30, 1901	92,437	178,462.10
June 30, 1911	156,012	754,139.80
June 30, 1921	207,846	973,213.25
June 30, 1931	222,938	916,405.92
June 30, 1941	195,726	896,425.08
June 30, 1951	155,544	1,312,820.40
June 30, 1961	176,551	2,035,633.03
June 30, 1971	225,727	3,287,912.17
June 30, 1977*	193,319	6,857,465.39

SOURCE: North Dakota Department of Public Instruction, Forty-Fourth Statistical Report, 1977a.

\*Until the 1973 Legislative Session, the age group was 6-21.

Brown (1957) noted the payments beginning in 1899 and continuing through the first four years of the program to be \$175.00 for a 4 year school; \$140.00 for a 3 year school; and \$100.00 for a two year school. No payment was made for a one year school until 1913. The payments were increased gradually until 1905, reaching the amount of \$800.00 for a 4 year school; \$500.00 for a 3 year school and \$300.00 for a 2 year school. The payment remained at those figures until that form of aid

was discontinued at the end of the 1931-33 Biennium. Aid for agricultural schools which was initiated in 1913 with an annual school payment of \$2500.00 was also discontinued at that time.

#### State Aid for Elementary Schools

Although special aid for high schools was provided for in 1889, special aid for elementary schools was not introduced until 1911. Wax (1962) reported that the legislature differentiated the payment between graded and rural districts and ordinary and consolidated districts. He noted that the aid was contingent upon the district meeting certain standards relative to facilities, teacher qualifications and length of school term. This form of aid, like that for the high schools, was phased out at the end of the 1931 Biennium.

#### Equalization--The New Emphasis on School Finance

Characteristics of the school finance legislation beginning in the early thirties was a concern for providing a more equitable distribution of state aid resources to the school districts. The State Equalization Fund was designed to facilitate that goal.

#### State Equalization Fund

Established by the 1933 Legislature, this fund was designed to serve as a vehicle for distributing various forms of state aid. Among these forms were state aid on the basis of need, state aid on a teacher-unit basis, state aid on a pupil-unit basis and tuition aid for non-resident high school students.

Pearson, Fuller and Edgar (1969) reported that it was the intent of the legislature to support the equalization fund through

a two per cent sales tax. However, the Sales Tax Law of 1933 was referred to the voters and defeated, leaving no money to support the funds. The Sales Tax Law was reinstated in the 1935 Legislative Session. An attempt to again refer the Sales Tax Law was not successful; thus, a source of funds became available. Wax (1962) noted however, that only seven-twelfths of the revenue raised by the two per cent tax went to education. The remaining sum was reserved for welfare services.

#### Aid on the Basis of Need

The first distribution of aid on the basis of need was made in 1935. The intent of this form of aid was to assist those districts which, after making the greatest possible efforts to support the school, were unable to raise sufficient revenue. The district had to apply directly to the State Department of Public Instruction for assistance. Spelled out in the law were the criteria used by the Superintendent in determining whether the maximum effort had been made by the district. Part C, Section 2, CHAPTER 260 reads as follows (North Dakota Laws, 1935):

In determination whether or not a school district made the maximum financial effort mentioned above, it must appear: (1) That the district shall have levied for the fiscal year the normal maximum tax rate as fixed by law, (2) That revenue from local taxes, and from state and county sources have been exhausted, and (3) That such district, under the law cannot issue additional warrants or sell certificates of indebtedness, or, if the same could be issued, that because of the financial condition of the school district such obligations of the district would greatly depreciated in value to the extent that they would not be acceptable as commercial instruments.

Some changes were made in the criteria in 1939 and the program was strengthened by the appointment of a Director of the State

Equalization Fund in the Department of Public Instruction in 1940.

Table 3 contains a summary of the distributions which were made on the basis of need beginning with the 1939-1940 school year.

TABLE 3  
PAYMENTS TO SCHOOL DISTRICTS ON BASIS OF NEED

School Year	Number of Counties	Number of School Districts	Payments
1939-1940	46	383	\$250,244.00
1940-1941	35	244	361,553.00
1941-1942	32	74	126,781.00
1942-1943	10	10	21,003.00
1943-1944	6	6	12,367.00
1944-1945	14	27	68,500.00
1945-1946	12	22	73,606.00
1946-1947	31	76	339,691.00
1947-1948	26	65	279,319.00
1948-1949	31	79	378,495.00
1949-1950	24	69	297,657.00
1950-1951	28	71	334,982.00
1951-1952	29	75	358,991.00
1952-1953	24	71	343,671.00
1953-1954	31	81	512,000.00
1954-1955	27	85	518,462.00
1955-1956	34	97	512,176.00
1956-1957	37	110	588,343.00
1957-1958	33	78	321,273.00
1958-1959	20	47	232,517.00
1959-1960	6	7	16,944.00
1960-1961	4	4	7,620.00
1961-1962	6	7	37,348.00
1962-1963	6	7	65,129.00
1963-1964	4	4	23,333.00
1964-1965	7	7	93,668.00
1965-1966	4	5	62,730.00
1966-1967	3	3	24,319.00
1967-1977	...	...	None

SOURCE: North Dakota Department of Public Instruction, Forty-Fourth Statistical Report, 1977a, p. 23.



### High School Tuition Fund

During the 1935 session the legislature also established a high school tuition fund. The payment was made to the districts for non-resident high school students in the amount of \$1.50 per week (North Dakota Laws 1935). This law was revised in 1949 and discontinued in 1951.

### State Aid on a Teacher-Unit Basis

The 1935 Equalization Law dictated how the money remaining in the fund was to be expended after the payments were made for aid on the basis of need and for the high school tuition aid. Section 6, CHAPTER 260, reads as follows (North Dakota Laws, 1935):

The State Auditor shall thereupon pay the said sum of \$150.00 for each high school teacher-unit and \$125.00 for each grade school teacher-unit so certified to him, which payments shall be made from the balance remaining in the State Equalization Fund after payments of the amounts certified for payment on the basis of need and for high school tuitions as hereinbefore set forth.

Brown (1957) noted that the amount of payment per teacher-unit for both the elementary and secondary level was reduced to \$120.00 in 1937. From that point onward the payment was also made to the agricultural schools. Payments were adjusted upwards in 1945 and 1947; however, on June 30, 1949 this form of aid was terminated.

### State Aid on a Pupil-Unit Basis

A fourth type of aid distributed through the equalization fund was state aid on a pupil-unit basis. The 1939 Legislature provided for a per pupil payment varying from fifty cents to \$11.00 depending on the valuation behind each pupil. Provision was made in the law for one-room

schools with less than a fixed number, either 15 or 20, to use that figure in calculating the aid.

Adjustments were made in the payments if a district failed to levy a normal minimum number of mills (North Dakota Laws, 1939). Brown (1957) noted that the maximum per pupil payment was increased to \$20.00 in 1945. This form of aid was also terminated on June 30, 1949.

#### Elementary Per Pupil Payment- State and County Support

The 1949 Legislature made several major changes in the aid programs received through the equalization fund. Snortland (1958) noted that state aid on a teacher-unit basis and state aid on a pupil-unit basis were dropped and an elementary per pupil payment supported by state and county funds was adopted. The county share of this program was raised through a ten-mill levy on all property within the county. The state's share was any amount beyond the yield of this tax which would be required to support elementary schools at a basic level of \$75.00 per student per year. Wax (1962) reported a sparsity allowance of \$1,250.00 for one-room rural schools with ten or fewer pupils in average daily attendance. He noted that to discourage the continuation of small schools, decreased payments were made to those schools with fewer than four students.

#### High School Tuition Aid Revised

High school tuition aid was the second major focus during the 1949 Legislative Session. Formerly restricted to payments only for non-resident students, the law was amended to provide support for all students in the district in the amount of \$10.00 per month per

student (North Dakota Laws, 1949). Snortland (1958) noted that the per pupil payment was increased to \$3.50 per week in 1957. High school tuition as a form of aid however, was short lived. Wax (1962) noted that the 1951 Legislature replaced the high school tuition aid program with a system very similar to that developed for elementary students during the 1949 Legislative Session. Snortland (1958) noted that although it required only one mill to support the system in 1951, an additional 3 mills was required by 1957.

Few changes were made in the state aid system between 1949 and 1959. However, dramatic changes were made during the 1959 Legislative Session. A major resource in the development of the new state school finance system was a master's thesis written by Howard Snortland, who, at that time, was the Director of the State Equalization Fund (Wax, 1962).

Snortland had this perception of the state school finance system in operation:

North Dakota's state aid program, evaluated on criteria of a sound finance program . . . , shows . . . considerable room for improvement. The property assessment is used as the index of local ability. Since there is little uniformity in assessing practices, it is a poor index of the ability of a school district to support education. Only 25.6 per cent of school revenue was provided by the state in 1956. School districts must take the maximum levy to support schools which leaves no tax leeway for local initiative. School finance does not encourage reorganization of school districts, . . . There is no guaranteed adequate foundation program; there are no payments for transportation and capital outlay; and payments to districts with closed one-room rural schools discourage consolidation of districts. The Basis of Need distribution encourages the continuance of small, inefficient school districts, and deprives the local school board of the right to determine the local educational program (Snortland, 1958, p. 187).

Snortland (1958, p. 193) developed a number of proposals he felt should be considered by the 1959 Legislature. His position was expressed as follows:

Summarized briefly, the proposals suggested for use in North Dakota are as follows:

- "1. A foundation program defined by law at the average cost per pupil in the state.
- "2. Capital outlay to be included as a part of the foundation program.
- "3. A separate equalized state aid for transportation.
- "4. Weighted average daily membership as the basis of distribution.
- "5. A county levy of twenty-eight mills to constitute the local share of the foundation program.
- "6. Appropriations from the General Fund of the state in addition to sales tax revenue to be placed in the State Equalization Fund to provide the state's share of the foundation program.
- "7. The State Tax Commissioner required by law to arrive at the ratio of true assessed value property.
- "8. County Auditors required by law to raise or lower county levies in accordance with the ratio of true to assessed value of property in the county."

#### State Foundation Program

The 1959 Legislature adopted a foundation program as a means of providing aid to the school districts. A number of suggestions offered by Snortland, following some modification, were incorporated into the foundation program during that session or in succeeding sessions.

Wax (1962, p. 50) described the state finance system following the adoption of the foundation program as follows: "This [adoption of a foundation program] resulted in the present North Dakota support program which consists of one general-purpose flat-grant, two general-purpose equalizing grants and five special-purpose flat grants." Wax (1962) recognized the State Tuition Fund as a general-purpose flat

grant; the emergency fund (basis of needs) and the state equalization fund as the two general-purpose equalization fund; and payments for correspondence courses, vocational education, special education, county agricultural schools and transportation as the five special-purpose flat grant funds. The Legislative Council staff for the Committee on Education in a report dated June, 1977 provided this analysis of the 1959 Foundation Law:

The foundation program for schools has been in effect since 1959. Although the state had provided assistance to local schools for more than 20 years prior to that year, it was the 1959 Legislative Session that first enacted a comprehensive program which included uniform minimum efforts at the local level. The legislation enacted in 1959 was the result of an interim study which found that the average cost of elementary education in North Dakota was \$250 per year. The interim committee recommended that the state guarantee 60 per cent of the state wide cost of education (or \$150). This was accomplished by a county mill levy of 21 mills and a state appropriations to make up the difference. Recognizing that circumstance varied in different school districts and that some higher cost schools in the state "must continue to operate regardless of future school district reorganization plans" the 1959 Legislative Assembly incorporated a system of weighting the payments to favor schools with lower enrollments and higher costs. The 1959 law also recognized the higher costs for high schools and provided a higher weighting factor for them (North Dakota Legislative Council, 1977).

The basic structure of the 1959 Foundation Law remained intact during the decade of the sixties even though the funding of elementary and secondary education was studied. In 1967, the financing of elementary and secondary education was reviewed as part of a comprehensive study on education in North Dakota. This study, which was referred to as the Statewide Study of Education or the "Alm Study," was sponsored by the Department of Public Instruction, the North Dakota Legislative Research Committee and the University of North Dakota and financially supported by the Federal Government under provisions of Title V,

Elementary and Secondary Education Act of 1965. Alm was the director of the project study team which was housed at the University of North Dakota.

The study addressed such facets of education as teacher training programs, qualifications of classroom teachers, size and types of school districts, number and types of instructional personnel, services provided to school districts and the financial support of elementary and secondary education (Alm et al., 1967a). For the purpose of this review only that aspect of the Statewide Study of Education related to the financing of elementary and secondary education was addressed.

It was the conclusion of the project study team that the quality of elementary and secondary education could not be improved without the adoption of a new foundation program. They indicated, however, that the success of the new foundation would be dependent upon two companion efforts. Those efforts were identified as (Alm et al., 1967b, p. 4):

- "1. Systematic reorganization of the State's 604 local school districts. It is suggested that needed reorganization occur in two steps; first, by 1968-70, enroll every pupil in a twelve-grade district; by 1971-72, enroll every pupil in a twelve-grade district whose high school enrolls no fewer than 215 pupils in the upper four grades. . . .
- "2. Systematic production and placement of fully prepared education personnel in local school districts, so that by 1975 every pupil in the State may be taught by a qualified teacher, and each school may be staffed by fully qualified administrators, counselors, librarians, and related service personnel."

The project study team identified a number of features characteristic of the proposed new foundation program. These features are summarized (Alm et al. 1967b, p. 7):

Provide - through a succession of small and achievable advances - the new levels of support that are needed for each well-organized district to employ and retain qualified personnel and to offer programs that are sufficiently broad and varied to accommodate individual differences among its pupils; Relate expenditure to a minimum foundation program of educational services that make an adequate and equal educational opportunity feasible and possible for each school child; Spread the burden of the extraordinary costs of special educational services (e.g., transportation, capital construction, and aid to isolated rural children) among all the State's taxpayers, thereby eliminating or reducing inequities in the present system; Reward local districts that employ and retain qualified personnel, and - at the same time - not reward those that choose not to do so; Promote and facilitate orderly reorganization of administrative units (local school districts) within the State, thereby obtaining optimum use of limited resources through economical operations.

An elaborate system was designed by the project study team for determining the level of foundation support. The level of foundation was based on a predetermined basic unit cost. Included in calculating the basic unit cost were: salaries and fringe benefits of personnel; services which included instructional materials; student support services and teacher inservice; and administration and development which included research, planning and evaluation, plant maintenance and operation and indirect costs. Transportation and capital construction and debt services were to be paid fully through state funds (Alm et al., 1967b).

No changes were made in the foundation law following the completion of the Statewide Study of Education. However, a second study initiated in that decade was influential in future changes. In 1969 the Legislature established a special Legislative Council Committee on Educational Finance to discern the nature of the problems school districts were encountering in obtaining financial support. This

Committee drew up a proposal designed to address the major problems identified in the study which became known as the "fair-share" bill. Following the defeat of this bill in the 1971 Legislative Session, the chairman of the Legislative Council directed the interim Committee on Education to conduct a comprehensive study of educational finance in North Dakota (North Dakota Legislative Council, 1977).

#### School Finance in This Decade

As a result of the interim study, the 1973 Legislative Assembly enacted Senate Bill No. 2026 which made some major changes in the entire system of financing elementary and secondary education in North Dakota. The Legislative Council had identified the following major features of the legislation (North Dakota Legislative Council, 1977, p. 2):

- "1. The state appropriation grew from \$54 million in 1971-73 to over \$118 million in 1973-75, although the latter figure included about \$25 million which would have been distributed to school districts through the personal property paycheck formula but were added to the Foundation Program.
- "2. The base support payment per pupil, which is the amount used to determine the amount each school district will receive after the application of weighting factors, was increased from \$260 to \$540 per pupil. It was estimated this would equal about 65 to 70 per cent of the actual cost of education.
- "3. The flat weighting factor for all high schools was changed to provide four classes of high school weighting factors and some adjustments were made in elementary school weighting factors.
- "4. A 20-mill school district equalization factor was incorporated into the formula, but unlike the 21-mill county levy, this equalization was not a mandatory levy but was used in determining the state payment to school districts.
- "5. A portion of federal impact aid received by school districts was subtracted from the state payment to those districts receiving such moneys.
- "6. Transportation payments for school buses were increased from 16 cents to 23 cents per mile for larger buses and from 7 cents to 10 cents per mile for smaller buses.



- "7. The maximum mill levy for high school districts was reduced from 34 to 24 mills and those districts with excess levies or unlimited levies were required to also reduce their levies."

A factor which may have facilitated the passage of Senate Bill 2026 was a desire on the part of the Legislature not to involve the state in a Serrano V. Priest type of legal situation which had erupted in California in 1971. The 1973 law applied only to the biennium, thus, the legislator was allowed to study its merits before making it permanent. As a result of that study, the 1975 Legislature made permanent the basic concepts which were included in the 1973 law. The base payment was increased from \$540 to \$640 per pupil for the first year and \$690 per pupil the second year of the 1975-77 biennium. Weighting adjustments were made for elementary pupils, including a new classification for seventh and eighth grade students. Transportation payments were also increased. To protect schools from the dramatic effects of declining enrollment, a "hold-harmless" provision was included. The appropriation for the Foundation Program was increased from \$118 million for 1973-75 to \$153,378,805 for 1975-77 (North Dakota Legislative Council, 1977).

A study was also conducted in the interim prior to the 1975 Legislative Session. As a result of the study the 1977 Legislature increased the per pupil base payment from \$775.00 for the first year of the biennium to \$850.00 for the second. Provision was made in the legislation to reimburse school districts which provide educational services to handicapped from three to five years of age. A payment of .49 of the regular per pupil base pay was made. There was also an increased payment provided for transportation. The Foundation

Program appropriation for the biennium was set at \$186,752.00. A resolution was also passed calling for another study of the state finance system of North Dakota (North Dakota Legislative Council, 1977).

#### An Analysis of the Present Foundation Program

Funds were received for conducting the study prescribed by the 1977 Legislature through a grant from the United States Department of Health, Education and Welfare under a federal program of assistance to states to study equalization plans. The Department of Public Instruction, the recipient of the grant, contracted with the Center for Teaching and Learning at the University of North Dakota to conduct the study which is to be completed in 1979. The study which is referred to as the FESEND (Financing Elementary and Secondary Education in North Dakota) Project was directed by Hill, Professor of Education at the Center for Teaching and Learning.

Paraphrased below are some of the recommendations relative to school finance which were contained in a general report issued by the FESEND Project (Hill et al., 1979):

1. Improve accounting practices in North Dakota school districts by standardizing the methods for reporting costs relative to transportation, special programs and elementary and secondary students.
2. Use multi-year data to determine indices (weightings) rather than single year.
3. Consider differentiating between small and "small but necessary schools."
4. Develop language in the law to prevent districts from manipulating size categories to their financial advantages.
5. Change present laws to require more accurate assessment of property.

6. Cause disparity and wealth neutrality data to be collected and displayed systematically so that affected schools and the legislature can comprehend state performance.

It was anticipated that during the interim prior to the 1981 Legislative Session, the FESEND Report would be presented to an interim study committee. The impact of the FESEND Report cannot be determined at this time. If the 1981 Legislative Session accepts the recommendations of the study, changes would be made in the foundation program.

#### A Brief Description of the Present Foundation Program

Payments from the state general fund and a twenty-one mill county levy supply funds for the foundation program in each county and are made to school districts on the basis of current enrollments corrected to average daily membership. To compensate for sparsity of population and greater educational costs, the payments are weighted to the school districts.

