

Staff Report -- WP-15

INSTRUCTIONAL COSTS  
IN MINNEAPOLIS INNER-CITY SCHOOLS

BY

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INSTRUCTIONAL COSTS  
IN MINNEAPOLIS INNER-CITY SCHOOLS

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## CHAPTER I

### THE PROBLEM

#### Introduction to the Problem

In recent years some efforts have been made to offer inner-city children an equal education. The Federal and State governments have through the passing of legislation increased their support of an equal educational opportunity. Federal funds, for an example, have been provided by the Elementary and Secondary Education Act of 1965 to help solve the educational problems of disadvantaged children. Scientific studies and series of research programs have been tested and gone into effect. Some communities have attempted to improve the socio-economic balance in schools through such tactics as busing of children and open enrollment. Some large cities have adopted programs to decentralize school administration, submitting authority to neighborhood school boards. Equally important, attempts have been made to improve urban schools that serve disadvantaged children.

Nevertheless, because of educational inequalities, most Urban Americans still lack the opportunity of full participation in American life. The sine qua non of entering into the mainstream of the American system appears to be the opportunity for a quality education. In decades ahead, the greatest social need of the United

States will probably be a sufficient quantity and quality of educated people. If the demand will be for a better-trained people, a larger percentage of all American children will have to attain an increasing quality of education.

This study was undertaken to investigate some of the educational inequalities that are evident in American urban schools, specifically, reasons for variations in educational expenditures among schools in a given district.

#### Statement of the Problem

It is the problem of this study to identify and examine causes of differences in school expenditures, specifically reasons for variations in professional staff costs of educating inner-city children of the Minneapolis public schools' area. This study will attempt to identify differences in some educational resources per student-- number of staff members per student, academic preparation and teaching experience of staff members--as they are associated with an individual school's minority and Aid to Families with Dependent Children (AFDC) student population. From a sample of sixty-seven elementary schools in the special school district number 1 of the metropolitan area, this study will investigate differences in instructional salary costs of schools that serve primarily minority and AFDC children as compared to other schools in our sample.

The differences between the kind of education received by inner-city children as compared to that

received by children from basically well-to-do families in a school district, raise a number of questions about the expenditure pattern of such a district. Which schools hire the better trained teachers? To which schools are new teachers assigned? These are questions with which this study is concerned.

Evidence obtained from studying the problem is intended to provide supplementary information and factual data on the extra costs of educating inner-city children. This study will attempt to determine to what degree variations in instructional costs exist in the Minneapolis area.

#### Limitations of the Problem

What it costs to educate inner-city children is a broad problem, which is faced with certain inherent limitations. It was impossible to give complete treatment to all facets of the problem for the Minneapolis area alone; but because of the significance of issues involved, the writer hopes that the findings in this study will contribute to the knowledge of the present educational policies in the state of Minnesota.

The most important deficiency is that this study only describes how Minneapolis has spent its money without any evaluation of the effectiveness of its expenditures. To say, for example, that more money was spent in inner-city schools does not reveal whether enough money was spent there. And even to say that the higher expenditures

were due to smaller classes, or to higher paid teachers, do not reveal the propositions or situations involved in the allocation of the funds.

Additionally this study is limited to instructional salaries; we have no information on costs of books and supplies, transportation, and other expenditures.

#### Need for the Study

Many serious questions have been raised about the shibboleths of modern education. State and federal legislation have tried, to some degree, to equalize the educational opportunity for American youths. Area businesses and affluent individuals have made contributions in support of financing public education. The degree, however, to which citizens of a given locality are willing to support the increasing costs of public education is affected by control variables including taste, income, expected social and private gains from education.

The overall economic effect of the large amount of public spending for educating American youths and providing them with an equal educational opportunity is one indication of the importance of this study.

Probably administrators in the Minneapolis Public Schools are aware of the reasons why instructional costs differ among schools, but the public is not. In order to generate public discussion of the decisions being made by administrators, the people need to be supplied with information of the simple dollar figures. This study gives a first estimate of the allocation of teachers.

## Definition and Discussion of Terms Used

AFDC. Aid to Families with Dependent Children is one of five categorical public assistance programs set up in the Social Security Act, in which the federal government shares cost with the states. These programs (AFDC, Old Age Assistance, Aid to the Blind, Aid to the Disabled, and Medical Aid to the Aged) are separately financed, and for the most part, administered from general relief, which is run by the states and localities with no federal involvement. The federal law says that to qualify under AFDC a child must be in need, but the states define that status and determine the actual amount of money each child and family receive.

The Minnesota AFDC law says financial help and social services are provided by a county welfare department for a child under age 18, or up to 19 years of age if attending school. Need is defined as the basic items a person must have in order to live in health and decency. The items considered essential are: 1) food, 2) shelter, 3) clothing, 4) personal and household needs, 5) fuel, 6) light, 7) refrigeration, and 8) medical care. Need is determined by the money cost of these items in adequate amounts.

When the program started in the late 1930's, death of the father was the common cause for being in need of aid. Today more than 5 percent (10,200,000)<sup>1</sup> of AFDC

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<sup>1</sup> The Wall Street Journal (August 30, 1971), Volume 60, Number 223:6 (Column 1).

cases are due to estrangement of parents, divorce, separation, desertion, or un-married motherhood. The Minnesota AFDC law says a child is dependent if he needs financial help to remain with his family because of a parent's continued absence from the home, physical or mental incapacity, or death.

Minority. This term refers to the nonwhite student population attending public elementary schools in Minneapolis. Minority and AFDC are sometimes used as synonyms for terms such as "disadvantaged," "inner-city" and "underprivileged." It is the author's opinion, however, that such varied terminology implies negatively of one's abilities.

Well-to-do. This term is used to describe primarily children of parents whose incomes may be described as being in the "Middle and Upper range" of incomes in the Minneapolis area. This range will not be defined precisely, due to insufficient data. Well-to-do is used synonymous with "affluent," "privileged," and "prosperous."

Experience. This term means the number of years of teacher experience recognized for salary credit by the Minneapolis school district.

Seniority. This term is used as a synonym for the term "experience."

Training. This term means the academic preparation for teachers recognized for salary credit by the Minneapolis board of education.

Academic qualification. A term used interchangeably with "training."

Single salary credit. As used in this study, this term refers to a salary schedule in which the two major factors are the training and experience of staff members.

Teachers. Staff members who have primarily a class-room responsibility in the schools. Principals, supervisors, counselors, librarians, social workers, and nurses are referred to as "administrative personnel."

Enrollment. The gross number of pupils enrolled in a school. The enrollment figures include all pupil entries for the beginning of the school year.

Average teacher's salary. The salary level below and above which equal numbers of the teaching force are compensated. The average salary reflects the influence of teaching experience, education preparation level, and consequent placement of teachers on an existing salary schedule in accord with their training and experience.

Average teacher-pupil ratio. This term will serve as proxy for class average size and teaching loads.

Educational resources. As used in this study, this term means those services and goods such as teachers, guidance counselors, textbooks, administrators, and librarians which are used in schools.

Instructional costs. This term is used interchangeably with "instructional salary cost per student," "educational expenditures," and "costs of instruction."

Teacher turnover. As used here, this term means the quotient obtained by dividing the total number of teachers into the number of new teachers. New teachers are defined as teachers with one year or less of teaching experience. A high teacher turnover reflects an undesirable school.

Typical. A term used interchangeably with "average."

#### Organization of Remainder of Thesis

Chapter II is a review of selected literature and relevant research in the following areas: a historical perspective of minorities' education, problems confronting disadvantaged children, the educational programs and achievements of disadvantaged children, proposed programs to educate inner-city children, and experiences with the proposals.

In Chapter III a discussion of the procedures and design of the study are presented including the sampling frame, the source of data, two causes for variation in instructional costs, and statistical treatment.

A report of the findings of the study, and interpretations of the statistical outcomes are discussed in Chapter IV.

Chapter V is a summary of the findings of the study, the conclusions reached, and recommendations of this study for further research.



## CHAPTER II

### REVIEW OF SELECTED LITERATURE

#### Introduction

Inner-city education has received considerable attention in several disciplines, particularly sociology, psychology, psychiatry, education, political science, and economics. There is consequently a large field of literature in which this subject has been examined with varying emphasis. Because of the writer's primary interest and concern in the education of the disadvantaged, a general review of material closely related to teaching underprivileged children will be presented here.

This review is limited to a review of literature, 1) bearing upon a historical perspective of minorities' education, 2) literature relating to some problems confronting disadvantaged children, 3) literature devoted to the educational programs and achievements of disadvantaged children, 4) material of proposed programs to educate inner-city children, and 5) studies relating to some experiences with the proposals.

Due to inequalities of education over the years, the economic-poor and minority groups have been inadequately prepared for the American education-oriented society, and have had substantially fewer opportunities to advance academically or socially. This chapter reviews the widely separated extremes in the gap of minorities' and

non-minorities' education; it looks at some remedies that have been proposed to close the gap (which reflect differences in per pupil cost). The remaining chapters will look at variances in per pupil cost in Minneapolis schools with respect to their economic-poor (AFDC) and minority students' enrollment.

### A Historical Perspective of Minorities' Education<sup>2</sup>

If much of the historical interaction between minorities and non-minorities has centered about trade, slavery, warfare, an equally constant theme has been education. From the early 1700's<sup>3</sup> until the present day, non-minorities have been concerned with education of minorities. Usually this has implied not simply the importing of literacy, technical skills, and academic lore, but also the transmutation of their culture.<sup>4</sup>

A brief historical review of minorities' education may give some explanation of the current educational

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<sup>2</sup>For a comprehensive review of minorities' education see Mario D. Fantini and Gerald Weinstein, The Disadvantaged: Challenge to Education, Harper and Row, New York, 1968.

<sup>3</sup>See Winthrop D. Jordan, White Over Black: American Attitudes Toward the Negro, 1550-1817, Kingsport Press, Tennessee, 1961, p. 133.

<sup>4</sup>See Henry E. Fritz, The Movement for Indian Assimilation: 1880-1890, University of Pennsylvania Press, Philadelphia, 1963. For a brief history and analysis of Immigrant children education see Leonard Cavillo, The Social Background of the Italian-American Child, Brill Press, Leiden, 1967.

problems confronting inner-city children. Education began unintentionally for minorities as a consequence of the slave economy. In theory education was denied to bondmen, but in practice they were educated by their owners for practical reasons: a slave trained for effective services was of more use and commanded a higher price.

Then following the Civil War, a freedmen school system was instituted for minorities largely by Northerners from New England colleges and universities. The people from servitude were taught useful training in upkeeping farms, providing food and shelter for their families, instead of the recondite learning stored in books.

In the wake of the anti-Negro sentiment released by Reconstruction and minorities' aspirations for first class citizenship, an effort began to perpetuate segregated order through the educational system. The social order in American education became segregated schools for minorities.

As a result of segregation, the minority child grew up in an impaired cultural and psychological atmosphere. The failure of his parents to read books, newspapers, or even carry on sustained conversations, and the failure of his school to provide him with the basic principles of education made it difficult for him to develop necessary skills to break out of poverty into the education-oriented society.

Nevertheless, the continued aspirations of minorities for first class citizenship nurtured in the 1950's by the National Association for the Advancement

of Colored People (NAACP) led inevitably to the Supreme Court decision on May 17, 1954,<sup>5</sup> the full implications of which are still to be felt.

Some Problems Confronting Disadvantaged  
Children

The problem of who today is disadvantaged confuses the utilization and interpretation of education indices. The terminology varies from culturally deprived, educationally deprived, inner-city children, alienated, children of the urban poor to underprivileged.

One way to approach this problem is to list a number of traits or characteristics attributed to disadvantaged children by different investigators and supported at least to some degree by evidence. The material cited below is by no means exhaustive. It does not include all the traits or characteristics attributed to the underprivileged with supporting evidence. But none which is mentioned has been put forward without some supporting evidence, even though the quantity and quality of the evidence may have been far from conclusive.

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<sup>5</sup>On May 17, 1954 the Supreme Court declared separated educational facilities to be inherently unequal because they gave Negro children a sense of inferiority and retarded their educational and mental development. The Court cited psychological and sociological data of Kenneth Clark and others in making their decision. Clark, an educator and psychologist, contended that segregation was harmful to both Negro and white students. See Encyclopedia Americana, Civil Rights and Liberties, Volume 6, pp. 774-781, Americana Corporation, New York, 1970.

The urban poor by definition are described as having little money, virtually no savings, no economic security. This means among other things buying often in small amount and getting less for their money than do the affluent.

Poverty, a characteristic of the disadvantaged, involves underemployment, irregular and miscellaneous employment, often at undesirable occupations; it involves extensive borrowing through formal and informal sources, use of second-hand clothing and furniture, overcrowded dwellings and lack of privacy. The poor have a higher death rate, a shorter life expectancy, and lower levels of health--physical and mental--and of nutrition than the prosperous.

These are the familiar characteristics of the disadvantaged. Increasingly interesting is the inverse relation between education and income; the fact that education has been at least until recently the most useful single indicator of socio-economic status. The quality of instruction has been lower among children from the urban poor, because they live in welfare neighborhoods and because schools obtain a large share of their financing from local taxes. In addition to low school achievement, disadvantaged children are associated with inadequate verbal skills, lack of intellectual stimulation; lack of motivation to education and similar problems.