Table 4 reflects the weighting for the various types and sizes of schools, the minimum requirements relative to pupil/teacher ratio at the elementary level and the per pupil payment for each year of the 1977-79 biennium. High school districts which fail to meet certain laws relative to a minimum number of course offerings and/or teacher qualifications receive only a base payment of \$220.00 per student (North Dakota Century Code, 1977). Total district revenue (foundation support) is calculated by multiplying both the number of students in average daily membership in the elementary and secondary school by the appropriate payment. The district contribution is determined by multiplying the taxable valuation of the district by

TABLE 4  
WEIGHTINGS FOR ELEMENTARY AND SECONDARY SCHOOLS

School Type	Pupil/Teacher Ratio	Weightings	1977-78 Payment	1978-79 Payment
<b>ELEMENTARY SCHOOLS</b>				
One-room rural schools 1-8	1-16/1	1.30	\$1007.50	\$1105.00
	17-20/1	.90		
	21/1	none		
Less than 100 in ADM 1-6	1-20/1	1.00	\$ 775.00	\$ 850.00
	21-25/1	.90		
	26/1	none		
100 to 999 in ADM 1-6	1-30/1	.90 none	\$ 697.50	\$ 765.00
7th & 8th Grade Students	1-30/1 31/1	1.00 none	\$ 775.00	\$ 850.00
District ADM 1,000 or more 1-6	1-30/1 31/1	.95 none	\$ 736.25	\$ 807.50
Pre-school Special Education		.49	\$ 379.75	\$ 416.50
<b>HIGH SCHOOLS</b>				
1 to 74 ADM	none	1.70	\$1317.50	\$1445.00
75 to 149 in ADM	none	1.40	\$1085.00	\$1190.00
150 to 549 in ADM	none	1.32	\$1023.00	\$1122.00
Total ADM of 550 or more	none	1.20	\$ 930.00	\$1020.00

SOURCE: North Dakota Department of Public Instruction, School Finance Bulletin, 1977b.

20 mills and subtracting that figure from the total of the calculation above. The remaining revenue is provided through state funds.

It should be noted from table 4 that there is no difference in the foundation level between elementary and secondary pupils. The system does however, provide weightings for two factors--sparsity and level of instruction. The weightings for secondary pupils are higher than for elementary pupils. As a result, the per pupil payment for a secondary student is larger than for an elementary student in a school of similar size.

#### Summary

It was the intent of the writer to capsulize in this chapter some of the literature fundamental to the development of school finance in North Dakota. The achievement of this goal required addressing literature at both state and national level.

## CHAPTER III

### METHODOLOGY

#### Study Questions

The purpose of this study was to investigate relationships among variables important in policy analysis for the state financing of secondary education.

Five study questions were analyzed in the treatment of the data:

1. Was there a relationship between per pupil expenditure and the number of courses offered in secondary schools?
2. Was there a relationship between foundation support and the number of courses offered in secondary schools?
3. Was there a relationship between foundation support and per pupil expenditure in secondary schools?
4. Did school size reduce the correlation between per pupil expenditure and the number of course offerings?
5. Were the number of courses offered by a district predicted by one or more of the following: student enrollment, per pupil valuation, student density, leeway mills and faculty positions?

#### Study Population

The study population consisted of all public high school districts operating during the 1976-1977 school term, with the exception of those districts contracting for services with the Bureau of Indian Affairs. Districts contracting with the Bureau of Indian Affairs were eliminated because support and administrative mechanisms were significantly different in these systems.

Each high school program consisting of grades nine through twelve in the multi-high school district was treated as a separate high school district. Although this practice artificially increased the number of districts, it allowed for the utilization of data in the study which had to be processed on a district rather than an individual school base. The number of school districts was increased by three as a result of this practice. The utilization of the full population eliminated the need to draw and validate a population sample.

#### Data Collection

The solutions to the research questions required performing a number of statistical tests. Necessary data for completing these tests were obtained from official Department of Public Instruction sources. Course offering information was obtained from the annual report submitted to the Superintendent of Public Instruction by the State Director of Secondary Education. Per pupil expenditures were taken from the 1976-1977 PI-1 File, a computer tape which contained financial data on all high school districts. Per pupil valuation, number of faculty positions and enrollment figures were taken from the 1976-1977 PI-3 File, a computer tape which contained various tapes of program information of the districts. The PI-3 File also contained the base data from which the foundation support, leeway mills and pupil density were determined.

To avoid the analysis of inaccurate data, all of the data were verified against the original source document used by the districts in reporting the information to the Department of Public Instruction. It

was also necessary to contact five school districts directly to confirm the accuracy of some data.

To facilitate the processing of the data the information was placed on a computer disc. The information was programmed to allow for processing through SPSS (Statistical Package for the Social Sciences, Nie et al., 1975). This program was selected because it allowed for both a statistical and descriptive treatment of the data.

### Data Analysis

The data analysis was organized and presented in five sections. Each of the sections contained information related to one of the five research questions.

In the analysis process the school district data were treated in relation to all of the districts in the population. Additionally, the district data were viewed in relation to the schools in a particular sparsity category. The sparsity categories were based on the enrollment size groups now recognized in the state school finance system. To simplify the referencing in the study to the various sparsity categories the writer has designated enrollment size 1-74 as Subgroup I, enrollment size 75-149 as Subgroup II, enrollment size 150-449 as Subgroup III and enrollment size 550 and greater as Subgroup IV. For example, a school with an enrollment of 63 would be classified as Subgroup I, and a school with an enrollment of 175 would fall in Subgroup III.

The scattergram was selected as the statistical technique for processing the data pertaining to the first three study questions. This technique allowed both a statistical analysis and a visual



analysis. Statistics which were reported include a Pearson's  $r$  (product-moment correlation coefficient)  $r$ -squared, and a significance-of- $r$ . Graphic and statistical data supported the narrative analysis. Much of the statistical data were reported in tabular form. The scattergram technique was applied to both the total population data and the data for each size subgroup.

A partial correlation was used as the statistical technique in answering the fourth question. In this process, the influence of school size was held constant or "partialed out." This partial correlation then represented the net correlation between per pupil expenditure and the number of course offerings. The technique was applied to the total population.

A multiple regression analysis was used to process the data for the fifth study question. In this analysis, the variable course offerings was considered the dependent variable and sparsity, leeway mills, per pupil valuation, student density and faculty positions were considered the independent variables. The multiple regression stepwise forward technique was applied to both the total population and the data for each sparsity group. Statistical data resulting from the analysis technique were reported on both tabular and narrative form. Both the  $F$  ratio and  $R$ -squared were considered in the analysis.

## CHAPTER IV

### ANALYSIS OF DATA

This chapter contains a presentation and analysis of the data collected on the study population. State school finance legislation recognizes four distinct high school enrollment (sparsity) size groups for financial support. In this study, individual district data were considered in the context of the total population data and the data of the appropriate high school enrollment (sparsity) size category as defined in the state school finance legislation. To facilitate the discussion of the study data for the four enrollment size groups, the groups were designated as follows: enrollment size 1-74 as Subgroup I (N=94); enrollment size 75-149 as Subgroup II (N=78); enrollment size 150-449 as Subgroup III (N=60); and enrollment size 550 and greater as Subgroup IV (N=15). The entire study population was referred to as the Total Group (N=247).

#### Presentation of Descriptive Data

The next five tables contain a summary of the variable statistical data for the Total Group (N=247) and Subgroup I (N=94), Subgroup II (N=78), Subgroup III (N=60) and Subgroup IV (N=15) respectively. Statistical data were given for each variable considered in the study with the exception of the variable density. The statistics for this variable were calculated and applied internally by the computer, thus a summary of the statistical data for this variable is not available.

TABLE 5

## VARIABLE SUMMARY DATA FOR TOTAL GROUP

Variables	Mean	Std Error	Std Dev	Range	Minimum	Maximum	Cases
COUOFF	31.748	1.226	19.260	174.750	12.250	187.000	247
FACULTY	11.564	0.944	14.841	148.250	2.550	150.800	247
HSENROLL	181.126	19.148	300.941	2829.000	24.000	2853.000	247
LEEMILLS	20.445	1.009	15.861	123.110	0.000	123.110	247
PPEXP	1359.777	17.368	272.960	1890.960	750.370	2641.330	247
PPVAL	6659.219	152.921	2403.338	14,053.734	1047.360	15,101.098	247
SECTIONS	241.568	9.710	152.608	1391.000	9.000	1400.000	247

## Variables:

COUOFF = Course Offerings  
 FACULTY = Number of Faculty  
 HSENROLL= High School Enrollment  
 LEEMILLS= Leeway Mills  
 PPEXP = Per Pupil Expenditure  
 PPVAL = Per Pupil Valuation  
 SECTIONS= Sections of Land

However, the statistical data for the variables high school enrollment and sections of land, which were used in calculating the variable density, are reported in the table.

Statistical data summarized in table 5 shows the variation in the total study population for the variables considered in this study. The number of courses offered in the schools of the study population varied from a high of 187 courses to a low of 12.25 courses (some districts offer quarter credit courses). A mean of 31.748 course offerings was calculated for the 247 cases. For the number of faculty positions the high of 150.8 and the low of 2.55 with a mean of 11.564 was reported. A mean of 181.126 was indicated for high school enrollment with the largest enrollment being 2853 students and the smallest enrollment being 24 students. Leeway mills had a mean of 20.445 with a high of 123.11 and a low of zero.

Per pupil expenditure also varied among the districts. The minimum district expenditure was \$750.37 while \$2641.33 was the maximum district expenditure. The expenditure mean was \$1359.78 for the 247 cases. District wealth, measured in terms of per pupil valuation, varied from a low of \$1047.36 to a high of \$15,101.10. A mean per pupil valuation of \$6,659.22 was noted for the 247 cases. With a mean of 241.568 sections, the geographic size of the districts ranged from a minimum of 9 sections to a maximum of 1400 sections of land.

The statistical data for the 94 school districts which make up Subgroup I are summarized in table 6. The number of courses offered by the school districts in this group varied from a low of 12.25 courses to a high of 28.75 courses. A mean of 19.941 course offerings was noted

TABLE 6

## VARIABLE SUMMARY DATA FOR SIZE SUBGROUP I

Variable	Mean	Std Error	Std Dev	Range	Minimum	Maximum	Cases
COUOFF	19.941	0.382	3.700	16.500	12.250	28.750	94
FACULTY	5.003	0.135	1.306	7.450	2.550	10.000	94
HSENROLL	48.223	1.466	14.213	50.000	24.000	74.000	94
LEEMILLS	22.292	1.121	10.873	45.000	6.000	51.000	94
PPEXP	\$1523.316	\$32.966	\$319.618	\$1685.920	\$955.410	\$2641.330	94
PPVAL	\$8041.082	\$235.564	\$2283.879	\$11,862.844	\$2009.950	\$13,872.797	94
SECTIONS	158.390	6.302	61.096	349.750	40.250	390.000	94

## Variables:

COUOFF = Course Offerings  
 FACULTY = Number of Faculty  
 HSENROLL = High School Enrollment  
 LEEMILLS = Leeway Mills  
 PPEXP = Per Pupil Expenditure  
 PPVAL = Per Pupil Valuation  
 SECTIONS = Sections of Land

for the 94 cases. Ten was the maximum number of faculty positions reported while 2.55 was the minimum number with a mean of 5.003 for the 94 cases. A mean of 48.223 was indicated for high school enrollment with the largest enrollment being 74 students and the smallest enrollment being 24 students. Leeway mills had a mean of 22.292, a maximum levy of 51 mills and a minimum levy of 6 mills.

The variation in the per pupil expenditure for Subgroup I was not quite as large as that reported for the Total Group. Per pupil expenditure in Subgroup I varied from a maximum of \$2,641.33 to a minimum of \$955.41. The mean for the 94 cases was \$1,523.32. Per pupil valuation varied from a low of \$2,009.95 to a high of \$13,872.80, with a mean of \$8,041.08. With a mean of 158.39 sections, the geographic size of the districts ranged from a minimum of 40.25 sections to a maximum of 390 sections of land.

A comparison of the statistical data in table 5 and in table 6 indicates that the Subgroup statistical data had influenced the statistical data of the Total Group. Subgroup I (N=94) accounted for the minimum high school enrollment, course offerings and faculty positions reported in table 5. This same subgroup also accounted for the largest per pupil expenditure reported on table 5.

Statistical data are summarized in table 7 for Subgroup II which is comprised of the 78 school districts having a high school enrollment of 75 to 149 students. Course offerings for this Subgroup varied from a low of 17.75 courses to a high of 41 courses. A mean of 28.064 course offerings has been calculated for the 78 districts. The minimum and maximum number of faculty positions was 4.7 and 13.5

TABLE 7

## VARIABLE SUMMARY DATA FOR SIZE SUBGROUP II

Variable	Mean	Std Error	Std Dev	Range	Minimum	Maximum	Cases
COUOFF	28.064	0.483	4.269	23.250	17.750	41.000	78
FACULTY	7.980	0.190	1.680	8.800	4.700	13.500	78
HSENROLL	106.115	2.336	20.631	72.000	75.000	147.000	78
LEEMILLS	15.992	0.908	8.021	38.000	0.000	38.000	78
PPEXP	\$1289.610	\$22.269	\$196.678	\$1045.780	\$750.370	\$1796.150	78
PPVAL	\$6481.809	\$262.100	\$2314.805	\$13,981.527	\$1119.570	\$15,101.098	78
SECTIONS	246.182	12.416	109.652	633.000	59.000	692.000	78

## Variables:

COUOFF = Course Offerings  
 FACULTY = Number of Faculty  
 HSENROLL = High School Enrollment  
 LEEMILLS = Leeway Mills  
 PPEXP = Per Pupil Expenditure  
 PPVAL = Per Pupil Valuation  
 SECTIONS = Sections of Land

respectively. A faculty mean of 7.98 was calculated for this subgroup. High school enrollment varied from a high of 147 to a low of 75 with 106.115 being the mean. This Subgroup had a mean of 15.992 leeway mills and a minimum levy of zero leeway mills.

Per pupil expenditure for this Subgroup varied from a low of \$750.37 to a high of \$1,796.15. A mean of \$1,289.61 was calculated for the 78 school districts in this Subgroup. Local wealth, measured in terms of per pupil valuation, varied from \$1,119.57 in the poorest district to \$15,101.10 in the richest district. The mean per pupil valuation for this Subgroup was \$6,481.81. Geographic size in terms of sections of land varied from 692 sections for the largest district to 59 sections for the smallest district in this size Subgroup. A mean of 246.182 sections was calculated for this size category.

A comparison of the Subgroup statistical data (table 7) and the Total Group statistical data (table 5) shows the mean score for Subgroup II to be larger than the Total Group mean score for sections of land. A further comparison of the data reveals that the minimum for per pupil expenditure and leeway mills in the Total Group was set by school districts in Subgroup II. The maximum for per pupil valuation for the Total Group was also established by Subgroup II.

The statistical data for the districts comprising Subgroup III are summarized in Table 8. Course offerings for this Subgroup varied from a low of 25.25 courses to a high of 68.25 courses. A mean of 40.604 course offerings was calculated for the 60 cases in this Subgroup. With a high of 30 and a low of 9, the mean for faculty positions was 14.445. The largest enrollment reported in this size



TABLE 8

## VARIABLE SUMMARY DATA FOR SIZE SUBGROUP III

Variable	Mean	Std Error	Std Dev	Range	Minimum	Maximum	Cases
COUOFF	40.604	1.058	8.195	43.000	25.250	68.250	60
FACULTY	14.445	0.556	4.307	21.000	9.000	30.000	60
HSENROLL	234.417	10.032	77.707	379.000	150.000	529.000	60
LEEMILLS	14.747	1.319	10.214	64.700	0.000	64.700	60
PPEXP	\$1205.765	\$ 17.918	\$ 138.792	\$ 907.700	\$ 936.850	\$1844.550	60
PPVAL	\$5372.305	\$196.297	\$1520.506	\$8274.387	\$1047.360	\$9321.750	60
SECTIONS	380.936	25.287	195.876	1256.000	144.000	1400.000	60

## Variables:

COUOFF = Course Offerings  
 FACULTY = Number of Faculty  
 HSENROLL = High School Enrollment  
 LEEMILLS = Leeway Mills  
 PPEXP = Per Pupil Expenditure  
 PPVAL = Per Pupil Valuation  
 SECTIONS = Sections of Land

Subgroup was 529. The smallest noted enrollment was 150 students. A mean enrollment of 234.417 was calculated for the 60 cases.

Leeway mills levied by the districts in this Subgroup varied from a maximum of 64.7 mills to a low of no leeway mills. The mean calculated for this Subgroup was 14.747 leeway mills. Per pupil expenditure varied from a high of \$1844.50 to a low of \$936.85 with a mean of \$1205.77 for the 60 cases. Local wealth, measured in terms of per pupil valuation, varied from \$1047.36 in the poorest district to \$9321.75 in the wealthiest district. The mean per pupil valuation for this Subgroup was \$5373.31. Geographic size measured in terms of sections of land varied from 1400 sections for the largest district to 144 sections for the smallest district in this Subgroup. A mean of 380.94 sections was calculated for this Subgroup.

A comparison of the Subgroup III statistical data (table 8) and the Total Group statistical data (table 5) indicates identical statistics for minimum per pupil valuation and leeway mills and maximum sections of land. The mean scores for high school enrollment, course offerings, sections of land, and number of faculty positions were larger for Subgroup III (table 8) than for the Total Group (table 5).

Statistical data are summarized in table 9 for Subgroup IV, which is comprised of 15 school districts having a high school enrollment of 550 or more students. Course offerings for this Subgroup varied from a low of 44.25 courses to a high of 187 courses. A mean of 89.467 course offerings was calculated for the 15 cases. The minimum and maximum number of faculty positions was 28.2 and 150.8 respectively. A faculty mean of 59.785 was calculated for the 15 cases.

TABLE 9

## VARIABLE SUMMARY DATA FOR SIZE SUBGROUP IV

Variable	Mean	Std Error	Std Dev	Range	Minimum	Maximum	Cases
COUOFF	89.467	8.668	33.572	142.750	44.250	187.000	15
FACULTY	59.785	7.648	29.621	122.600	28.200	150.800	15
HSENROLL	1190.866	143.229	554.722	2211.000	642.000	2853.000	15
LEEMILLS	54.811	9.323	36.110	117.110	6.000	123.110	15
PPEXP	\$1315.843	\$ 41.580	\$161.037	\$ 558.880	\$1026.880	\$1585.760	15
PPVAL	\$4065.750	\$150.442	\$522.658	\$1708.879	\$3245.930	\$4954.930	15
SECTIONS	181.349	39.079	151.354	472.000	9.000	481.000	15

## Variables

COUOFF = Course Offerings  
 FACULTY = Number of Faculty  
 HSENROLL = High School Enrollment  
 LEEMILLS = Leeway Mills  
 PPEXP = Per Pupil Expenditure  
 PPVAL = Per Pupil Valuation  
 SECTIONS = Sections of Land

High school enrollment varied from a high of 2853 students to a low of 642 students with 1190.866 being the mean.

Leeway mills had a mean of 54.811, a maximum levy of 123.11 mills and a minimum levy of 6 mills. Per pupil expenditure for the districts in this Subgroup varied from a low of \$1026.88 per student to a high of \$1585.76 per student. A mean of 1315.84 was calculated for per pupil expenditure. Local wealth, measured in terms of per pupil valuation varied from \$3245.93 in the poorest district to \$4954.93 in the wealthiest district. The mean per pupil valuation for the Subgroup was \$4065.75. With a mean of 181.349 sections, the geographic size of the districts varied from a minimum of 9 sections to a maximum of 481 sections of land.

A comparison of the Subgroup IV statistical data (table 9) and the Total Group statistical data (table 5) indicated identical statistics for the two relative to minimum sections of land and maximum high school enrollment, course offerings, number of faculty positions and leeway mills.

Individual district data have been placed in appendix D. The column "size" denotes the appropriate district subgroup. The number of mills listed under the column "mills" represents the total general fund levy. The general fund levy includes the 24 mills which may be levied without the consent of the electorate plus the leeway mills.

#### Analysis of Study Data

Three steps were followed in the analysis of the study data. A study question was presented first, followed by a description of the procedure utilized in the data treatment. An analysis of the data was

the culminating step.

Total Group data were addressed first in the analysis phase. As the second step of the analysis process the data for each subgroup was critiqued and then related to the Total Group data. A comparison of the data from the four size subgroups constituted the third step of the analysis process. The fourth step encompassed drawing reservations from the data which were basic to answering the study question. An exception to the general procedure was the treatment of the data from Study Question 4. This information did not lend itself to the process described. Tables were developed to relate statistical data pertinent to the solution of the question.

#### Study Question Number 1

Is there a relationship between per pupil expenditure and the number of courses offered in a secondary school?

The SPSS SCATTERGRAM SUBPROGRAM (Nie et al., 1975) was utilized to answer this question. With this technique per pupil expenditures were plotted bivariately against course offerings. Scattergram results were obtained for the Total Group and the four subgroups.

SPSS SCATTERGRAM SUBPROGRAM (Nie et al., 1975) computes statistical data on the relationship between the two variables in addition to presenting a bivariate frequency graph. The scattergram results for Study Question Number 1 were placed in appendix A. The statistical data for the Total Group and the four subgroups are presented in table 10.

An analysis of the data for the Total Group (N=247) in table 10 shows a negative correlation, ( $r = -0.206$ ) significant at the .001 level, between course offerings and per pupil expenditures. It further shows

TABLE 10

RELATIONSHIPS BETWEEN PER PUPIL EXPENDITURES AND COURSE  
OFFERINGS FOR TOTAL GROUP AND FOUR SUBGROUPS

Size Category	Correlation (r)	r Squared	Significance	Cases
Total Group	-0.206	0.043	<0.001	247
Subgroup I	-0.141	0.020	>0.05	94
Subgroup II	0.016	0.000	>0.05	78
Subgroup III	0.220	0.049	<0.05	60
Subgroup IV	0.184	0.034	>0.05	15

that the per pupil expenditure variable account for 4 per cent of the variance in this relationship, thus, there was no accounting of the remaining 96 per cent.

In Subgroup I (N=94) the correlation between the variables course offerings and per pupil expenditures ( $r = -0.141$ ) was not significant at the .05 level. Two per cent of the variance was accounted for by the variables. Subgroup II (N=78) showed the lowest relationship between the variables course offerings and per pupil expenditure reported by either the Total Group or the subgroups. The correlation coefficient ( $r = 0.016$ ) was not significant at the .05 level.

Subgroup III (N=60) data indicated a positive correlation ( $r = 0.220$ ) between the variables course offerings and per pupil expenditures. Data for the Total Group (N=247) suggested a negative correlation ( $r = -0.206$ ) between these two variables. Some similarities also exist between the Subgroup III (N=60) and Total Group (N=247) statistics.

Both report a correlation significant beyond the .05 level with low variance. Subgroup III (N=60) accounted for 5 per cent of the Total Group (N=247) 4 per cent of the variation. Thus, the variables in both the Total Group (N=247) and Subgroup III (N=60) leave the majority of the variation unexplained.

Subgroup IV statistics in all categories were less than those reported for the Total Group. The correlation between the variables course offerings and per pupil expenditures ( $r = 0.184$ ) was not significant at the .05 level for Subgroup IV (N=15). A decrease of 1 per cent in variance from that reported for the Total Group (N=247) was noted. Thus, 97 per cent of the variation in the variable course offerings could not be accounted for by the per pupil expenditure variable in Subgroup IV (N=15).

The following general observations were made relative to the statistical data reported in table 10. Negative correlations between the variables per pupil expenditures and course offerings were reported for Subgroup I and the Total Group. Positive correlations for the same two variables were reported for Subgroups II, III and IV. However, the correlation for Subgroup II was very limited. Only the Total Group and Subgroup IV reported a correlation significant beyond the .05 level. The variable per pupil expenditure accounted for a very limited amount of the variance in the variable course offerings in the Total Group and four size subgroups. The percentage of accountable variance ranged from less than 1 per cent to 5 per cent.

The statistical data reported in table 10 support a limited linear relationship between the variables course offerings and per

pupil expenditures which was reflected on the scattergram. This observation would suggest that the variable per pupil expenditures would have limited value as a predictor of the number of course offers in a school. This observation would appear to apply equally well to the total population and the four size subgroups.

#### Study Question Number 2

Is there a relationship between foundation support and the number of courses offered in secondary schools?

The SPSS SCATTERGRAM SUBPROGRAM (Nie et al., 1975) was utilized to answer this question. With this technique foundation support was plotted bivariately against the number of course offerings. Scattergram results were obtained for the Total Group and the four size subgroups.

SPSS SCATTERGRAM SUBPROGRAM (Nie et al., 1975) computes statistical data on the relationship between the two variables in addition to presenting a bivariate frequency graph. The scattergram results for Study Question Number 2 were placed in appendix B. The statistical data for Total Group and the four subgroups are presented in table 11.

A review of table 11 data shows that the Total Group (N=247) statistics established a pattern which was generally maintained by the statistics of the four subgroups. A positive correlation ( $r= 0.925$ ), significant beyond the .001 level, was calculated between the variables course offerings and foundation support. The strength of this relationship was further supported by accounting for 86 per cent of the variance in the two variables.

In subgroup I (N=94) 55 per cent of the variance in the variable course offerings accounted for by the variable foundation support. The



TABLE 11

RELATIONSHIPS BETWEEN FOUNDATION SUPPORT AND COURSE  
OFFERINGS FOR TOTAL GROUP AND FOUR SUBGROUPS

Size Category	Correlation (r)	r Squared	Sig	Cases
Total Group	0.925	0.856	<0.001	247
Subgroup I	0.740	0.548	<0.001	94
Subgroup II	0.585	0.342	<0.001	78
Subgroup III	0.747	0.558	<0.001	60
Subgroup IV	0.799	0.638	<0.001	15

correlation between the two variables ( $r = 0.740$ ) was significant beyond the .001 level. Both the correlation coefficient and the variance for Subgroup I ( $N=94$ ) was less than the same data reported for the Total Group ( $N=247$ ).

Subgroup II ( $N=78$ ) reported a correlation between the variables course offerings and foundation support ( $r = 0.585$ ) which was lower than that reported for the Total Group ( $r = 0.925$ ). The correlation, however, remained significant beyond the .001 level. This Subgroup also reported the least amount of variance accounted for among the variables in comparison to the Total Group and the other three size subgroups.

The correlation between the variables course offerings and foundation support ( $r = 0.747$ ) was significant beyond the .001 level for Subgroup III ( $N=60$ ). More than 55 per cent of the variation in the variables for this Subgroup was also accounted for. Although the statistics for Subgroup III are not as high as those reported for the Total Group,

the Subgroup data did still suggest a strong positive relationship between the variables course offerings and foundation support.

The correlation between the variables course offerings and foundation support ( $r = 0.799$ ) was significant beyond the .001 level for Subgroup IV ( $N=15$ ). Although this correlation is less than that indicated for the Total Group ( $r = 0.925$ ), it is higher than that found in the other size Subgroups. In addition 64 per cent of the variance could be accounted for in the variable course offerings by the foundation support variable.

Several observations may be drawn from the statistical data of the four size subgroups. Three of the four subgroups had a correlation coefficient at or above 0.740. Each of these three subgroups individually accounted for more than 50 per cent of the variation between the two variables. Apparently the number of cases did not influence the amount of the variance or the correlation coefficient among the subgroups. Subgroup I ( $N=94$ ) which had a higher correlation coefficient and variance accounted for than Subgroup II ( $N=78$ ) also had a larger number of cases. Subgroup III ( $N=60$ ) and Subgroup IV ( $N=15$ ), which had higher correlation coefficients between the variables and were able to account for a larger amount of the variation in the variables than Subgroup II ( $N=78$ ), did have a smaller number of cases.

A review of the scattergram (appendix B) for the Total Group and the four size subgroup suggests that a strong linear relationship exists between course offerings and foundation support. Statistical data in table 11 generally support that observation. A linear

relationship between the variables course offerings and foundation support was significant beyond the .001 level for all the subgroups and the Total Group. The minimum and maximum correlation coefficients respectively were 0.585 and 0.925. Accountable variance ranged from a low of 34 per cent to a high of 86 per cent.

The data would support the following conclusions. It is apparent that a strong linear relationship exists between the number of course offerings and foundation support. Because of this strong linear relationship, foundation support could be used as a predictor of the number of course offerings for the Total Group as well as the four size subgroups.

#### Study Question Number 3

Is there a relationship between foundation support and per pupil expenditure in secondary schools?

the SPSS SCATTERGRAM SUBPROGRAM (Nie et al., 1975) was utilized to answer this question. With this technique per pupil expenditures was plotted bivariately against foundation support. Scattergram results were obtained for the Total Group and the four size subgroups.

SPSS SCATTERGRAM SUBPROGRAM (Nie et al., 1975) computes statistical data on the relationship between the two variables in addition to presenting a bivariate frequency graph. The scattergram results for Study Question Number 3 were placed in appendix C. The statistical data for the Total Group and the four subgroups are presented in table 12.

The statistical data reported for the Total Group in table 12 are not characteristic of that reported for the subgroups. With the exception of Subgroup I (N=94), the Total Group (N=247) reported a

TABLE 12

RELATIONSHIPS BETWEEN PER PUPIL EXPENDITURES AND FOUNDATION SUPPORT  
FOR TOTAL GROUP AND FOUR SUBGROUPS

Size Category	Correlation (r)	r Squared	Significance	Cases
Total Group	0.414	0.171	<0.001	247
Subgroup I	-0.455	0.207	<0.001	94
Subgroup II	-0.223	0.050	<0.05	78
Subgroup III	0.138	0.019	>0.05	60
Subgroup IV	0.146	0.021	>0.05	15

considerably larger correlation ( $r = 0.414$ ) than the other subgroups. It should also be noted that the correlation was significant beyond the .001 level. Approximately 17 per cent of variance could be accounted for in this relationship leaving 83 per cent unexplained.

The variables in Subgroup I ( $N=94$ ) accounted for 21 per cent of the variance leaving 79 per cent unexplained. The correlation coefficient ( $r = -0.455$ ) not only exceeded that of the Total Group ( $N=247$ ) but the other subgroups as well. It should be noted that although both Subgroup I and the Total Group reported a correlation significant beyond the .001 level, the correlation for Subgroup I was negative and that for the Total Group correlation was positive.

Statistically, Subgroup II ( $N=78$ ) is set off from the Total Group ( $N=247$ ) and the other subgroups. The negative correlation ( $r = -0.223$ ) between per pupil expenditure and total foundation support is significant beyond the .01 level. It should be noted that

only 5 per cent of the variance between the variables could be accounted for leaving 95 per cent unexplained.

Statistically, Subgroup III (N=60) and Subgroup IV (N=15) were similar. Positive correlation coefficients of ( $r= 0.138$ ) and ( $r= 0.146$ ) were reported respectively for Subgroup III and Subgroup IV. Additionally, neither of the correlations were found to be significant at the .05 level. Both subgroups, reported the same percentage of explained variance. Approximately 2 per cent of the variance could be accounted for leaving 98 per cent unexplained.

When comparing the subgroup data several notable points surface. Subgroup I (N=94) and Subgroup II (N=78), which represent the smaller size school but largest number of schools, both show negative correlations significant beyond the .05 level. Although positive, the correlation coefficients reported for Subgroup III (N=60) and Subgroup IV (N=15) are less than those reported for the two smaller subgroups. As was noted earlier Subgroup III and Subgroup IV also accounted for the least amount of variance.

The following observations were made relative to the data reported on table 12. There was a range in the correlation coefficient from  $-0.455$  to  $0.138$ . The accounted variance varied from a low of 2 per cent to a high of 17 per cent. Two of the subgroups showed no significant relationship at the .05 level. The correlation coefficient for the Total Group was the highest positive correlation. Subgroup I reported the highest negative correlation.

Based on the statistics in table 12 the following conclusions may be drawn. A linear positive relationship between the variables

per pupil expenditure and foundation support for the Total Group (N=247) would suggest that foundation level is an indicator of per pupil expenditures for the total study population. Implied in this relationship is that, as foundation support increases so does per pupil expenditure. Thus, per pupil expenditure may be increased by increasing foundation support. However, because 83 per cent of the variation was unexplained, caution should be used in this interpretation. The correlation between the variables per pupil expenditure and foundation support in Subgroup I (N=94) would also suggest that per pupil expenditure can be predicted by foundation support. However, because the correlation between the variables is negative ( $r = -0.455$ ), this relationship suggests that per pupil expenditure decreases with an increase in foundation support. In essence, increasing foundation support for schools with an enrollment of less than 75 students should result in a decrease in per pupil expenditure. Again caution is suggested in this interpretation because of the large unexplained variation in the relationship of the two variables.

Subgroup II (N=60) also reported a negative correlation between the variables. However, the limited size of the relationship ( $r = -0.223$ ) and the large amount of unexplained variance (95 per cent) would suggest that the variable foundation support may not be a good indicator of per pupil expenditure for schools in that size group. The lack of a relationship at the .05 significance level between the two variables in Subgroup III (N=60) and Subgroup IV (N=15) voids the use of the variable foundation support as an indicator of per pupil expenditure for these two size groups.

Study Question Number 4

Does school size reduce the correlation between per pupil expenditures and the number of course offerings?

The SPSS PARTIAL CORR SUBPROGRAM (Nie et al., 1975) was utilized to answer this question. The purpose of partial correlation is to determine whether other factors may affect the relationship between two variables. In response to this question the influence of school size on the relationship between the variables per pupil expenditure and course offerings was determined by this method.

Size was controlled in this test through the use of a third order partial, which allowed the recoding of the four sized subgroups into three dummy-coded variables. This recoding then allowed for the retraction of the variable school size from the correlation between per pupil expenditures and course offerings. The remaining correlation was between the variables per pupil expenditures and course offerings free of the influence of size.

The statistical relationship between the variables per pupil expenditures and course offerings prior to controlling for size and after controlling for size is indicated in table 13. The answer to Study Question Number 4 is found in the discrepancy between the original correlation and the partial correlation.

Statistical data in table 13 show that a negative correlation ( $r = -0.206$ ) significant at the .001 level exists between per pupil expenditures and course offerings prior to controlling for size. Also indicated on the table is the relationship between per pupil expenditures and course offerings when size is "partialled out" or controlled.

TABLE 13

INFLUENCE OF SIZE ON THE RELATIONSHIP BETWEEN PER PUPIL  
EXPENDITURES AND COURSE OFFERINGS

VARIABLES	CORRELATION	DF	SIG
PPEXP, COUOFF	-0.206	245	0.001
VARIABLES	PARTIAL CORR		
PPEXP, COUOFF, SIZE	0.025*	242	0.347

\*Not significant at the .05 level.

Variables:

PPEXP = Per Pupil Expenditure  
 COUOFF = Course Offerings  
 SIZE = High School Enrollment

Table 13 shows that controlling for size does have an impact on the relationship between per pupil expenditures and course offerings. The correlation coefficient of -0.206 was reduced to a partial correlation coefficient of 0.025. It should be noted that the partial correlation was not significant at the .05 level. Also reduced from 4 per cent to less than 1 per cent was the accountable variance between the two variables. It may be concluded from the data in table 13 that school size does contribute to the correlation between per pupil expenditures and the number of course offerings.

Study Question Number 5

Can the number of courses offered by a district be predicted by one or more of the following: student enrollment, per pupil valuation, student density, leeway mills and faculty positions?



To answer this question selected variable data for the total population and the four subgroups was processed with the SPSS REGRESSION PROGRAM (Nie et al., 1975). A summary of the variable data for the Total Group and Subgroups I, II, III, and IV is found in tables 5, 6, 7, 8 and 9 respectively. The SPSS REGRESSION PROGRAM (Nie et al., 1975) provides a multiple regression stepwise forward treatment of the variable data. Course offerings was listed as the dependent variable and high school enrollment, per pupil valuation, student density, leeway mills and number of faculty positions were listed as the independent variables.

Data from the test results for the Total Group and the four subgroups are reported on the next five tables. The table for the Total Group (N=247) is presented first, followed by the tables in sequential order for Subgroups I (N=94), II (N=78), III (N=60), and IV (N=15). This table arrangement facilitated a comparative analysis between each subgroup and the Total Group; among the subgroups; and among the Total Group and the four size subgroups. The comparative analysis between each subgroup and the Total Group is preceded by an interpretation of the data on each table. Conclusions are drawn from the overall observations.

Several types of statistical data are reported on each table. All of these data assist in clarifying the relationship between the dependent variable and each independent variable. However, some make a greater contribution than others, so only those making the greater contribution are treated in the narrative following the table. The major focus of the analysis was on the r-squared statistic and the significance level of the correlation.

The stepwise forward multiple regression for the Total Group (table 14) showed that 88 per cent of the variation in the variables course offerings is explained by the variable faculty. All of the other variables accounted for less than 2 per cent of the remaining accountable variance. The variable density ( $R^2 = 0.887$ ) made the second largest contribution adding approximately 1 per cent to the variation. The variables leeway mills and high school enrollment also made minimal contributions. A small amount (11 per cent) of the variance was unexplained. The relationship between the dependent variable course offerings and all of the independent variables was significant beyond the .01 level. A high relationship between the variables faculty and course offerings ( $R^2 = 0.877$ ) suggested that the number of faculty positions was a good indicator for the number of course offerings. In essence, as the number of faculty positions increase, so many the number of course offerings.