An increasing number of studies have described the disparities in educational opportunities of inner-city children. Conant<sup>6</sup> describes the kind of public school serving underprivileged children as compared to those serving privileged children.

The expenditure per pupil in the (privileged) school is as high as 1000 dollars per year. The expenditures in a big city school is less than half that amount. An even more significant contrast is provided by looking at school facilities and the size of professional staff. In the (privileged neighborhood) there is likely to be a spacious modern school staffed by as many as 60 professionals per 1000 pupils. In the (underprivileged area) we often find a crowded dilapidated and unattractive school staffed by 40 or fewer professionals per 1000 pupils. The contrast challenges any complacency we may have about our method of financing public schools.<sup>7</sup>

Hawkes<sup>8</sup> reported his results of a normative study indexed by school attendance, sex, and grade on the response of upper elementary school children to a general anxiety questionnaire. His data showed that fifth and sixth grade children in an inner-city school had significantly high scores ( $P < .001$ ) indicative of higher levels of anxiety than did private school children of the same sex and school grade. His findings revealed that inner-city children have high levels of "real fear, fear of school achievement, anxiety symptomatology."

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<sup>6</sup>James B. Conant, Slums and Suburbs, McGraw-Hill, New York 1961.

<sup>7</sup>Ibid., p. 3.

<sup>8</sup>Thomas H. Hawkes, "Race, Socio-economic Situation, Achievement, I.Q., and Teacher Rating of Student Behavior as Factor Relating to Anxiety in Upper Elementary School Children." Sociology of Education (Summer, 1971), 44:330-350.

Hawkes collected his data in an all black inner-city school and in a predominantly white university laboratory school. Both schools were located in the same midwestern city. A considerable portion of the inner-city children came from families who were receiving welfare benefits, the private school population came mostly from upper middle-class professional homes.

Sexton<sup>9</sup> examining the public school system in an industrial metropolis of the Middle West found disadvantaged children to be inadequately prepared for the American education-oriented society. She found that most children from disadvantaged homes incur inferior teachers, less adequate school facilities than other children, and are given substantially fewer opportunities to advance academically or socially. Sexton pointed out that most children from the urban poor are taught segregated classes in a curricula arbitrarily divided so that they usually are prepared only for the same blue collar occupation of their parent generation.

#### Educational Programs and Achievements of Disadvantaged Children

As consequences to problems of the disadvantaged, their educational achievement levels have prepared them for menial positions in the American economy. Several

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<sup>9</sup>Patricia C. Sexton, Education and Income, Viking, New York, 1961.

studies show teacher's attitudes (expectations and perceptions) and values to directly influence disadvantaged pupil's achievement levels. Ausbel,<sup>10</sup> Pettigrew,<sup>11</sup> and Clark<sup>12</sup> point out that teacher's attitudes and values affect the ego-development and motivation of inner-city children. They suggest that the disadvantaged child usually perceives and fulfills lower expectations.

Rosenthal<sup>13</sup> reports teacher's expectations are communicated to students in subtle vocal and visual nuances of which teachers may be unaware, such as fluctuations in their voices or changes in their facial expressions. Reissman<sup>14</sup> contends teacher's lower expectations reflect in a lowering self-image that affects inner-city children's achievement and classroom behavior negatively.

The unwillingness of new teachers to accept appointments to teach the disadvantaged and the tendency of experienced teachers to seek transfers are reported

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<sup>10</sup>David P. Ausbel and Pearl Ausbel, "Ego Development Among Negro Children," in Education in Depressed Areas, A. H. Passow, Editor, Columbia University, New York, 1963, pp. 109-141.

<sup>11</sup>Thomas F. Pettigrew, "Race and Equal Equality," Harvard Educational Review (Winter, 1968), 38:66-76.

<sup>12</sup>Kenneth B. Clark, Dark Ghetto, Harper, New York, 1965.

<sup>13</sup>Robert Rosenthal, "Self Fulfilling Prophecy," Psychology Today (September, 1962), 2:44-54.

<sup>14</sup>Frank Reissman, The Culturally Disadvantaged Child, Harper, New York, 1965.



by Clark,<sup>15</sup> Conant,<sup>16</sup> and Groff.<sup>17</sup> Whereas Stodolsky and Lesser<sup>18</sup> in their research concerning disadvantaged children point out that teachers of the culturally deprived want to succeed but fail because behavior techniques have not been developed "which produce desirable outcomes."<sup>19</sup> They suggest that one of the problems of teaching disadvantaged children is the inability to be precise in analyzing, carrying out, and evaluating the teaching act.

Some investigators in an attempt to establish the existence of and find causes underlying differences in educational and occupational aspirations among children examined samples of secondary school students. Stephenson<sup>20</sup> found no significant differences between educational and occupational aspirations of minority and non-minority ninth grade students. He found, however, that minority students plan lower than that of non-minority students. This latter finding may suggest that minorities recognize their racial and economic barriers, lower their

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<sup>15</sup>Kenneth B. Clark, op. cit.

<sup>16</sup>James B. Conant, op. cit.

<sup>17</sup>Peter G. Groff, "Teaching the CD School: Teacher Turnover," Journal of California Research (1967), 18: 91-95.

<sup>18</sup>Susan S. Stodolsky and Gerald Lesser, "Learning Patterns in the Disadvantaged," Harvard Educational Review (1967), 37:546-593.

<sup>19</sup>Ibid., p. 559.

<sup>20</sup>Robert Stephenson, "Mobility of 1000 Ninth Graders," American Sociological Review (1957), 22:204-212.

plans so that they are more consistent with existing realities. Stephenson defined aspirations as that which one would like to achieve, and he defined plans as that which one works and that which one considers possible to achieve.

Gist and Bennet,<sup>21</sup> on the other hand, found no significant differences between minority and non-minority students in occupational aspirations or plans. They found, however, that minorities' educational aspirations were higher than non-minorities' educational aspirations.

Halloway<sup>22</sup> examining elementary school children found that non-minority middle class students had higher occupational aspirations than minority students, but that the educational aspirations of the two groups were not significantly different.

Some studies assert that minority pupils' low achievement levels are due to heredity rather than environment. Moynihan,<sup>23</sup> and later Jensen<sup>24</sup> found statistical differences in intelligence quotient (I.Q.)

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<sup>21</sup>Noel P. Gist and William Bennet, "Aspirations of Negro and White Students," Social Forces (1963), 42:40-48.

<sup>22</sup>Wilbur Halloway, "The Educational and Occupational Plans for Negro and White Elementary School Children," Political Sociological Review (1959), 7:50-75.

<sup>23</sup>David P. Moynihan, The Negro Family: The Case for National Action, United States Department of Labor, Washington, D.C., 1965.

<sup>24</sup>Arthur Jensen, "How Much Can We Boost I.Q., and Scholastic Achievement?" Harvard Educational Review (Winter, 1969), 39:1-123.

tests between whites and blacks, between privileged and underprivileged, and among various ethnic minorities. Moynihan found that low scores of some children were due to internal barriers--for example, family structure and cultural ambience. Similarly some children scoring lower than others, irrespective to race, were evident that these children were the products of unintelligent parents.

Similarly Jensen studied the possibility that minorities and non-minorities differed in inherited intelligence, which shows up as the average difference between minorities and non-minorities' I.Q. test scores, give non-minorities that statistical advantage in economic and educational competition of achievement levels.

However some studies have proved assumptions as Moynihan's and Jensen's wrong and have pointed out that "some children have fewer test-taking skills than others, some are less responsive to speed pressure, and some are less familiar with specific vocabulary."<sup>25</sup> Deutsch and Brown<sup>26</sup> in their study concerning educational aspirations and testing of disadvantaged children show typical depressed scores of children from lower-class environment, irregardless to race; and lower scores of ethnic minority

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<sup>25</sup>Nathaniel Hickerson, Education for Alienation, Prentice-Hall, New Jersey, 1966, pp. 19-30.

<sup>26</sup>Martin Deutsch and Bert Brown, "Social Influences in Negro-White Intelligence Differences," Journal of Social Issues (1964), 20:24-25.

children compared with those of non-ethnic minority children, irrespective to class level. They show a considerable large number of ethnic oriented children whose I.Q. test scores were higher than all other children. They document the increase in all children's scores with presumably a better environment. Deutsch and Brown's findings are typical to that of other studies<sup>27</sup> examining aspirations of inner-city children.

The popular Equality of Educational Opportunity Report by Coleman<sup>28</sup> concluded that per-pupil expenditures and school facilities show very little relation to student achievement levels, and the effect of a student's peers on his achievement level is more important than any other school influence. It asserted that a good deal of racial segregation in both North and South, the relatively small differences in object characteristics of schools attended by different ethnic groups--differ approximately constantly between minorities and non-minorities. The Report raised questions about the effectiveness of schools which have guided policy--the idea that we can best increase student achievement by getting better buildings, more libraries, and more laboratories, by increasing teachers' pay, and by reducing the number of students per classroom.

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<sup>27</sup>See for example Irwin Krauss, "Sources of Educational Aspirations Among Working Class Youths," American Sociological Review (1964), 39:867-879; Otto Klineberg, Negro Intelligence and Selective Migration, Columbia University Press, New York, 1935.

<sup>28</sup>James S. Coleman and Others, Equality of Educational Opportunity, United States Government Printing Office, Washington D.C., 1966, referred to as the Report.

Bowles and Levin<sup>29</sup> in a critique of Equality of Educational Opportunity scrutinized the data and the statistical analysis on which the conclusions were based. They suggested that because of poor measurement of school resources, inadequate control for social background, and inappropriate statistical techniques used, the finding of the Report could not be supported.

#### Proposed Programs to Educate Inner-City Children

With the realization that educational disadvantage was a serious problem, numerous remedies have been proposed. One of these is compensatory education under which a proliferation of programs have occurred ranging from Project Headstart for pre-school children to Upward Bound for pre-college students.

Compensatory education began in 1960 as a program to help counteract some of the problems which schools serving disadvantaged students encounter: high staff turnover, low pupil mobility. Through its accomplishments, it would gear instruction to disadvantaged children's special needs arising from such factors commonly associated with poverty as low educational attainment of parents, large family size, broken homes, discrimination, and congested housing conditions.

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<sup>29</sup>Samuel Bowles and Henry Levin, "The Determinants of Scholastic Achievements--An Appraisal of Some Recent Evidence," Journal of Human Resources (Winter, 1968), 3:3-24.

An exhaustive study in 1966 by Gordan and Wilkerson<sup>30</sup> found that most compensatory programs embodied light characteristics:

- (1) heavy emphasis on reading and language development
- (2) different curricular approaches; for example,  
team teaching
- (3) extra-curricular innovations such as field  
trips
- (4) parental involvement
- (5) community involvement
- (6) teacher recruitment and training
- (7) emphasis on guidance
- (8) use of specialized personnel such as social  
workers and psychiatrists

A cursory examination of this list reveals that the programs studied contain nothing really new in education. Indeed characteristics mentioned should be part of a good educational program for any child. Literature supports the writer's view that most compensatory programs have ended in ambiguous results due to the inability to define a program that would offer concrete learning materials to urban children.

#### Experiences with the Proposals

This section of the literature presents a review of a case study in which several of the conditions

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<sup>30</sup>Edmund Gordan and Doxy Wilkerson, Compensatory Education for the Disadvantaged, Programs, and Practices, College Board, New York, 1966.

discussed in the foregoing sections are evident in a more or less typical urban school system in a medium-sized city. Fantini and Weinstein<sup>31</sup> conducted a study of three schools--two elementary and one junior high--that served primarily disadvantaged pupils and incurred most of the problems faced by schools in large urban areas--high dropout rates, a high rate of teacher turnover and a severe shortage of qualified teachers, a strong racial imbalance, a high incidence of juvenile crime, and so on.

An educational enrichment program was decided upon by the public school system and its personnel to help the schools cope with their problems and improve their overall conditions. The general assumptions underlying the objectives were that the pupils faced too many out-of-school environmental obstacles for the standard school process to cope with successfully and, thus, special supplementary instruction was needed if the obstacles were to be overcome for the benefit of the pupil, school, and society. In spite of the many compensatory features of the program--after-school program, double-team teaching--it became clear that if the immediate problems connected with educational disadvantage were to be remedied "an atmosphere of change" had to be created. Community involvement was among the first measures taken to lay the foundations for effecting an array of future reforms.

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<sup>31</sup>Mario D. Fantini and Gerald Weinstein, op. cit.

It was recognized that if the real educational needs of the disadvantaged pupils were to be met, administrative policies would have to be based on a full understanding of inner-city children's needs. Because teachers were the closest to pupil reality, some means for an upward flow of communication from the instructional to the administrative level would have to be established. This is where the idea of teachers finding means of reaching and teaching the disadvantaged entered the situation. Teachers were to learn from the pupils' needs and determine how the enrichment program might be coordinated with their daily school program.