A comparison of the Subgroup I data (table 15) and the Total Group data (table 14) suggested a variation in the statistics for the two. Although still significant beyond the .01 level, the correlations between the dependent variable course offerings and the independent variables is lower for Subgroup I. Consequently, a smaller amount of variance can also be accounted for. The variable faculty again made the largest contribution ( $R^2 = 0.557$ ) providing for 56 per cent of the variation. Faculty is followed by the variable high school enrollment which contributed 10 per cent. The variables leeway mills and density follow, each adding 1 per cent to the accountable variation. The lack of a contribution to the accountable

TABLE 14

## STEPWISE FORWARD MULTIPLE REGRESSION SUMMARY FOR TOTAL GROUP

Dependent Variable.. COUOFF							
Variable	Multiple R	R Square	RSQ Change	Simple R	F Val.	DF	Sig.
FACULTY	0.937	0.877	0.877	0.937	1752.04	1,245	<0.01
DENSITY	0.942	0.887	0.009	-0.538	953.24	2,244	<0.01
LEEMILLS	0.944	0.891	0.005	0.330	665.22	3,243	<0.01
HSENROLL	0.945	0.892	0.001	0.923	501.05	4,242	<0.01
PPVAL	0.945	0.893	0.000	-0.388	400.59	5,241	<0.01

## Variables:

COUOFF = Course Offerings  
 FACULTY = Number of Faculty  
 DENSITY = Density  
 LEEMILLS = Leeway Mills  
 HSENROLL = High School Enrollment  
 PPVAL = Per Pupil Valuation

TABLE 15

## STEPWISE FORWARD MULTIPLE REGRESSION SUMMARY FOR SUBGROUP I

Dependent Variable. COUOFF							
Variable	Multiple R	R Square	RSQ Change	Simple R	F Val.	DF	Sig.
FACULTY	0.746	0.557	0.557	0.746	115.73	1,92	<0.01
HSENROLL	0.813	0.662	0.104	0.740	88.93	2,97	<0.01
LEEMILLS	0.819	0.671	0.010	-0.026	61.21	3,90	<0.01
DENSITY	0.827	0.685	0.014	-0.068	48.31	4,89	<0.01
PPVAL	0.827	0.685	0.000	-0.091	38.21	5,88	<0.01

## Variables:

COUOFF = Course Offerings  
 FACULTY = Number of Faculty  
 HSENROLL = High School Enrollment  
 LEEMILLS = Leeway Mills  
 DENSITY = Density  
 PPVAL = Per Pupil Valuation

variance by the variable per pupil valuation supported the direction set by this variable in the Total Group data. Thirty-two per cent of the variation remained unexplained by the variables on this table. The percentage of unexplained variance was larger for Subgroup I than it was for the Total Group. The variables high school enrollment and density switched positions on table 15 when compared with the order of the variables on table 14.

Consistent with the pattern set in the Total Group, the variable faculty in Subgroup I accounted for a larger amount of variance in course offerings than any other single dependent variable. Thus, the number of faculty positions may also be an indicator of the number of course offerings in school districts with a high school enrollment of less than 75 students (Subgroup I, N=94). Increasing the number of faculty positions may possibly increase the number of course offerings in school districts of this size category.

An analysis of the statistical data for Subgroup II (N=78) in table 16 in comparison to the Total Group data (table 14) and Subgroup I data (table 15) shows a continual downward trend in the correlations between the variable course offerings and the other variables. A positive point, however, is the continuation of the significance level for all correlations beyond .01. A general decrease was also noted in accountable variance. The stepwise forward multiple regression data for Subgroup II showed that 46 per cent of the variation in the variable course offerings was explained by the variable faculty. The other variables accounted for an additional 11 per cent, with high school enrollment being the major contributor. Forty-four per cent

TABLE 16

## STEPWISE FORWARD MULTIPLE REGRESSION SUMMARY FOR SUBGROUP II

Dependent Variable.. COUOFF							
Variable	Multiple R	R Square	RSQ Change	Simple R	F Val.	DF	Sig.
FACULTY	0.681	0.464	0.464	0.681	65.73	1,76	<0.01
HSENROLL	0.743	0.552	0.090	0.605	46.27	2,75	<0.01
DENSITY	0.756	0.572	0.019	0.103	32.92	3,74	<0.01
PPVAL	0.756	0.572	0.000	0.207	24.39	4,73	<0.01
LEEMILLS	0.757	0.573	0.001	-0.169	19.30	5,72	<0.01

## Variables:

COUOFF = Course Offerings  
 FACULTY = Number of Faculty  
 HSENROLL = High School Enrollment  
 DENSITY = Density  
 PPVAL = Per Pupil Valuation  
 LEEMILLS = Leeway Mills

of the variance remained unexplained. A comparison of the order of the variables in table 14 and table 16 shows a major change in variable order. However, consistent with pattern established in the Total Group data (table 14) and Subgroup I data (table 15), faculty continues to account for a larger amount of variance in course offerings than any of the other independent variables. Thus, in school districts having an enrollment of from 75 through 149 students, an increase in the number of faculty positions may result in an increase in course offerings.

The statistically data for Subgroup III (table 17, N=60) have characteristics common to the statistical data for the Total Group (table 14, N=247). In tables 14 and 17 the statistical data show the variable faculty to be the major contributor to the total accountable variance in the stepwise forward multiple regression. The contribution of the remaining variables--per pupil valuation, leeway mills, density and high school enrollment amounted to 1 per cent in the Total Group and 2 per cent in Subgroup III. Both reported correlations significant beyond the .01 level. Similar to the Total Group, faculty in Subgroup III was identified as the major contributing variable to the variance found in the variable course offerings.

Two major differences were noted between the data in the tables. The amount of unexplained variance was larger for Subgroup III (32 per cent) than for the Total Group (11 per cent). With the exception of faculty, the variable order was also different. Faculty continued to account for the largest amount of variance in course offerings. Based on this relationship, it would appear that the number of faculty positions would be the best indicator of the number of course offerings in schools with an enrollment from 150 through 449 students.

TABLE 17

## STEPWISE FORWARD MULTIPLE REGRESSION SUMMARY FOR SUBGROUP III

Dependent Variable.. COUOFF

	Multiple R	R Square	RSQ Change	Simple R	F Val.	DF	Sig.
FACULTY	0.810	0.657	0.657	0.810	110.92	1,58	<0.01
PPVAL	0.825	0.681	0.025	-0.006	60.93	2,57	<0.01
LEEMILLS	0.826	0.683	0.001	0.379	40.15	3,56	<0.01
DENSITY	0.827	0.689	0.001	-0.225	29.76	4,55	<0.01
HSENROLL	0.827	6.684	0.000	0.750	23.38	5,54	<0.01

Variables:

COUOFF = Course Offerings  
 FACULTY = Number of Faculty  
 PPVAL = Per Pupil Valuation  
 LEEMILLS = Leeway Mills  
 DENSITY = Density  
 HSENROLL = High School Enrollment



Table 18 shows that the statistical data for Subgroup IV (N=15) is different from that of the Total Group and the other size subgroups. The stepwise forward multiple regression showed that 85 per cent of the variation in the variable course offerings was explained by the variable faculty. Atypical was that only two of the remaining four independent variables--high school enrollment and per pupil valuation accounted for additional variance in course offerings. Variables leeway mills and per pupil valuation contributed no variation to the relationship. However, 76 per cent of the variance was accounted for by the first three variables leaving 24 per cent unexplained. The correlations between the dependent variable course offerings and the independent variables were significant beyond the .05 level and all but one were significant beyond the .01 level. Consistent with the trend established by the other subgroups, there was no similarity in the order of the variables between Subgroup IV and the Total Group with the exception of faculty. The data in table 18 suggested that faculty accounted for a greater percentage of the variation in the variable course offerings than any of the other independent variables. Variables per pupil valuation and density accounted for none of the variance. Based on this observation, it can be concluded that the number of faculty positions is the best predictor of the number of course offerings in school districts with a high school enrollment in excess of 549 students. This conclusion concurs with that made for the total population and the three other subgroups.

The following general observations can be drawn from the data on table 14 through 18. The variable faculty consistently accounted

TABLE 18

## STEPWISE FORWARD MULTIPLE REGRESSION SUMMARY FOR SUBGROUP IV

Dependent Variable.. COUFF							
Variable	Multiple R	R Square	RSQ Change	Simple R	F Val.	DF	Sig.
FACULTY	0.853	0.727	0.727	0.853	34.63	1,13	<0.01
HSENROLL	0.865	0.748	0.021	0.799	17.78	2,12	<0.01
LEEMILLS	0.869	0.756	0.008	-0.147	11.34	3,11	<0.01
PPVAL	0.869	0.756	0.000	-0.306	7.73	4,10	<0.01
DENSITY	0.869	0.756	0.000	-0.251	5.57	5,9	<0.05

## Variables:

COUOFF = Course Offerings  
 FACULTY = Number of Faculty  
 HSENROLL = High School Enrollment  
 LEEMILLS = Leeway Mills  
 PPVAL = Per Pupil Valuation  
 DENSITY = Density

for the largest amount of variance in the variable course offerings on all five tables. Additionally, faculty accounted for a higher percentage of the total explained variation in each table than the combined contribution of the other variables. High school enrollment was the second major contributing variable on three of the five tables. The variable leeway mills was the third major contributor in four of the five tables. Per pupil valuation was reported twice as the least contributing variable. The correlations between variables course offerings and faculty, the major contributor, were consistently high with the minimal accountable variance being 86 per cent. All of the correlations were significant beyond the .05 level and all but one was significant beyond the .01 level.

In conclusion, the information would suggest that the number of faculty positions is the best single predictor of course offerings. In essence, the number of course offerings may increase in the school district as the number of faculty positions are increased. This observation would apply to the total study population as well as the four size subgroups. It may also be concluded that the variables density, leeway mills, high school enrollment and per pupil valuation have limited predictive value for the number of courses offered in a school district.

## CHAPTER V

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### Summary

The purpose of this study was to investigate relationships among some variables important in policy analysis for the state financing of secondary education. Basic to this task was analyzing the relationship among variables presently considered in school finance policy. To guide the analysis of the variable relationships the following study questions were generated:

1. Is there a relationship between per pupil expenditure and the number of courses offered in secondary schools?
2. Is there a relationship between foundation support and the number of courses offered in secondary schools?
3. Is there a relationship between foundation support and per pupil expenditure in secondary schools?
4. Does school size reduce the correlation between per pupil expenditures and the number of course offerings?
5. Can the number of courses offered by a district be predicted by one or more of the following: student enrollment, per pupil valuation, student density, leeway mills and faculty positions.

The SPSS SCATTERGRAM SUBPROGRAM (Nie et al., 1975) was utilized in treating the data pertinent to the first three questions. Question 4 was answered by computing a partial correlation with the SPSS PARTIAL CORR SUBPROGRAM (Nie et al., 1975). Stepwise forward multiple regression, which is a product of the SPSS REGRESSION PROGRAM (Nie et al., 1975), was used as the statistical test in question five.

The study population consisted of all public high school districts operating during the 1976-1977 school term, with the exception of those districts contracting for services with the Bureau of Indian Affairs. Each high school program consisting of grades nine through twelve in the multi-high school district were treated as a separate high school district. The base per pupil payment used in calculating foundation support was \$690.00.

Individual district data were related to the total population data and comparable size district data. Total population was referred to as the Total Group. The total population was also broken down into four subgroups: enrollment size 1-74 as Subgroup I; enrollment size 75-149 as Subgroup II; enrollment size 150-449 as Subgroup III and enrollment size 550 and greater as Subgroup IV.

#### A Summary of the Findings

1. The statistical data reported in table 10 would suggest a limited linear relationship between the variables per pupil expenditures and course offerings. A negative relationship ( $r = -0.206$ ) significant at the .001 level was reported for the Total Group. Subgroup I also reported a negative correlation ( $r = -0.141$ ), however, the relationship was not significant at the .05 level. Positive correlations between the variables per pupil expenditure and course offerings were reported for Subgroup II ( $r = 0.016$ ), Subgroup III ( $r = 0.220$ ) and Subgroup IV ( $r = 0.184$ ), however, only Subgroup III showed a relationship significant beyond the .05 level. The percentage of accountable variance among the Total Group and four subgroups varied from less than 1 per cent to 5 per cent leaving the majority of the variance between

the two variables unexplained.

2. A strong linear relationship between the variables foundation support and course offerings for the Total Group and the four subgroups was suggested on table 11. All of the correlations were positive and all were significant beyond the .001 level. The largest amount of variance accounted between the two variables (86 per cent) was expressed in the Total Group data, while Subgroup II data accounted for the least (34 per cent). That left 14 per cent and 66 per cent of the variance, respectively, unexplained for these two units. The correlation coefficients between the variables foundation support and course offerings were as follows: Total Group ( $r = 0.925$ ); Subgroup I ( $r = 0.740$ ); Subgroup II ( $r = 0.585$ ); Subgroup III ( $r = 0.747$ ) and Subgroup IV ( $r = 0.799$ ).

3. A variation was found in the relationship between the variables per pupil expenditures and foundation support among the Total Group and the four size subgroups in table 12. Significant beyond the .001 level, a positive correlation ( $r = 0.414$ ) was reported for the Total Group. A larger, but negative correlation ( $r = -0.455$ ), significant beyond the .001 level was indicated for Subgroup I. A decreased negative correlation ( $r = -0.223$ ) significant beyond the .05 level was reported for Subgroup II. The low positive correlations for Subgroup III ( $r = 0.138$ ) and Subgroup IV ( $r = 0.146$ ) were not significant at the .05 level. There was also a decrease in explained variance with the increase in school size. Subgroup I accounted for 21 per cent of the variation while Subgroup II explained 5 per cent and Subgroups III and IV 2 per cent. Foundation support accounted for 17 per cent of the variation in per pupil expenditure in the Total Group. Thus, neither

the Total Group or the four size subgroups could account for more than 21 per cent of the variance, leaving the majority unexplained.

4. The correlation between the variables per pupil expenditure and course offerings may be altered through controlling the influence of size on the relationship. Through the use of partial correlation test, which allowed controlling for the variable size, the correlation coefficient between the variables per pupil expenditure and course offerings was reduced from  $-0.206$  significant beyond the  $.001$  level to a partial correlation  $0.025$  not significant at the  $.05$  level. It was concluded from the data that the size of a district does influence the relationship between the per pupil expenditures and the number of course offerings in the district.

5. The predictive value of high school enrollment, per pupil valuation, density, leeway mills, and number of faculty positions on the number of courses offered in a school was discerned through the use of the stepwise forward multiple regression test. Faculty positions consistently accounted for the largest amount of the variance in course offerings for the Total Group as well as the four size subgroups. Faculty positions was able to account for 88 per cent of the variance in course offerings for the Total Group, 56 per cent for Subgroup I, 46 per cent for Subgroup II, 66 per cent for Subgroup III and 73 per cent for Subgroup IV. The other variables added 1 per cent to the explained variation for the Total Group, 12 per cent to Subgroup I, 11 per cent to subgroup II, 2 percent to Subgroup III, and 3 per cent to Subgroup IV. It can be observed from the data that the five independent variables accounted for the majority of the variation in the

dependent variable course offerings. High school enrollment was the second major contributor for three of the five tests. Leeway mills was listed third on four of the five tables. Per pupil valuation was ranked as the least contributor on two of the tests. One correlation was significant beyond the .05 level; all others were significant beyond the .01 level.

### Conclusions

The following conclusions have been drawn from the findings. Where appropriate, the limitations to the conclusions have been offered.

1. Per pupil expenditures has limited validity as an indicator of course offerings. Several factors contribute to its limited use. Among these are a limited linear relationship between the two variables, a small accountable variance between the two variables and the large amount of unexplained variation in course offerings. Thus, increasing per pupil expenditure may not result in an increased number of course offerings.

2. The strong linear relationship between the variables foundation support and course offerings for the total population and the four size subgroups suggested that foundation support was a useful indicator of course offerings. This relationship suggested that the number of course offerings would increase with an increase in foundation support.

3. Because of the large variation in the data reported for the Total Group and the four size subgroups it was not possible to arrive at a general conclusion relative to the relationship between foundation support and per pupil expenditure. It would appear that a positive relationship existed for the Total Group. A negative relationship



was projected for Subgroup I which represents the smallest schools. Subgroup II also suggests a more limited validity as a predictor. Subgroup III and Subgroup IV data suggested that per pupil expenditures in schools exceeding one hundred and fifty enrollment could not be predicted on the basis of foundation support. In essence, it would appear that per pupil expenditures would increase with increased foundation support for the total study population, decrease for schools with an enrollment of less than 150 students and possibly remain the same for schools with an enrollment of 150 and greater.

4. The correlation between the variables per pupil expenditure and course offerings may be altered by controlling for size as a variable. It appears as though increasing size reduces the negative correlation between the two variables. It may be concluded that the per pupil expenditure will decrease as enrollment size and the number of course offerings increase.

5. The data indicated that the number of faculty positions is a better indicator of the number of courses offered in a school than high school enrollment, per pupil valuation, density and leeway mills. High school enrollment, per pupil valuation, density and leeway mills have limited predictive value. This observation applies to the Total Group and the four size subgroups. The data suggested that increasing the number of faculty positions may result in the increased course offerings for the total population and the four size categories.

#### Recommendations

The recommendations growing out of this study have been placed in two categories--those suggesting further study and those suggesting

immediate attention. The recommendation in the first category may be of interest to the researcher, while the recommendation in the second group may be of greater interest to policy makers.

#### Recommendations for Further Studies

1. That further research be conducted on the nature of the variables per pupil expenditures and course offerings to discern factors which may be basic to the limited linear relationship between these variables.

2. That further research be conducted on the relationship between per pupil expenditures and foundation support to ascertain the factors which contribute to the sporadic correlation reported on these two variables among the Total Group and the four size subgroups.

3. That further research be conducted to further discern the influence of size on the relationship between per pupil expenditures and course offerings.

4. That further research be conducted to discern the influence of local property wealth, as measured in terms of per pupil valuation, on the ability of a school to offer a quality program as reflected in the number of course offerings.

5. That further research be conducted to determine influencing factors on the relationship between faculty positions and course. Among the influencing variables may be size of school, age of faculty members, education level of faculty members, base salaries of instructors, number of years of teaching experience, majors and minors of teachers, sex of teachers, accreditation level of the school and district staff development policies.

6. That further research be conducted in which the statistical tests used in this study be applied to other variations in size, particularly to schools having an enrollment of less than 50 students and greater than 1000 students.

#### Recommendations for Immediate Attention

1. That the policy in state legislation which assigns the foundation level on the basis of per pupil expenditure be reviewed in light of a lack of evidence to support a high relationship between foundation support and per pupil expenditure.

2. That consideration be given in state school finance policy to recognizing the number of faculty positions as a variable basic to the distribution of state school funds.

3. That equality of educational opportunity be more precisely defined in terms of the number of course offerings available to a student in the secondary school within any one year of attendance.

4. That the foundation level be set at the level appropriate to support the number of course offerings deemed necessary to insure equal educational opportunity.

#### Limitations of the Study

The recommendations in this section have been framed in the context of certain limitations on the study data. Among the limitations are the utilization of information for only one data year, the consideration of data for a limited number of variables and the treatment of the data with a limited number of statistical tests.