The aggregate effect of this program was manifold:

- 1) it created a spirit of constructive reform in the community and sustained community support;
- 2) it developed an increasingly favorable disposition among school authorities to accept new areas of change;
- 3) it created a receptive attitude among teachers toward instructional changes; and
- 4) it enhanced the pupils' self-esteem.



## CHAPTER III

### DESIGN OF THE STUDY

#### Introduction

This chapter describes the design of the study. The subdivisions of this chapter deal with these subjects: the sampling frame, two causes for variation in cost, the method of statistical analysis, and the design of experimental control.

This study examined the relationship between two determinate variables (teacher-pupil ratio and teacher salary) and instructional cost as each variable is associated with an individual school's minority and AFDC student population.

#### The Sampling Frame

The sampling frame for this study is comprised of sixty-seven elementary schools in the city of Minneapolis. They include all but four of the elementary schools in the city: Barton and Dowling Schools were excluded precisely due to insufficient data. The Sheltering Arms and Hennepin County Home Schools were excluded because they serve special population groups (those of the physically handicapped, mentally retarded, etc.) making them unsuitable for use as typical academic institutions in the city.

For comparison purposes and to use later as the writer's frame of reference, the sixty-seven schools are

listed according to their minority percentage rank and grouped into socio-economic classes of High Minority, Moderately High Minority, Low Minority, and Very Low Minority. The percent minority brackets of these four social classes in respective order are "30 percent and above," "10 percent but less than 30 percent," "5 percent but less than 10 percent," and "under 5 percent." Half the schools fall into the "very low minority" group; the precise number of schools in each class is given in Table 1.

Then the corresponding percent AFDC rating is tabulated for each school, and is shown with each group in Table 1-1 through Table 1-4. Figure 1-1 through Figure 1-4 accompany each of these tables, in respective order, to illustrate the school's community of each social grouping. The AFDC statistics will serve as a guide and rough proxy for measuring the degree of social disorganization and family poverty associated with each class (it is the only index of poverty available for individual schools).

Table 1-1 shows schools comprising Group 1. These schools served the highest percent of minority pupils, and the highest percent of children from low income families with low educational levels and other problems faced by the AFDC.<sup>32</sup> Schools comprising Group 2 shown in

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<sup>32</sup>Note that there are some variations. Field School has a concentration of middle class minority families, and three other schools have minority percentages which deviate substantially from their AFDC percentages (Hay, Willard, Hall). But for most schools in the group, the two percentages are about equal.

Table 1. Stratification of Schools

(1)	(2)	(3)	(4)	(5)
Group Rank	Group Division (Percent)	Classification of Schools	Number of Schools	Proportion of Schools in Group
Group 1	30 and above	High Minority	11	0.17
Group 2	10-29.99	Moderately High Minority	10	0.15
Group 3	5- 9.99	Low Minority	13	0.19
Group 4	Under 5	Very Low Minority	<u>33</u>	<u>0.49</u>
		Total	67	1.00

Table 1-1

Percent Minority and AFDC Ranking of Schools Based  
on the Minority Group: 30 percent and above

(Group 1)		
(1) School	(2) Percent Minority	(3) Percent AFDC
Hay	75	43
Bethune	61	64
Willard	60	43
Field	53	18
Clinton	44	45
Adams	42	47
Harrison	42	46
Mann	36	31
Hall	33	49
Bancroft	32	27
Greeley	30	33
N = 11	$\bar{X}_1^1 = 46$	$\bar{X}_2^1 = 41$