APPENDIX A

RELATIONSHIP BETWEEN PER PUPIL EXPENDITURES AND COURSE  
OFFERINGS FOR TOTAL GROUP AND FOUR SUBGROUPS



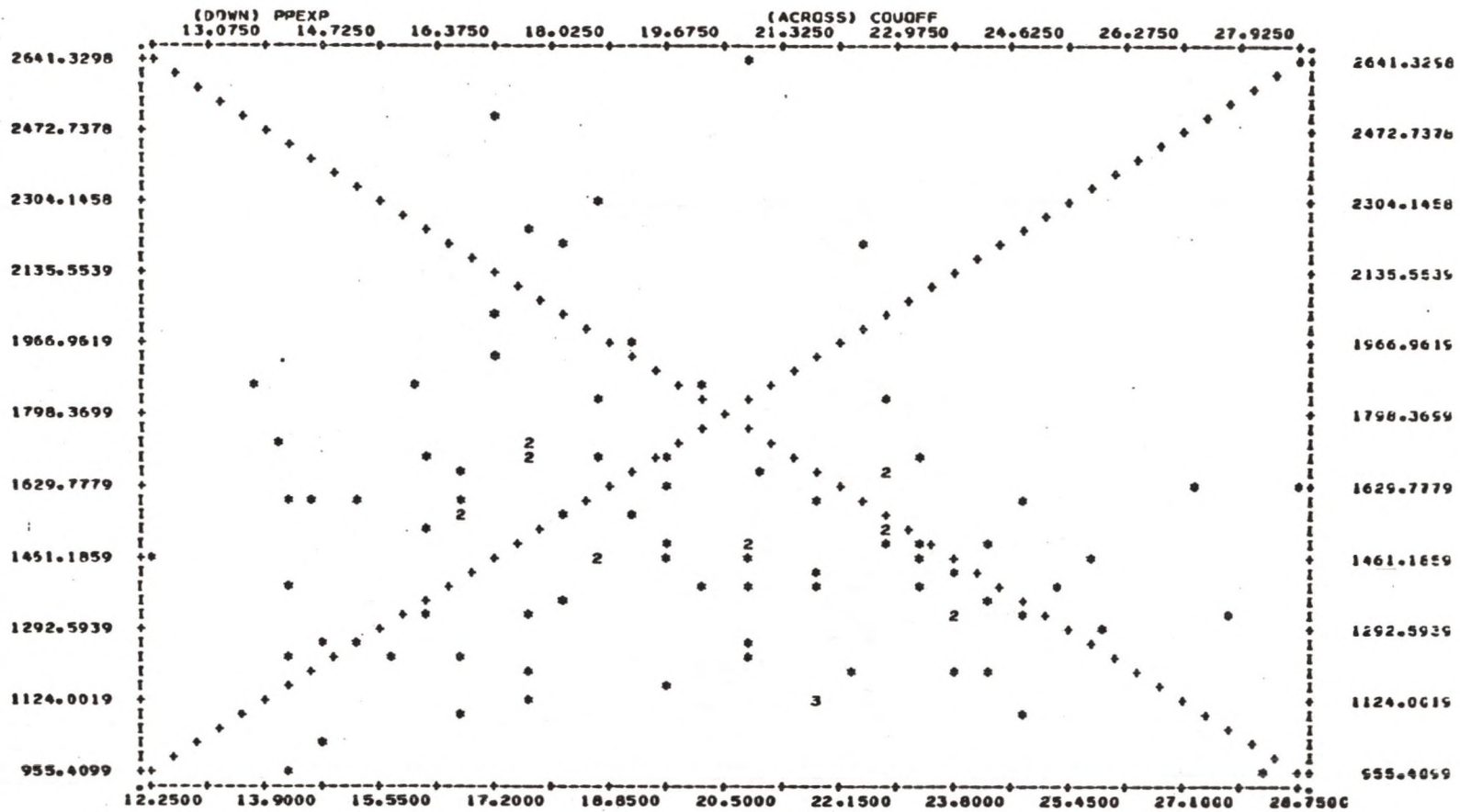


Fig. 3. Relationship Between Per Pupil Expenditures and Course Offerings for Subgroup I (N=94).

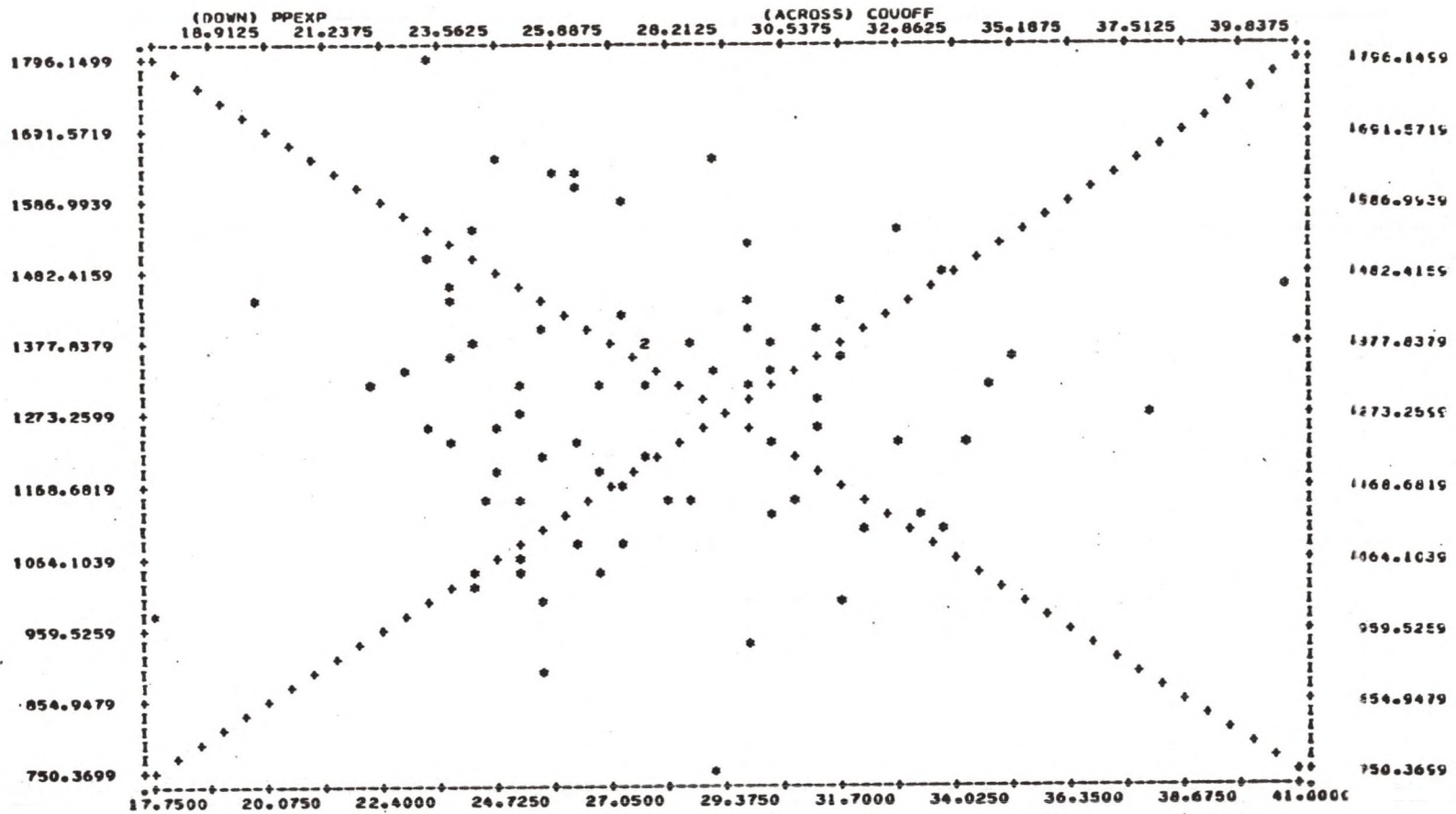


Fig. 4. Relationship Between Per Pupil Expenditures and Course Offerings for Subgroup II (N=78).

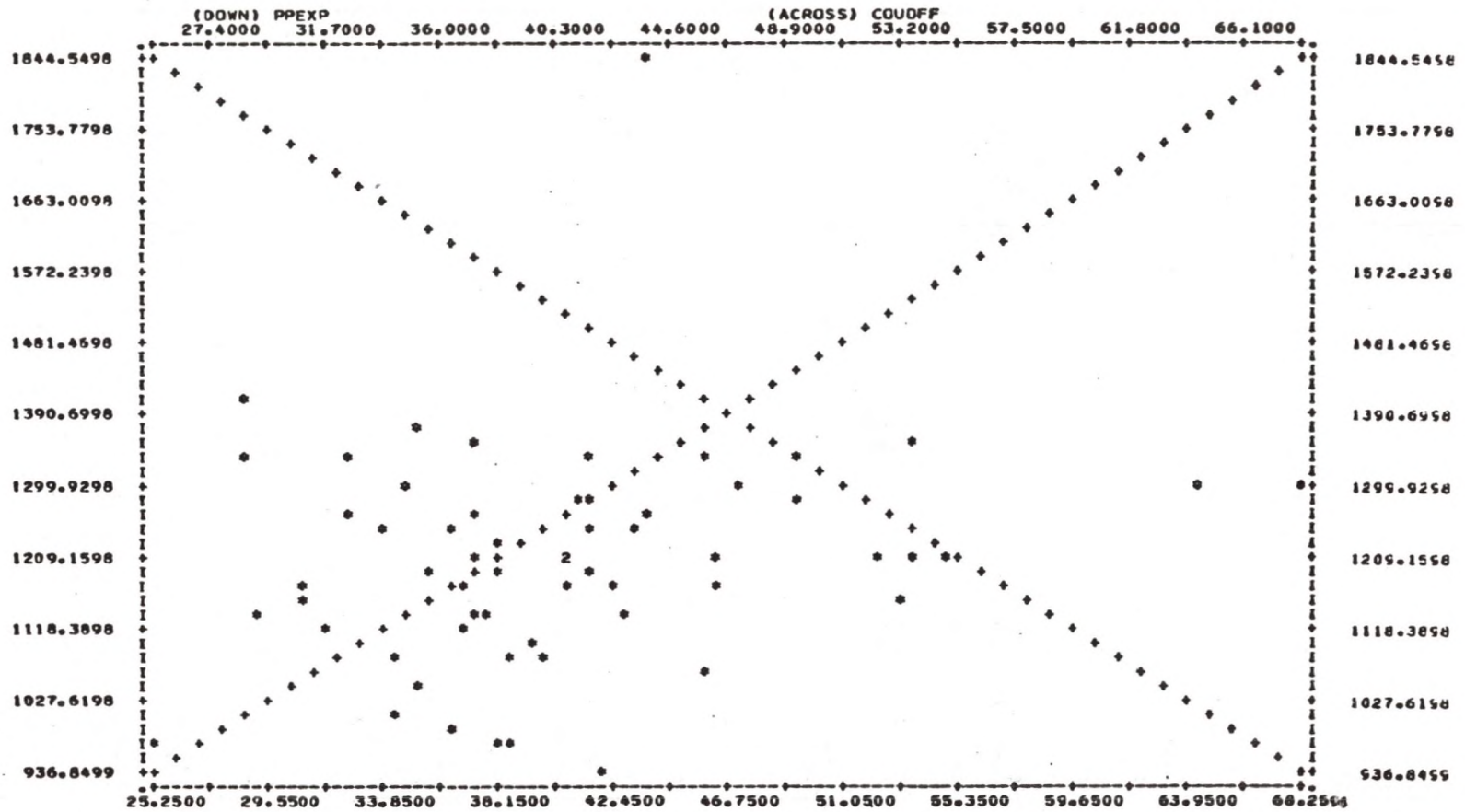


Fig. 5. Relationship Between Per Pupil Expenditures and Course Offerings for Subgroup III (N=60).



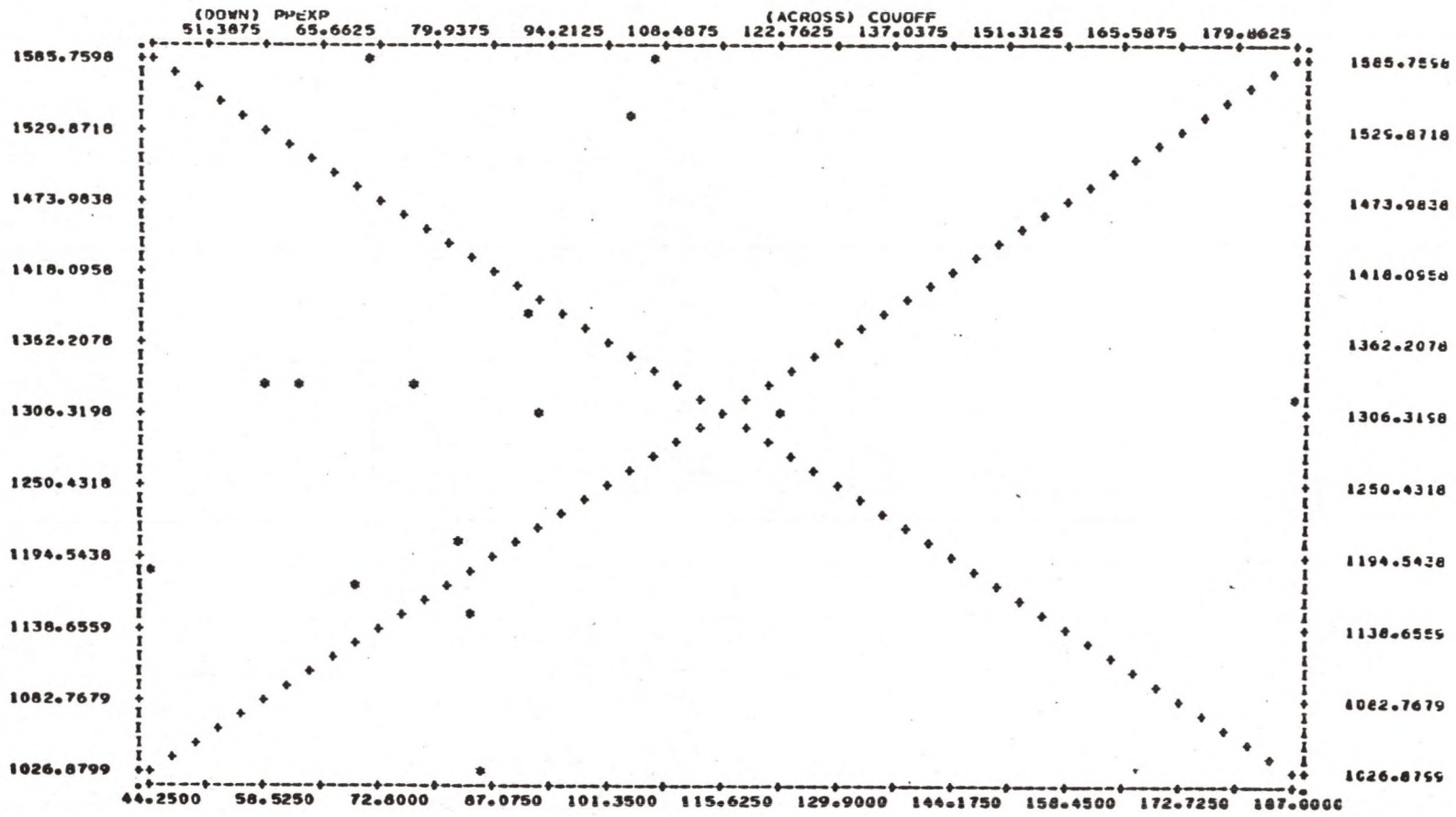


Fig. 6. Relationship Between Per Pupil Expenditures and Course Offerings for Subgroup IV (N=15).

APPENDIX B

RELATIONSHIPS BETWEEN FOUNDATION SUPPORT AND COURSE

OFFERINGS FOR TOTAL GROUP AND FOUR SUBGROUPS

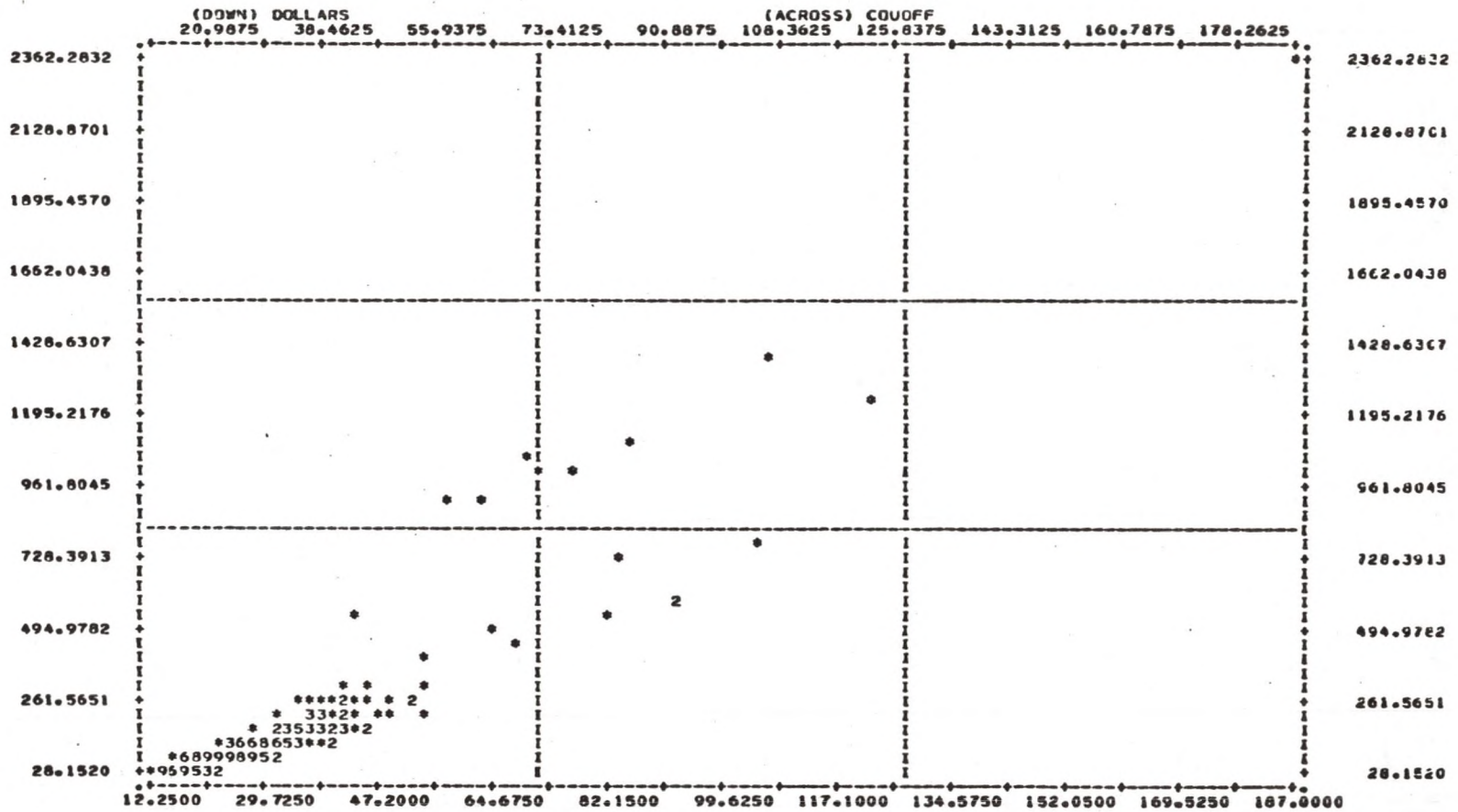


Fig. 7. Relationship Between Foundation Support (DOLLARS) and Course Offerings for Total Group (N=247).

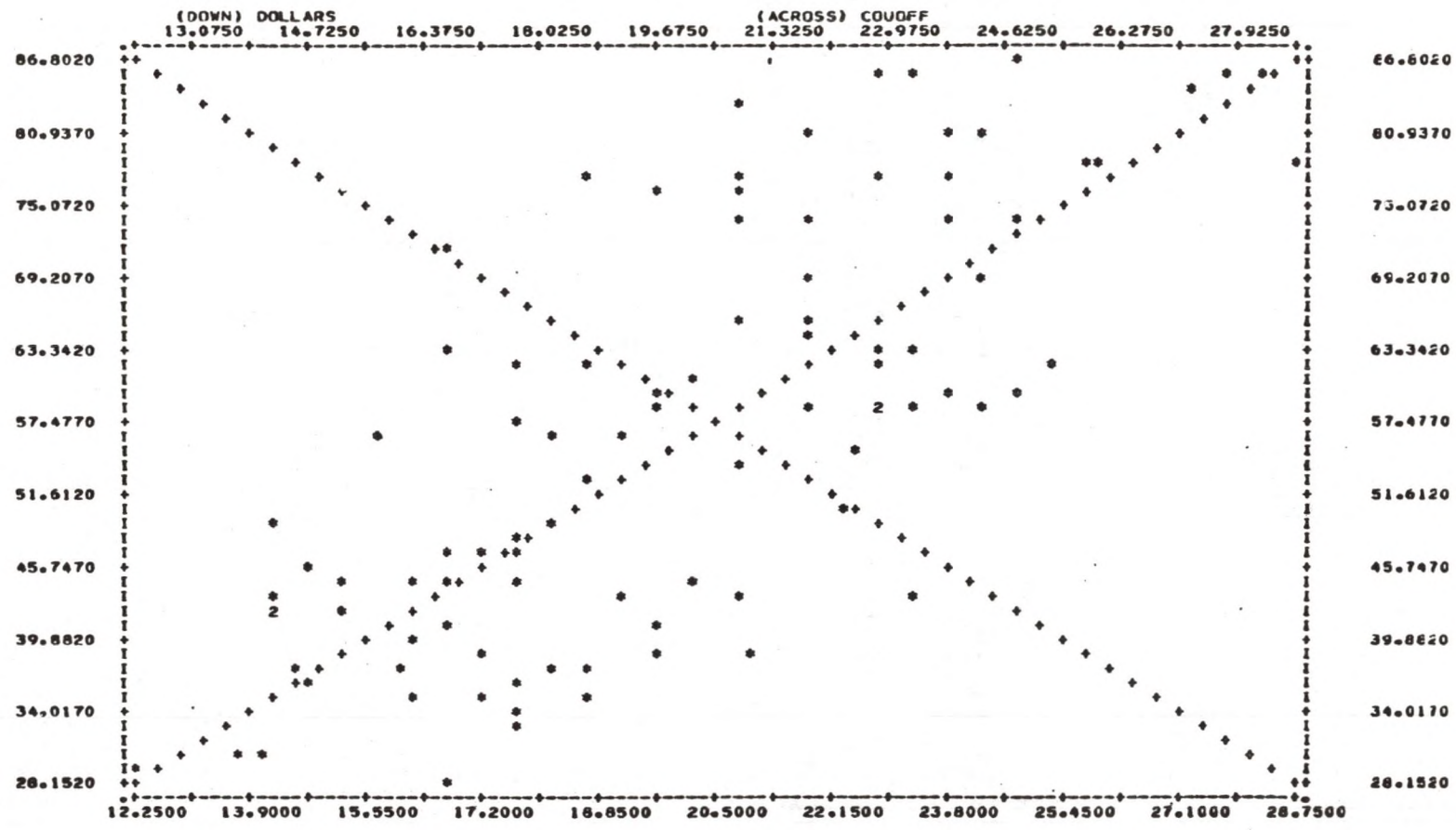


Fig. 8. Relationship Between Foundation Support DOLLARS) and Course Offerings for Subgroup I (N=94).

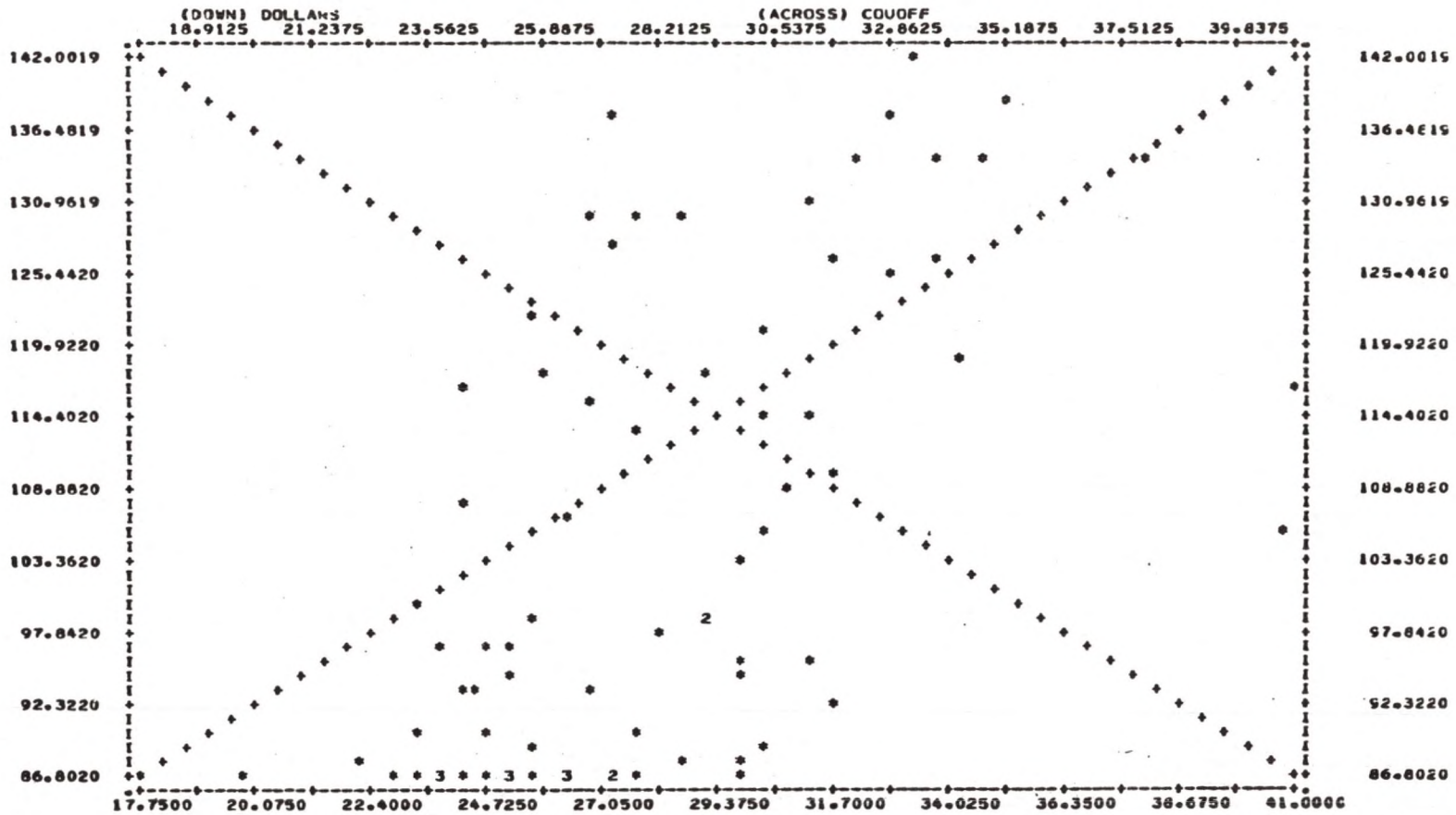


Fig. 9. Relationship Between Foundation Support (DOLLARS) and Course Offerings for Subgroup II (N=78).

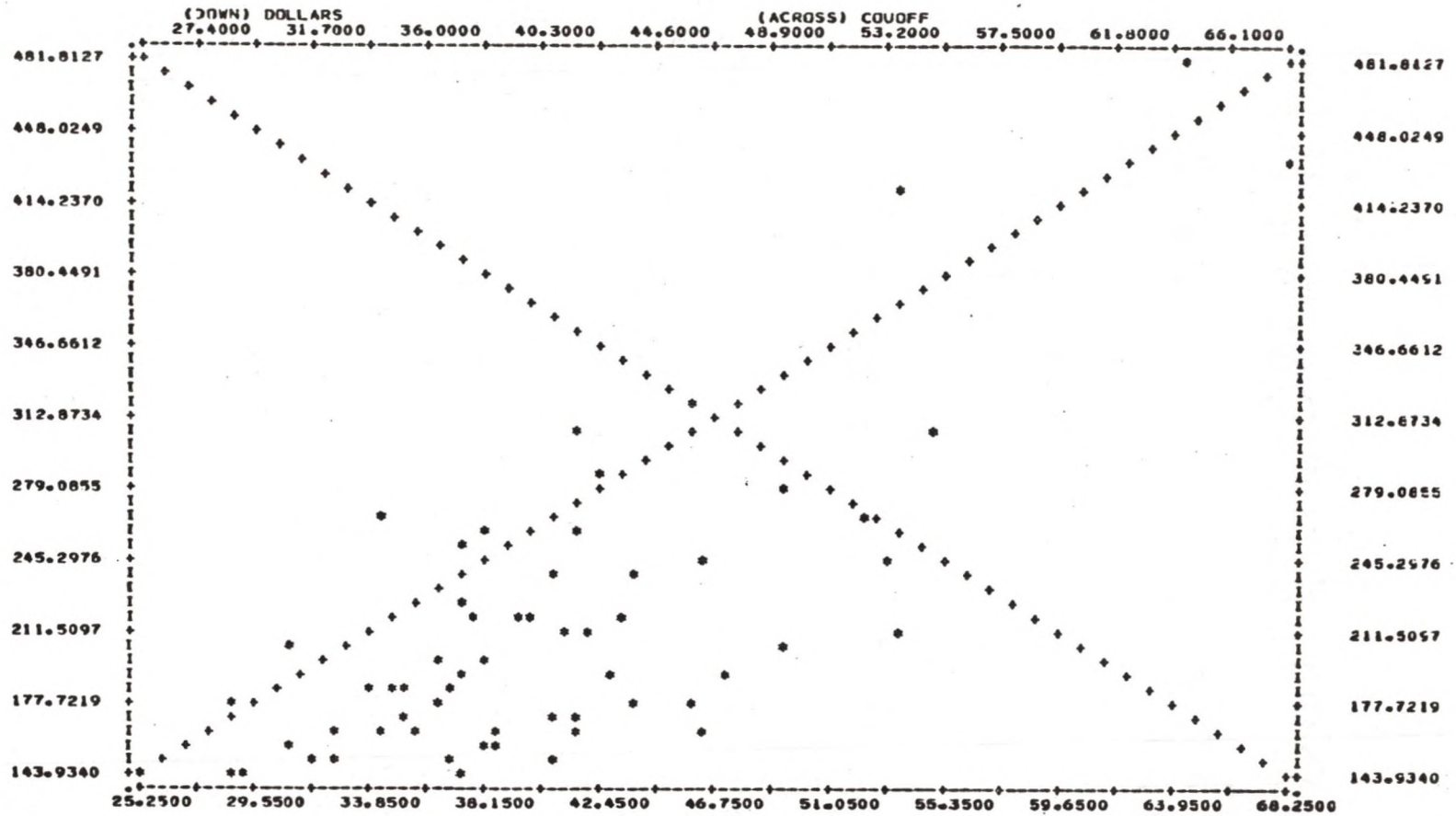


Fig. 10. Relationship Between Foundation Support (DOLLARS) and Course Offerings for Subgroup III (N=60).

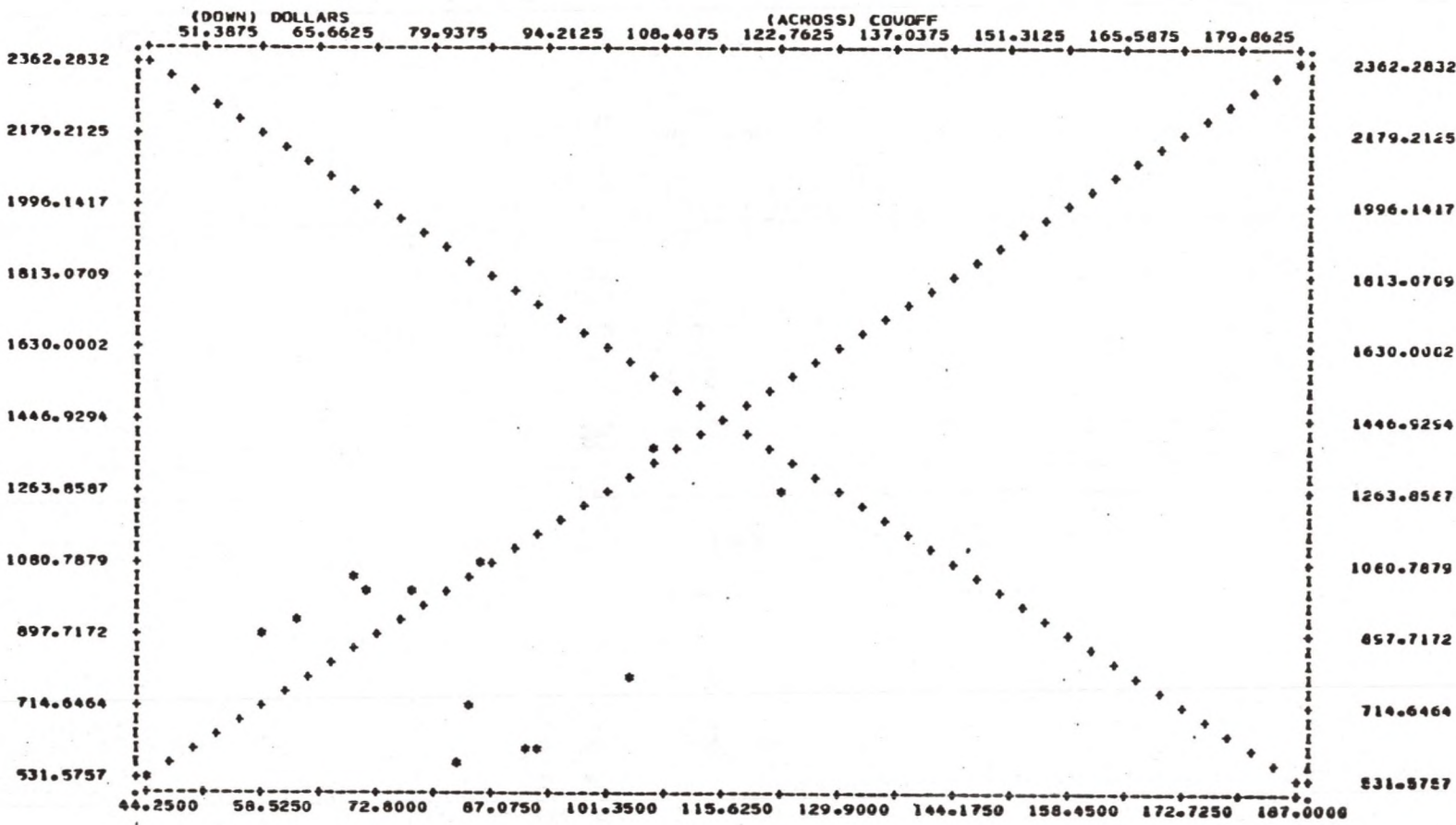


Fig. 11. Relationship Between Foundation Support (DOLLARS) and Course Offerings for Subgroup IV (N=15).

APPENDIX C

RELATIONSHIPS BETWEEN FOUNDATION SUPPORT AND PER PUPIL  
EXPENDITURES FOR TOTAL GROUP AND FOUR SUBGROUPS





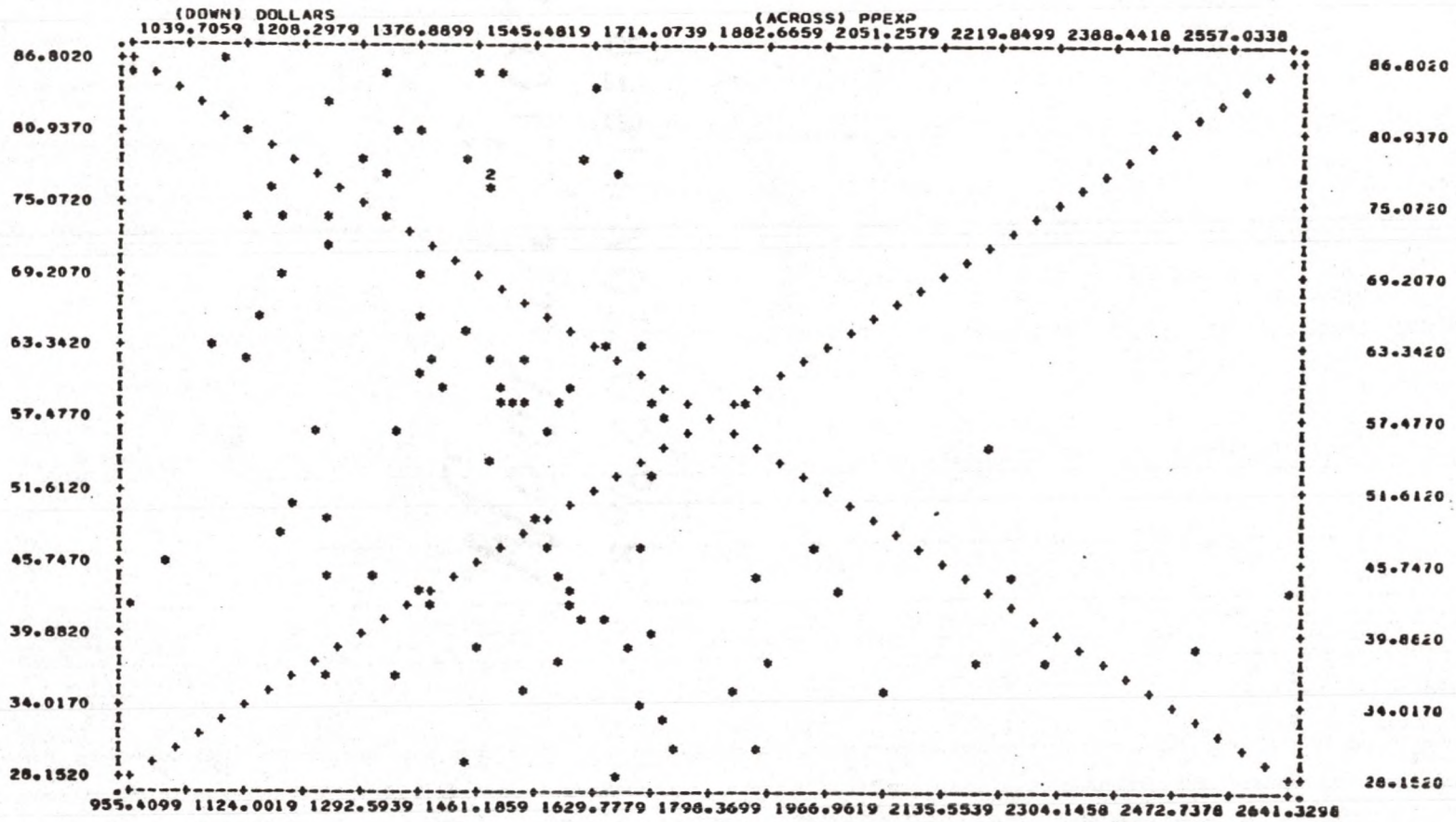


Fig. 13. Relationship Between Foundation Support (DOLLARS) and Per Pupil Expenditures for Subgroup I (N=94).