# MINNEAPOLIS PUBLIC SCHOOLS ELEMENTARY SCHOOL DISTRICTS

SEPTEMBER 6, 1973



Figure 1-1  
Schools Comprising Minority  
Group: 30 Percent and Above

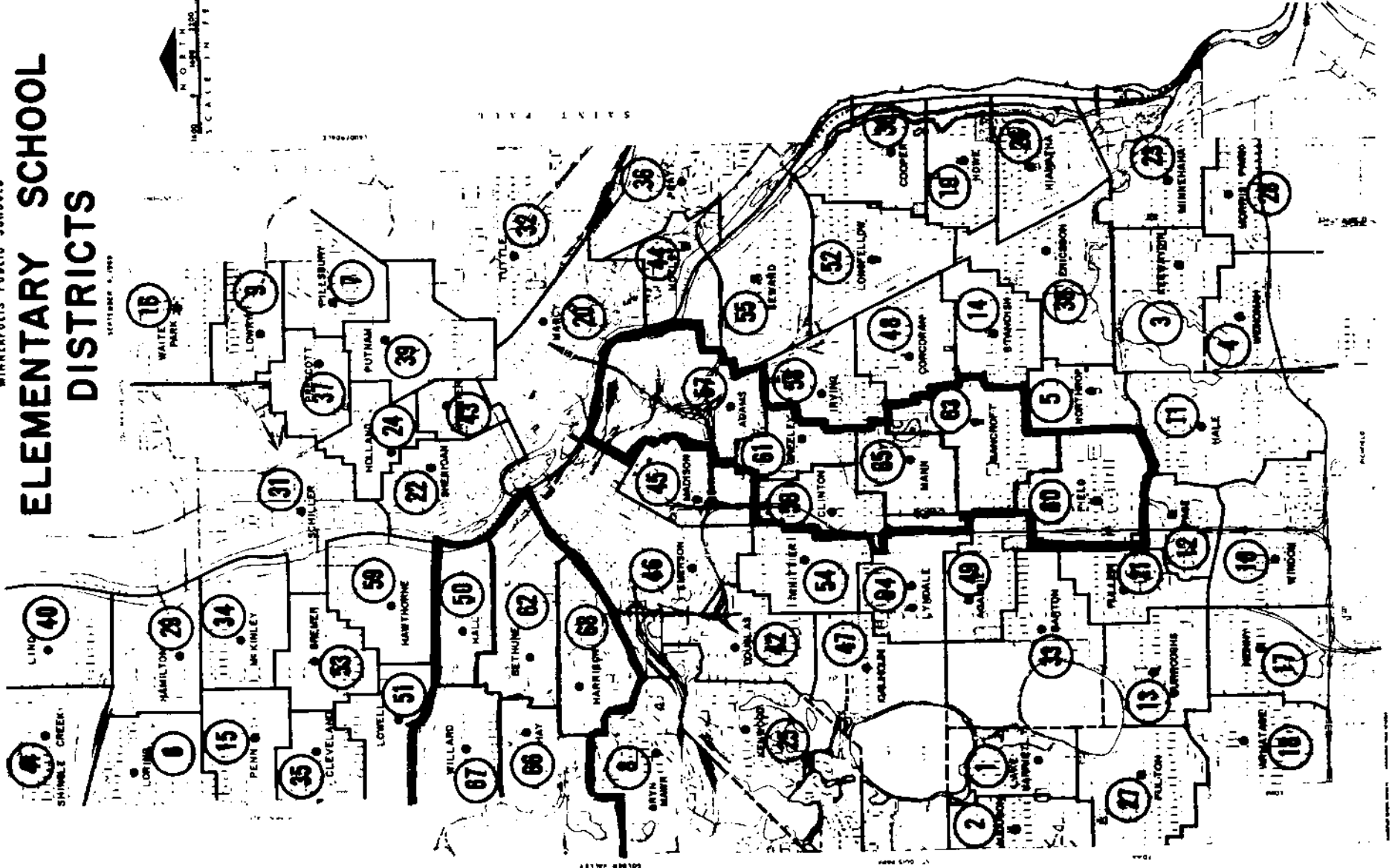


Table 1-2

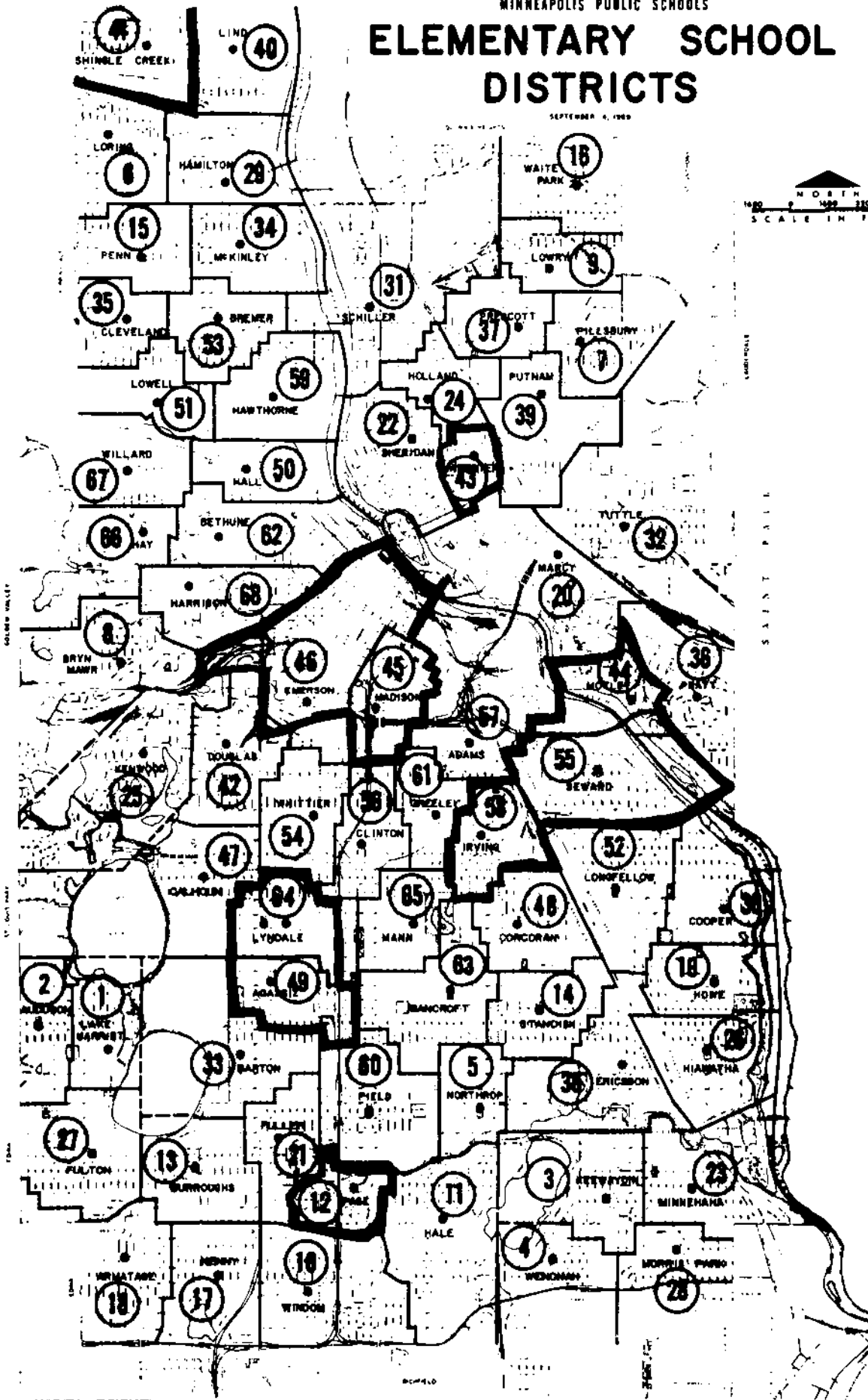
Percent Minority and AFDC Ranking of Schools based on  
the Minority Group: 10 percent  
but less than 30 percent

(Group 2)		
(1) School	(2) Percent Minority	(3) Percent AFDC
Motley	25	42
Madison	24	27
Lyndale	23	36
Irving	19	31
Shingle Creek	18	9
Agassiz	18	26
Emerson	16	38
Seward	16	20
Webster	13	25
Page	11	3
N = 10	$\bar{X}_1 = 18$	$\bar{X}_2 = 26$

MINNEAPOLIS PUBLIC SCHOOLS

# ELEMENTARY SCHOOL DISTRICTS

SEPTEMBER 4, 1969



Group: 10 Percent but less than 30 Percent

Schools Comprising Minority

Figure 1-2

Table 1-3

## Percent Minority and AFDC Ranking of Schools

based on the Minority Group:

5 percent but less than 10 percent

(Group 3)		
(1) School	(2) Percent Minority	(3) Percent AFDC
Pratt	9.9	11
Whittier	9.9	26
Hawthorne	9.3	36
Ericsson	9.0	17
Longfellow	8.4	23
Kenwood	7.8	2
Bremer	7.4	19
Lowell	7.3	29
Tuttle	6.9	14
Corcoran	6.4	17
Putnam	6.2	16
Marcy	6.1	8
Douglas	5.2	19
N = 13	$\bar{X}_1^3 = 8$	$\bar{X}_2^3 = 17$