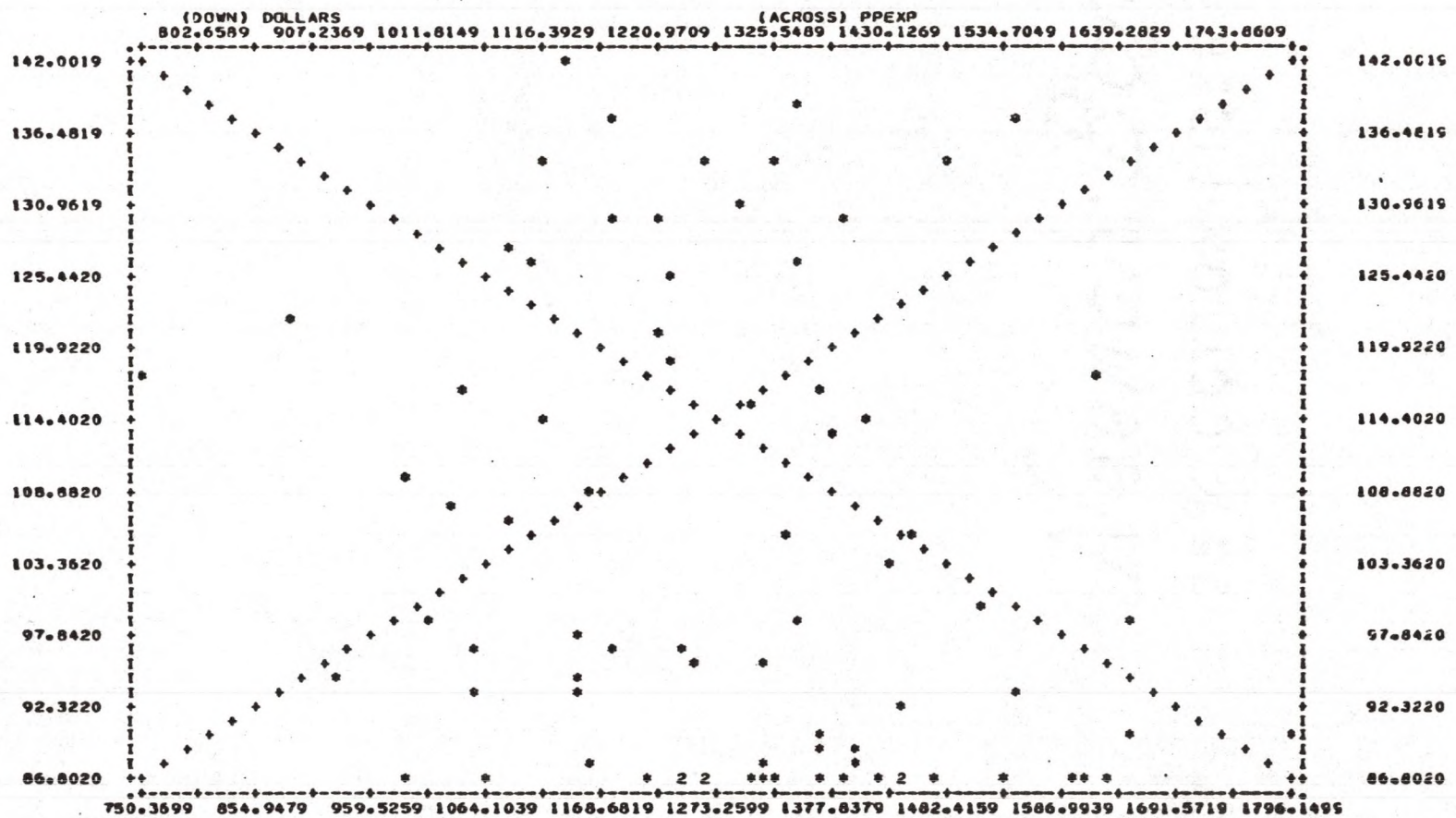


Fig. 14. Relationship Between Foundation Support (DOLLARS) and Per Pupil Expenditures for Subgroup II (N=78).

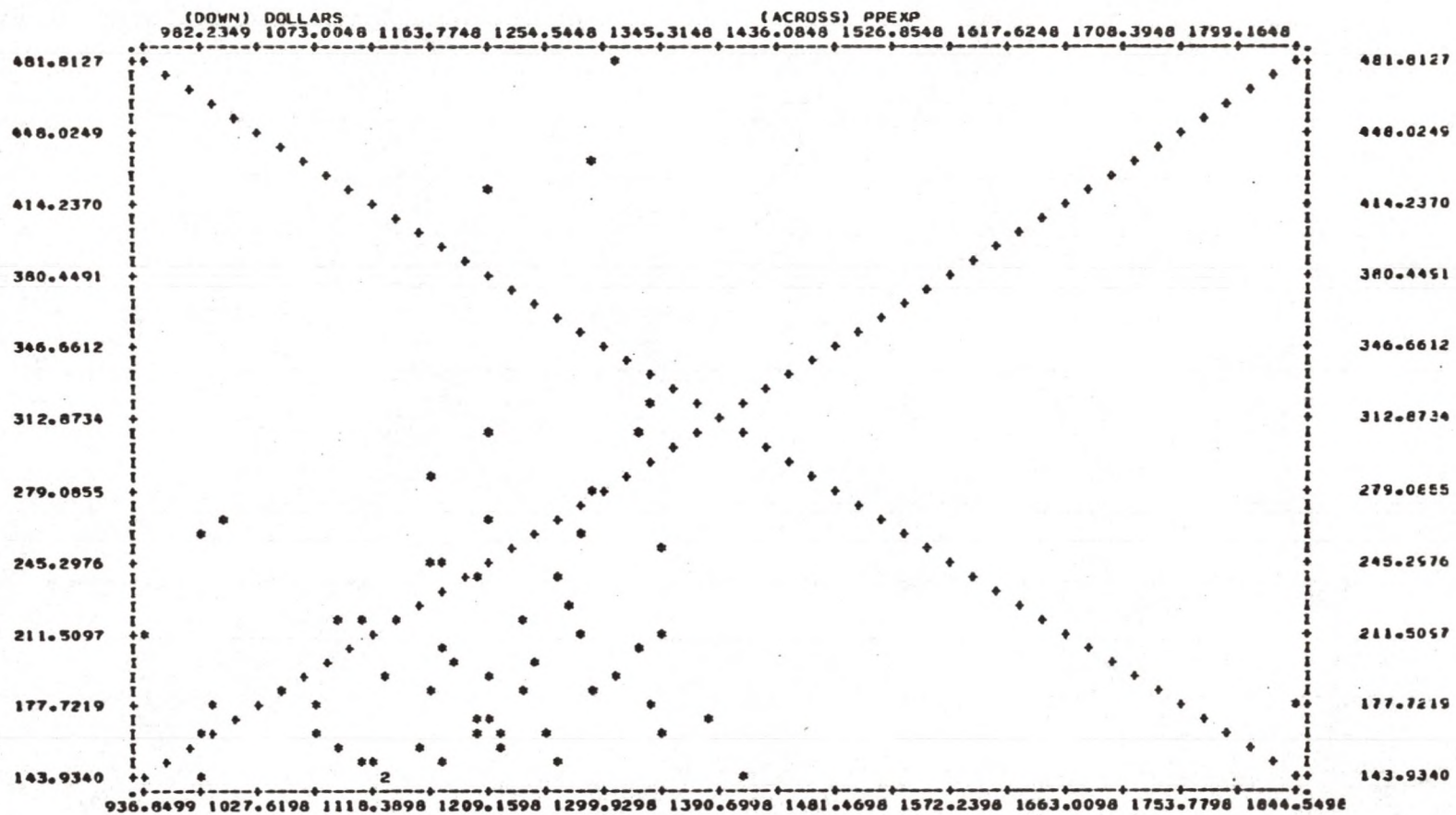


Fig. 15. Relationship Between Foundation Support (DOLLARS) and Per Pupil Expenditures for Subgroup III (N=60).

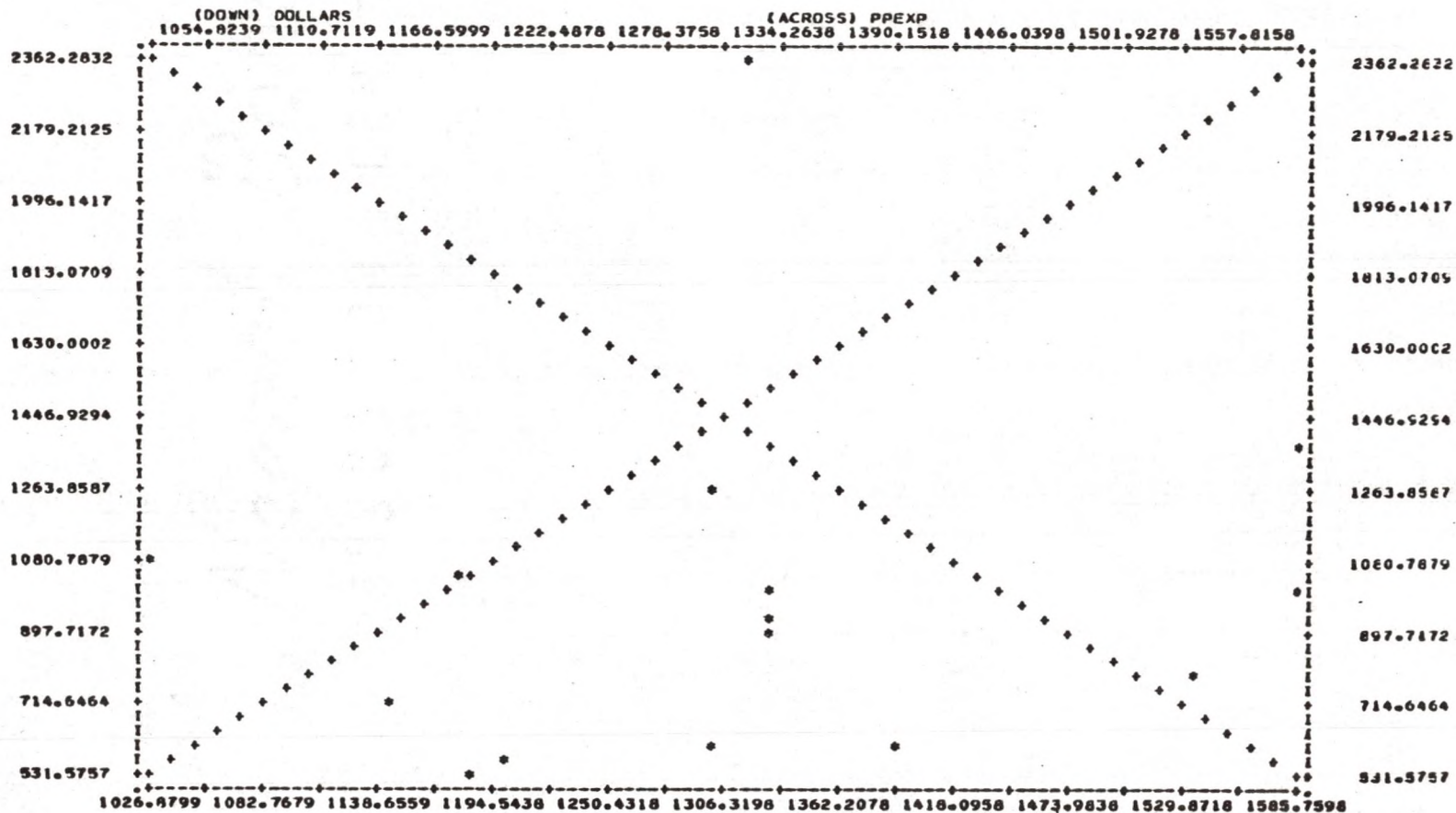


Fig. 16. Relationship Between Foundation Support (DOLLARS) and Per Pupil Expenditures for Subgroup IV (N=15).

APPENDIX D

VARIABLE DATA FOR TOTAL STUDY POPULATION

TABLE 19

## VARIABLE DATA FOR TOTAL STUDY POPULATION

COUNTY	DISTRICT	PLANT	YEAR	SIZE	HSENRL	COURSE	PPEXP	SECTIONS	MILLS	PPVAL	FACULTY
01	003	7369	1976	1	0066	018.75	1,476.52	00169.30	042.00	0007151.56	005.32
01	013	3599	1976	3	0247	037.25	1,269.13	00495.95	033.60	0007547.43	015.07
02	002	8954	1976	4	0642	044.25	1,185.85	00252.88	076.55	0004371.06	028.20
02	013	6641	1976	1	0049	017.75	1,737.32	00143.94	036.00	0010626.45	004.10
02	052	5298	1976	2	0112	024.25	1,030.37	00266.00	036.00	0008348.61	006.50
02	054	2825	1976	1	0053	022.75	1,531.45	00130.88	059.00	0010154.80	006.00
02	065	6118	1976	2	0135	026.75	1,183.78	00310.60	036.00	0009113.55	007.30
02	082	9463	1976	1	0069	021.75	1,123.67	00153.19	051.45	0007387.45	004.90
02	093	4833	1976	1	0039	014.75	1,007.96	00080.06	067.00	0008809.37	003.50
03	005	5741	1976	2	0083	023.25	1,259.60	00157.00	051.00	0005054.82	006.50
03	006	5184	1976	2	0123	034.25	1,229.04	00325.67	036.00	0007868.11	008.22
03	009	0902	1976	2	0109	040.75	1,455.57	00425.00	042.00	0006531.07	009.50
03	025	2510	1976	2	0118	030.25	1,116.55	00183.50	042.00	0003303.30	007.25
03	029	9219	1976	1	0065	020.75	1,479.09	00233.00	042.00	0002776.18	005.66
05	001	1033	1976	3	0353	045.75	1,337.04	00361.10	045.00	0004078.01	021.00
05	013	9422	1976	1	0067	029.75	1,613.87	00208.63	042.00	0006846.79	007.15
05	017	9325	1976	2	0120	026.75	1,308.49	00195.00	036.00	0005304.72	008.00
05	023	5515	1976	1	0048	015.75	1,230.91	00139.00	042.00	0006906.68	005.00
05	029	8046	1976	1	0040	017.75	1,692.40	00190.02	042.00	0013093.13	004.30
05	035	5159	1976	1	0048	018.25	1,345.98	00177.00	042.00	0007601.43	006.00
05	048	6043	1976	1	0047	022.50	2,200.59	00134.75	075.00	0008465.37	004.65
06	001	1043	1976	3	0265	043.75	1,259.97	00396.00	042.00	0004832.99	015.75
06	017	7421	1976	1	0055	021.75	1,440.62	00267.00	062.00	0008588.82	004.57
06	033	7785	1976	2	0107	029.75	1,434.88	00383.00	042.00	0008239.42	009.50
							4,135.47				
07	014	1037	1976	2	0078	027.25	1,417.39	00304.00	036.00	0007349.61	007.50
07	027	7158	1976	2	0093	027.75	1,371.79	00330.00	036.00	0005640.50	007.00
07	034	1528	1976	1	0072	027.25	1,636.71	00231.50	036.00	0007476.99	006.70
07	035	2859	1976	1	0035	019.75	1,641.59	00090.00	042.00	0005981.20	005.00
07	036	5262	1976	2	0092	025.75	1,401.40	00167.00	042.00	0005684.46	008.00
08	001	0970	1976	4	1522	122.25	1,301.62	00090.00	091.00	0003978.46	069.10
08	001	1365	1976	4	0726	092.50	1,301.62	00050.00	091.00	0003978.46	032.00
08	028	9470	1976	1	0069	024.25	1,376.52	00390.00	042.00	0008344.07	006.00
08	036	1932	1976	1	0042	014.25	1,234.88	00143.00	042.00	0009847.15	003.50
09	001	2744	1976	4	1677	107.00	1,585.76	00057.04	147.11	0004849.00	091.00
09	001	6125	1976	4	1196	072.00	1,585.76	00057.04	147.11	0004849.00	053.50
09	002	4933	1976	3	0213	037.25	1,212.00	00274.50	036.00	0006871.86	015.00
09	003	0525	1976	2	0143	035.25	1,349.14	00229.50	042.00	0009806.51	008.60
09	004	1148	1976	2	0134	028.75	1,387.83	00228.37	050.00	0008386.60	008.82
09	006	9315	1976	4	0885	084.00	1,146.61	00124.75	066.18	0004749.43	047.50

TABLE 19--continued

COUNTY	DISTRICT	PLANT	YEAR	SIZE	HSENRL	COURSE	PPEXP	SECTIONS	MILLS	PPVAL	FACULTY
09	007	5479	1976	1	0037	020.75	2,641.33	00071.75	066.00	0010402.09	004.00
09	017	1354	1976	3	0238	043.25	1,237.90	00294.25	036.00	0008860.86	014.55
09	026	1370	1976	1	0051	019.75	1,492.10	00094.50	042.00	0008410.06	004.75
09	054	5217	1976	1	0045	018.75	1,713.44	00135.90	042.00	0009255.83	004.25
09	076	0513	1976	1	0073	022.75	1,494.32	00189.00	060.00	0012334.92	007.00
09	080	6882	1976	2	0093	023.25	1,796.15	00212.75	042.00	0010365.84	006.50
10	001	6674	1976	1	0042	018.25	1,547.15	00092.62	042.00	0006351.63	003.45
10	002	0355	1976	1	0040	016.75	1,564.35	00077.00	042.00	0005721.16	004.00
10	014	1028	1976	1	0059	024.25	1,179.63	00237.00	052.00	0010365.06	006.00
10	019	5895	1976	1	0069	023.75	1,340.90	00174.00	042.00	0006526.09	006.40
10	023	5153	1976	3	0478	068.25	1,293.91	00535.18	050.00	0004729.03	026.00
10	024	3448	1976	1	0043	022.25	1,196.28	00082.25	062.00	0007172.33	006.00
10	030	5725	1976	1	0054	023.25	1,705.62	00097.25	042.00	0006151.61	004.70
10	036	6008	1976	1	0033	017.25	2,504.82	00067.75	042.00	0002009.95	004.00
11	037	2959	1976	1	0030	017.25	2,043.07	00110.75	042.00	0009494.58	004.50
11	038	5786	1976	1	0033	019.75	1,464.34	00145.00	042.00	0009755.99	005.00
11	040	2330	1976	3	0169	036.75	1,112.95	00259.00	042.00	0006036.59	011.00
11	041	6215	1976	3	0291	034.25	1,001.68	00408.00	036.00	0005191.03	012.10
11	042	2887	1976	1	0038	015.25	1,247.83	00124.00	042.00	0008390.22	004.10
12	001	1866	1976	3	0275	037.25	1,345.41	00803.54	061.00	0007836.75	014.00
13	008	1881	1976	1	0036	015.25	1,597.39	00103.75	042.00	0004483.00	003.70
13	016	4927	1976	3	0175	038.25	1,220.39	00839.00	025.57	0006495.14	011.00
13	019	3390	1976	2	0093	024.75	1,650.01	00314.75	035.98	0007398.75	006.50
14	001	5971	1976	3	0267	053.25	1,160.41	00326.53	036.00	0004916.63	016.00
14	012	7861	1976	1	0067	026.00	1,294.10	00171.00	036.00	0006358.24	006.20
15	006	3527	1976	2	0097	024.25	1,548.91	00401.00	049.00	0007078.20	007.00
15	007	1055	1976	1	0032	018.75	2,287.90	00139.00	042.00	0007260.87	004.50
15	015	8248	1976	2	0085	023.75	1,366.64	00211.25	042.00	0003406.46	007.00
15	030	3380	1976	1	0054	016.75	1,081.42	00091.25	042.00	0003568.67	003.00
15	036	5288	1976	3	0287	038.25	978.32	00430.00	036.00	0003555.07	018.00
16	010	1304	1976	3	0339	054.75	1,211.49	00388.13	037.20	0005190.35	019.00
16	014	3172	1976	1	0050	022.75	1,840.90	00167.50	067.00	0013872.80	004.05
16	015	5597	1976	1	0053	018.75	1,469.81	00144.88	042.00	0005154.03	006.00
16	016	3226	1976	1	0028	017.75	1,732.90	00112.75	067.00	0008751.84	003.50
17	003	0850	1976	3	0196	043.75	1,844.55	00540.00	024.00	0006775.39	012.25
17	006	3191	1976	1	0048	019.25	1,558.57	00216.00	036.00	0008714.75	006.00



TABLE 19--continued

COUNTY	DISTRICT	PLANT	YEAR	SIZE	HSENRL	COURSE	PPEXP	SECTIONS	MILLS	PPVAL	FACULTY
18	001	3239	1976	4	1127	063.25	1,326.63	00077.41	106.30	0003766.95	050.30
18	001	7360	1976	4	1218	076.75	1,326.63	00077.41	106.30	0003766.95	057.00
18	044	5169	1976	3	0312	042.25	1,167.72	00318.17	036.00	0006165.65	017.00
18	061	8416	1976	2	0122	029.25	750.37	00117.38	036.00	0005884.90	008.00
18	128	5707	1976	3	0165	032.75	1,264.02	00291.00	051.00	0008547.10	009.00
18	129	6134	1976	2	0139	033.75	1,478.14	00249.87	036.00	0006120.83	010.50
19	015	6031	1976	1	0063	021.75	1,122.84	00250.00	052.00	0006080.45	004.72
19	016	2328	1976	2	0125	030.25	1,224.59	00441.50	036.00	0006055.2E	010.75
19	018	1306	1976	2	0103	029.25	1,344.70	00455.00	035.29	0006219.95	011.50
20	018	1555	1976	3	0162	040.75	1,168.71	00180.38	042.00	0006413.46	010.75
20	022	3444	1976	1	0050	021.75	1,586.36	00138.25	061.00	0008511.91	005.50
20	023	0958	1976	1	0063	023.75	1,177.40	00180.38	061.00	0007431.81	007.00
21	006	5858	1976	3	0240	039.25	1,106.25	00594.00	030.00	0005980.49	013.54
21	009	6026	1976	2	0130	032.75	1,231.36	00538.25	057.00	0005307.50	008.50
21	014	7388	1976	2	0076	024.25	1,384.07	00295.50	051.00	0008551.65	005.70
22	011	7025	1976	1	0031	017.75	1,341.48	00197.00	042.00	0008326.98	004.50
22	014	7437	1976	1	0041	017.75	1,178.62	00237.00	036.00	0007512.42	004.25
22	020	8571	1976	1	0050	022.75	1,523.18	00216.00	048.00	0007366.84	005.34
22	026	8232	1976	2	0142	027.25	1,178.70	00376.50	042.00	0005616.01	008.25
22	028	8318	1976	2	0077	027.25	1,595.73	00262.50	042.00	0005865.11	007.00
23	003	2107	1976	3	0206	035.25	1,042.69	00276.75	036.00	0005551.60	010.00
23	005	4758	1976	1	0034	016.25	1,707.83	00118.00	065.00	0010361.77	003.65
23	007	5068	1976	2	0100	025.25	1,051.35	00341.00	042.00	0009194.81	008.00
23	008	5145	1976	3	0180	046.25	1,216.42	00291.50	036.00	0005735.8E	011.75
23	009	5483	1976	2	0083	026.25	1,239.41	00207.50	034.59	0008595.36	006.00
23	011	9009	1976	1	0061	016.75	1,234.09	00180.00	042.00	0007358.05	005.00
24	002	5977	1976	3	0263	040.75	1,202.39	00494.31	036.00	0004218.06	015.01
24	014	3013	1976	2	0092	030.25	1,367.43	00318.13	042.00	0006949.42	006.25
25	001	9003	1976	3	0213	047.00	1,304.75	00305.25	042.00	0004141.03	015.00
25	004	6046	1976	3	0182	038.75	979.53	00399.00	030.00	0004061.15	014.00
25	014	0339	1976	2	0097	024.50	1,143.59	00215.50	036.00	0004301.93	005.33
25	025	3253	1976	2	0086	025.25	1,068.05	00237.50	036.00	0005654.03	008.00
25	029	8839	1976	2	0076	019.75	1,436.80	00258.75	042.00	0007133.75	005.00
25	037	1796	1976	1	0031	014.75	1,243.17	00092.25	042.00	0007616.88	002.65
25	054	4830	1976	1	0066	023.75	1,319.95	00154.50	042.00	0004050.93	005.35
25	056	0795	1976	1	0029	017.75	1,696.38	00108.00	072.00	0006706.05	005.00
25	057	1925	1976	2	0091	029.75	1,399.57	00253.25	036.00	0005176.64	008.50

TABLE 19--continued

COUNTY	DISTRICT	PLANT	YEAR	SIZE	HSENRL	COURSE	PPEXP	SECTIONS	MILLS	PPVAL	FACULTY
26	004	9849	1976	2	0076	017.75	988.29	00128.80	036.00	0003750.07	005.00
26	009	0539	1976	3	0157	037.25	1,130.02	00440.50	036.00	0006422.83	010.50
26	010	5200	1976	1	0063	024.75	1,326.43	00202.50	042.00	0007204.62	010.00
26	019	9477	1976	3	0219	038.25	1,185.68	00354.00	042.00	0004876.21	012.92
27	001	5606	1976	3	0272	046.25	1,172.51	01400.00	024.00	0005802.77	016.72
27	002	0315	1976	1	0054	022.75	1,648.39	00281.00	036.00	0012258.09	005.21
28	001	9451	1976	2	0132	027.25	1,080.53	00244.00	036.00	0005447.55	007.23
28	004	9239	1976	2	0114	031.75	994.25	00244.20	036.00	0005253.18	009.00
28	008	8806	1976	2	0097	026.75	1,049.73	00160.25	042.00	0005215.80	009.00
28	050	5519	1976	2	0111	026.25	1,086.05	00135.05	030.00	0006153.81	006.75
28	051	3052	1976	3	0240	037.75	1,139.07	00392.35	036.00	0004228.47	018.50
28	062	1225	1976	1	0050	019.75	1,706.62	00252.00	048.00	0009214.76	004.75
28	072	8562	1976	3	0152	029.25	1,128.36	00484.25	036.00	0006350.89	009.75
28	089	7491	1976	2	0086	029.75	1,533.89	00086.36	024.00	0002327.64	008.00
29	003	3529	1976	3	0203	036.75	1,164.70	00246.86	030.00	0003796.21	010.00
29	014	9831	1976	1	0032	013.25	2,190.95	00156.50	030.00	0006247.20	003.55
29	020	4791	1976	1	0053	017.75	1,120.47	00152.00	030.00	0004740.38	004.60
29	022	8224	1976	2	0090	025.25	1,315.99	00076.00	042.00	0002423.50	004.70
29	027	0924	1976	3	0177	035.75	1,196.03	00297.00	036.00	0005075.77	013.00
30	001	5453	1976	4	1326	085.50	1,026.88	00481.00	030.00	0003840.26	059.00
30	007	6033	1976	3	0232	042.00	936.85	00335.19	033.60	0004874.58	015.00
30	008	0349	1976	1	0032	016.00	1,876.71	00188.00	042.00	0007019.70	004.50
30	013	3537	1976	2	0131	033.75	1,101.36	00384.75	028.59	0005941.06	008.00
30	039	2854	1976	3	0150	025.25	978.03	00387.25	036.00	0004207.00	009.35
30	048	3165	1976	3	0188	041.75	1,198.76	00425.75	029.19	0004625.60	012.20
31	001	6039	1976	3	0229	041.25	1,285.54	00345.00	036.00	0002157.94	016.50
31	002	8218	1976	3	0240	040.00	1,086.92	00572.00	030.00	0005095.94	016.00
31	003	6225	1976	2	0142	032.75	1,544.44	00358.00	042.00	0004585.56	010.30
31	053	6895	1976	1	0030	018.75	1,824.79	00158.00	072.00	0010023.22	006.00
31	137	7108	1976	1	0059	021.75	1,382.85	00224.00	042.00	0006686.80	006.25
32	020	0423	1976	1	0065	019.75	1,162.85	00100.63	042.00	0006853.97	004.10
32	040	5699	1976	2	0121	024.25	1,046.30	00185.06	036.00	0005201.07	006.40
32	046	5641	1976	2	0087	026.25	1,627.91	00205.69	062.00	0007659.05	005.27
32	066	5136	1976	3	0190	040.75	1,212.57	00347.48	045.00	0007072.74	010.48
32	074	8506	1976	2	0086	023.75	1,469.91	00214.00	062.00	0006415.97	005.63
32	080	8826	1976	2	0086	027.75	1,309.00	00221.88	062.00	0010663.08	008.10
33	018	1350	1976	3	0172	030.75	1,155.38	00448.00	036.00	0004881.18	012.00

TABLE 19--continued

COUNTY	DISTRICT	PLANT	YEAR	SIZE	HSENRLL	COURSE	PPEXP	SECTIONS	MILLS	PPVAL	FACULTY
34	001	6982	1976	2	0075	025.25	1,263.48	00129.33	052.00	0008155.46	007.00
34	006	1323	1976	3	0283	041.50	1,278.63	00304.96	036.00	0004847.82	014.20
34	012	3721	1976	2	0091	022.25	1,312.83	00127.38	052.00	0009134.99	008.00
34	019	1928	1976	2	0121	041.00	1,367.44	00191.50	042.00	0015101.10	013.50
34	027	9186	1976	3	0224	049.50	1,331.57	00286.00	036.00	0003894.18	015.50
34	043	8212	1976	1	0073	023.25	1,453.28	00115.00	057.00	0008632.84	008.00
34	055	5999	1976	2	0088	024.75	1,245.30	00136.25	036.00	0007872.24	008.00
35	001	9508	1976	1	0052	020.25	1,378.06	00195.25	036.00	0006828.51	005.80
35	005	7614	1976	3	0464	053.75	1,206.23	00698.00	036.50	0004488.50	025.50
35	007	0798	1976	1	0038	020.25	1,865.29	00111.62	036.00	0003800.83	004.45
36	001	1829	1976	4	0722	092.00	1,389.84	00369.75	058.55	0003866.65	042.65
36	002	2113	1976	2	0136	031.25	1,294.58	00258.00	030.00	0008604.22	009.50
36	003	1605	1976	1	0051	023.75	1,415.21	00159.56	047.00	0002021.50	004.95
36	004	1412	1976	1	0037	014.25	1,596.82	00119.63	042.00	0010215.94	003.50
36	034	3412	1976	1	0030	016.25	1,523.86	00092.00	052.00	0008189.86	004.00
36	044	8230	1976	1	0067	025.75	1,446.55	00221.86	042.00	0008595.62	006.20
37	002	7845	1976	1	0063	020.75	1,247.98	00134.63	042.00	0005275.84	005.25
37	019	5296	1976	3	0306	049.25	1,298.60	00360.07	036.00	0005019.60	020.00
37	022	2387	1976	3	0191	035.00	1,379.41	00272.00	041.97	0006050.89	011.60
38	002	7858	1976	2	0077	022.75	1,330.37	00206.00	036.00	0007327.80	008.00
38	009	5778	1976	2	0139	038.00	1,262.87	00314.68	036.00	0006549.90	010.70
38	025	8501	1976	1	0026	014.00	1,746.66	00124.10	036.00	0008964.15	002.55
38	026	3169	1976	2	0119	031.25	1,405.41	00281.82	024.00	0005972.60	011.50
39	009	3432	1976	3	0180	032.50	1,344.99	00217.37	036.00	0006448.30	009.80
39	018	2739	1976	2	0089	023.75	1,437.76	00059.00	036.00	0004957.00	005.25
39	028	5260	1976	3	0192	036.50	994.79	00186.75	030.00	0005320.66	012.17
39	037	9170	1976	4	0669	032.50	1,202.29	00255.00	042.00	0004954.81	038.60
39	042	9627	1976	3	0196	045.75	1,069.60	00298.25	042.00	0007980.66	016.00
39	044	6120	1976	2	0134	027.75	1,219.56	00222.07	052.00	0008205.54	009.50
40	001	1966	1976	3	0192	028.75	1,333.85	00199.00	036.00	0001047.36	010.00
40	003	8152	1976	2	0103	025.75	1,010.35	00109.00	036.00	0001119.57	006.50
40	004	7558	1976	3	0179	034.25	1,073.53	00250.00	042.00	0004936.64	012.00
40	029	7555	1976	2	0122	026.00	1,619.41	00280.90	036.00	0005047.47	008.00
41	002	5719	1976	2	0109	030.25	1,333.60	00192.87	042.00	0003877.21	010.00
41	003	6130	1976	2	0104	023.25	1,512.17	00117.00	042.00	0004788.41	009.00
41	006	7709	1976	3	0206	034.00	1,238.57	00476.39	030.00	0006496.40	012.00
42	016	3199	1976	1	0050	023.25	1,499.78	00264.75	042.00	0006799.16	005.50

TABLE 19--Continued

COUNTY	DISTRICT	PLANT	YEAR	SIZE	HSENRL	COURSE	PPEXP	SECTIONS	MILLS	PPVAL	FACULTY
42	019	5532	1976	3	0173	038.50	1,090.32	00429.00	036.00	0004292.33	013.00
43	003	8036	1976	2	0102	029.25	1,651.54	00314.75	030.00	0001477.81	009.00
43	008	7804	1976	1	0056	021.75	1,133.29	00288.00	030.00	0004668.92	007.00
45	001	1845	1976	4	0956	104.50	1,538.17	00354.75	068.00	0003302.76	061.50
45	003	8335	1976	1	0050	024.25	1,509.23	00092.00	036.00	0007357.20	007.00
45	004	7433	1976	3	0159	028.75	1,407.19	00319.00	046.00	0004579.73	009.30
45	009	8060	1976	2	0147	033.25	1,134.87	00302.00	024.00	0004287.84	008.50
45	013	0884	1976	3	0205	034.75	1,294.16	00144.00	024.00	0002871.97	015.50
46	003	2827	1976	2	0131	031.75	1,349.76	00177.37	036.00	0007201.88	008.25
46	010	3729	1976	2	0100	023.75	1,241.79	00187.87	051.00	0008232.00	008.00
46	018	5376	1976	1	0038	016.75	1,573.49	00092.01	046.00	0008125.00	004.35
47	001	4570	1976	4	1265	070.50	1,175.28	00371.50	065.07	0004188.90	065.70
47	003	5657	1976	2	0098	025.25	1,149.26	00215.25	036.00	0005604.73	005.50
47	010	7087	1976	1	0037	019.25	1,983.09	00156.50	030.00	0008424.43	005.00
47	011	1144	1976	1	0038	016.25	1,313.25	00165.25	042.00	0012780.19	003.50
47	014	5794	1976	1	0073	028.25	955.61	00219.00	036.00	0008956.82	006.20
47	019	4892	1976	1	0074	024.75	1,087.40	00169.50	042.00	0006392.21	006.00
47	024	1580	1976	1	0033	021.00	1,675.39	00141.00	042.00	0012283.30	005.00
47	028	1450	1976	1	0046	020.75	1,480.04	00124.00	067.00	0008799.00	003.50
47	030	9525	1976	1	0037	023.25	1,381.96	00257.00	036.00	0007536.50	004.75
47	042	8250	1976	1	0066	022.75	1,665.16	00268.37	036.00	0008352.58	005.50
48	002	0964	1976	1	0053	025.25	1,400.46	00194.13	036.00	0010284.10	008.00
48	008	1277	1976	3	0178	041.75	1,251.34	00259.25	042.00	0005158.43	014.00
48	012	2037	1976	1	0040	017.25	1,948.75	00145.50	065.00	0009094.52	004.25
48	028	6122	1976	2	0086	025.75	1,210.32	00247.75	036.00	0007364.47	010.00
49	003	1369	1976	2	0139	032.25	1,113.21	00208.75	042.00	0007563.50	010.00
49	004	1459	1976	1	0051	024.75	1,593.43	00161.63	066.00	0009080.66	005.58
49	007	3504	1976	2	0101	028.25	1,149.31	00153.13	046.00	0008694.68	007.15
49	009	3630	1976	3	0210	042.75	1,130.76	00205.75	042.00	0009321.75	011.50
49	010	5526	1976	3	0292	052.50	1,211.35	00282.25	061.00	0006712.43	020.75
50	003	3235	1976	3	0529	064.50	1,306.31	00176.25	088.70	0004611.09	030.00
50	020	5759	1976	2	0113	030.75	1,156.92	00125.50	055.50	0006945.17	007.00
50	039	5156	1976	1	0036	014.25	955.41	00074.81	042.00	0008050.04	003.57
50	071	7098	1976	1	0024	016.75	1,662.37	00040.25	062.00	0007360.59	003.40
50	078	9208	1976	3	0217	036.25	1,243.57	00174.94	042.00	0005263.78	013.50
50	079	2891	1976	1	0073	027.75	1,325.22	00140.25	036.00	0006860.01	007.50
50	106	2109	1976	2	0098	029.75	932.79	00141.69	030.06	0004759.29	008.00
50	128	0081	1976	1	0071	020.75	1,235.26	00163.29	042.00	0007593.99	006.00

TABLE 19--continued

COUNTY	DISTRICT	PLANT	YEAR	SIZE	HSENRL	COURSE	PPEXP	SECTIONS	MILLS	PPVAL	FACULTY
51	001	5752	1976	4	2853	187.00	1,318.16	00052.70	042.00	0003245.93	150.80
51	007	8923	1976	3	0162	031.75	1,115.31	00177.19	036.00	0003989.55	109.25
51	016	7717	1976	2	0099	029.75	1,313.33	00194.75	042.00	0005002.81	108.00
51	024	1994	1976	1	0036	014.25	1,392.85	00137.00	042.00	0006532.25	103.50
51	028	4882	1976	3	0231	053.50	1,348.29	00418.50	042.00	0004986.37	117.00
51	041	8266	1976	2	0126	025.75	888.29	00071.43	036.00	0002189.54	107.80
51	054	0916	1976	2	0099	031.25	1,248.96	00257.63	036.00	0006182.94	110.00
51	156	1302	1976	2	0091	029.75	1,154.11	00247.31	036.00	0005841.98	106.70
51	158	5446	1976	2	0100	024.75	1,182.95	00358.25	042.00	0007522.55	105.45
52	003	1319	1976	1	0026	013.75	1,873.51	00094.34	060.00	0010768.00	104.00
52	023	1039	1976	1	0056	020.75	1,380.01	00190.75	060.00	0008708.65	104.00
52	035	3831	1976	1	0032	014.50	1,584.17	00135.25	042.00	0007018.05	103.50
52	038	3479	1976	3	0337	041.75	1,327.68	00434.06	061.48	0004249.21	121.00
52	039	8284	1976	1	0066	020.75	1,477.61	00159.25	042.00	0007189.31	106.70
52	040	2792	1976	2	0139	034.75	1,321.76	00337.19	042.00	0008023.22	109.92
53	001	9416	1976	4	1079	058.00	1,326.55	00009.00	045.00	0003277.63	149.53
53	002	7352	1976	2	0117	027.75	1,375.49	00202.25	036.00	0006733.45	108.50
53	006	2270	1976	2	0075	026.25	1,607.59	00085.00	036.00	0004470.04	107.00
53	015	8463	1976	3	0222	030.75	1,171.74	00310.00	036.00	0006567.23	112.00
53	064	0306	1976	1	0035	016.75	1,607.53	00158.00	042.00	0009698.59	105.00
53	088	2453	1976	1	0025	012.25	1,450.47	00053.00	042.00	0013749.45	103.50
53	091	9409	1976	1	0038	017.75	2,233.69	00218.00	052.00	0012575.59	103.50
53	099	3281	1976	2	0096	031.75	1,443.13	00692.00	036.00	0012100.90	108.00

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