MINNEAPOLIS PUBLIC SCHOOLS

# ELEMENTARY SCHOOL DISTRICTS

SEPTEMBER 4, 1969

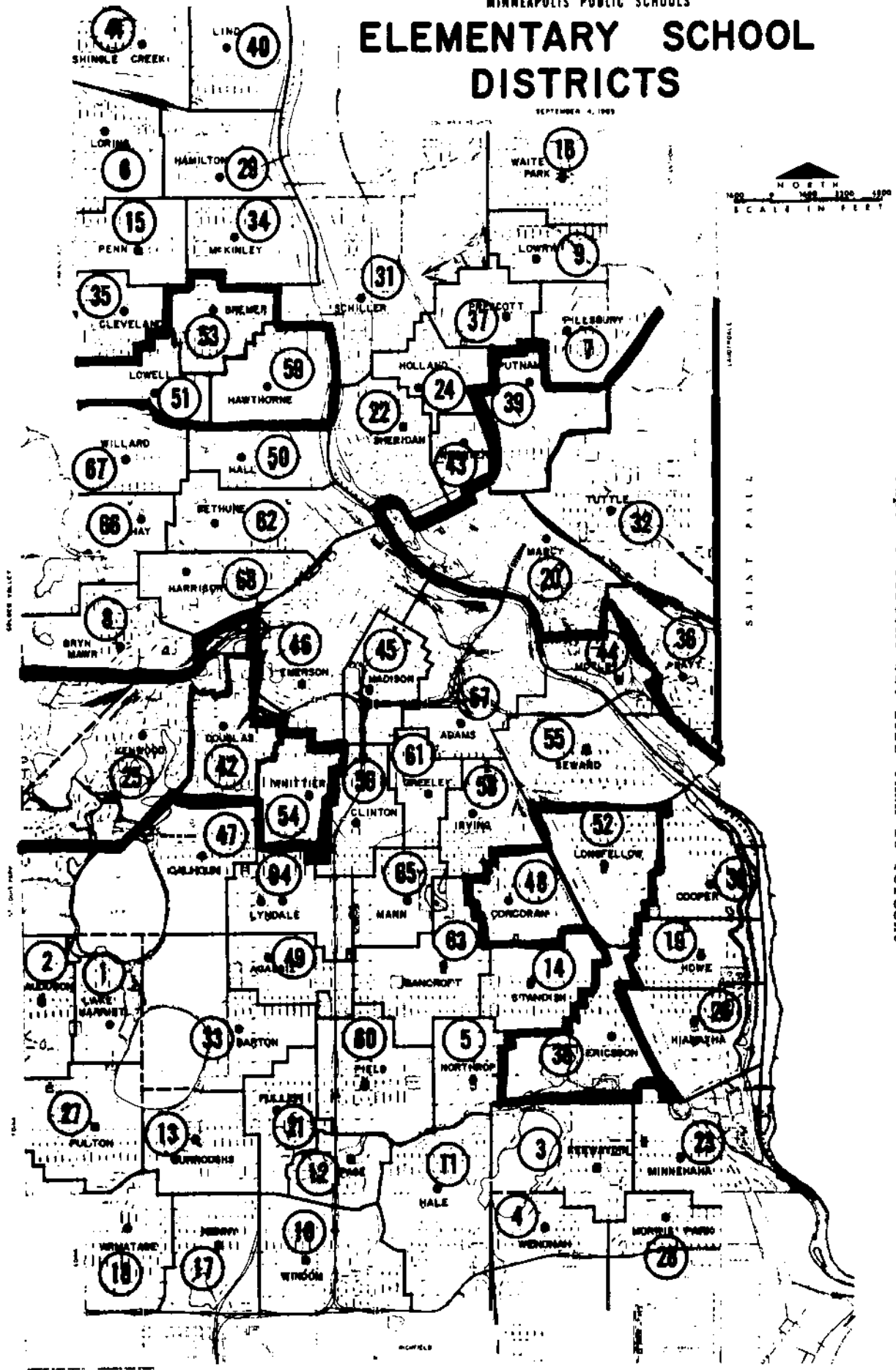


Figure 1-3  
Schools Comprising Minority

Group: 5 Percent but less than 10 Percent

Table 1-4

Percent Minority and AFDC Ranking of  
Schools Based on the Minority Group:  
under 5 percent

(Group 4)		
(1) School	(2) Percent Minority	(3) Percent AFDC
Calhoun	4.8	15
Bryn Mawr	4.7	7
Lind	4.7	12
Cleveland	4.1	12
Morris Park	4.0	9
Sheridan	3.9	24
Minnehaha	3.7	9
Kenny	3.5	1
Prescott	3.3	15
Cooper	2.8	5
Hiawatha	2.7	7
Penn	2.5	9
Schiller	2.2	15
McKinley	2.1	14
Northrop	2.1	4
Waite Park	2.1	3
Fuller	2.0	5
Howe	1.9	8
Windom	1.9	4
Hamilton	1.7	14
Fulton	1.6	4
Holland	1.6	22
Wenonah	1.6	6
Loring	1.4	5
Lowry	1.4	7
Armatage	1.3	1
Audubon	1.2	5
Standish	0.9	6
Keewaydin	0.8	5
Hale	0.7	3
Lake Harriet	0.6	4
Pillsbury	0.5	8
Burroughs	0.4	2
N = 33	$\bar{X}_1^A = 2$	$\bar{X}_2^A = 8$

# MINNEAPOLIS PUBLIC SCHOOLS ELEMENTARY SCHOOL DISTRICTS

SEPTEMBER 4, 1999

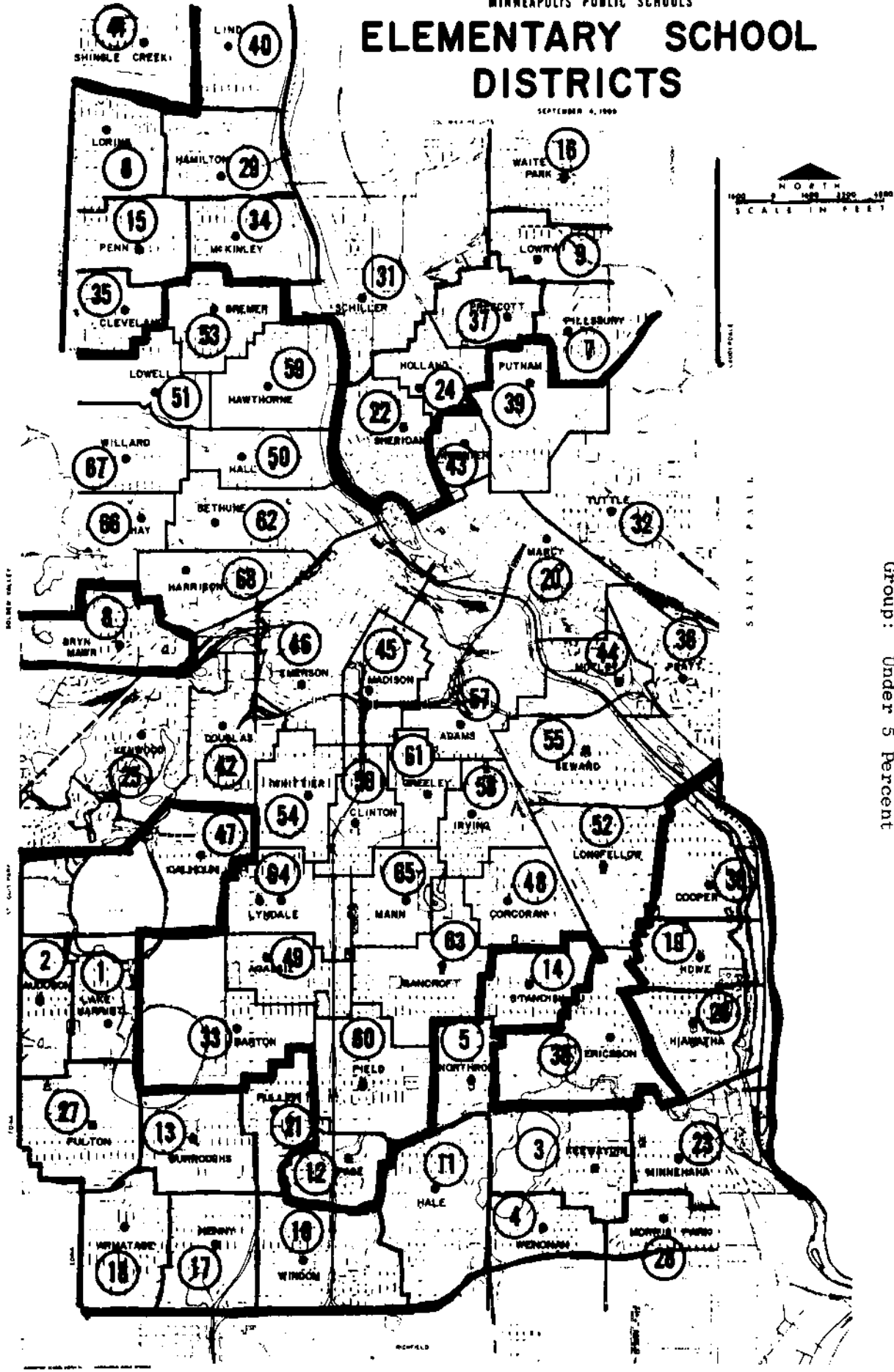


Figure 1-4  
Schools Comprising Minority  
Group: Under 5 Percent

Table 1-2 served a larger percentage of AFDC children as compared to their service to minority children.

Table 1-3 shows that twice as many AFDC children as compared to minority children attended schools in Group 3. This pattern is fairly uniform across the group, with only two exceptions (Kenwood and Pratt). And schools comprising Group 4 are a mixture. Some of the schools served children from basically well-to-do families in the city, others served low-income non-minority areas. Table 1-4 shows the minority and AFDC differentials for schools comprising Group 4.

Two Independent Causes for Variation  
in Instructional Cost

Underlying most investigators'<sup>33</sup> findings of inner-city educational expenses are two somewhat inter-related hypotheses:

Hypothesis I: Inner-city school expenditures are less than they would otherwise be because better trained teachers, especially teachers with seniority, refuse to work in city schools.

Hypothesis II: Inner-city school expenditures are higher than they would otherwise be because of (1) the impact of the Elementary and Secondary Education Act of 1965 (ESEA) funds, and (2) urban renewal.

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<sup>33</sup>See Joan G. Brown, "Tenure and the Teacher," The Clearing House (February, 1971), 255-360; Martin T. Katzman, "Distribution and Production in a Big City Elementary School System," Yale Economic Essays (Spring, 1968), 201-256.

The first hypothesis is based on the argument that the teaching staff in a school reflect the preferences of individual teachers choosing among vacant positions in the school system. As their tenure increases, the rights of seniority give teachers the opportunity to choose among open positions in the schools. Since the salary schedule applies to all schools in the city and there is no extra compensation for teaching in undesirable schools, institutions serving disadvantaged children are expected to have more difficulty than other schools in attracting teachers with training and experience.

Furthermore investigations show schools serving privileged students to have a greater number of attractions to offer than schools serving disadvantaged pupils: bright pupils, prospects for rapid advancement in administrative positions, opportunities to participate in experimental schemes, etc., whereas in communities of the latter, students are not as rewarding to work with due to low pupil mobility and achievement ratios, a high rate of juvenile crime, etc. For these reasons, schools serving inner-city children have more difficulty in attracting teachers with quality and experience, who have enough seniority to go elsewhere. Consequently instructional school expenditures are lower in inner-city schools.

The second hypothesis, on the other hand, offers reasons for higher expenditures per pupil among inner-city schools. (1) Expenditures per pupil are higher in

inner-city schools than elsewhere because of payments received from federal funds in support of special programs to help meet the special educational needs of disadvantaged children. (2) Expenditures per pupil are higher in inner-city schools than elsewhere due to urban renewal programs set up to rebuild needed city areas.

(1) The Elementary and Secondary Education Act<sup>34</sup> was passed by Congress in 1965 providing federal assistance to both public and non-public schools. The federal programs mentioned here focus on the section of the ESEA that applies most directly to educating disadvantaged youths: Title I - Education of Children of Low-Income Families.

The purpose of Title I programs "(1) are designed to meet the special educational needs of educating deprived children in school attendance as having high concentration of children from low income families, and (2) are of sufficient size, scope and quality to give reasonable promise of substantial progress toward these needs."<sup>35</sup>

As a result of ESEA funds, special programs such as Headstart, Teachers' Corps, Upward Bound have been designed and are set up under Title I to meet the special needs of disadvantaged children. Under its requirements, schools

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<sup>34</sup>For a descriptive account of ESEA programs see Philip J. Meranto, School Politics in the Metropolis, Merrill Publishing Company, Ohio, 1970, pp. 105-138.

<sup>35</sup>United States Congress, Senate Committee on Labor and Public Welfare, Elementary and Secondary Education Act of 1965, 89th Congress, 1st Session (1965), p. 25.

are eligible to receive payments of federal funds in support of the special programs they undertake to help inner-city students. Special instructional activities and special supplementary services (those of remedial, corrective, and developmental instruction, pre-school, after-school, and summer classes, etc.) are offered to them. Because these special programs for disadvantaged students reflect higher costs than programs ordinarily required for children, expenditure per pupil is higher in inner-city schools.

(2) Beginning in 1949, urban renewal programs<sup>36</sup> were set up to improve the physical conditions of cities and towns. They were to reconstitute cities so as to make them more liveable for people living there. Since then there has been an outward movement of non-minorities to the suburbs and an in-migration of minorities which has resulted in a dramatic shift in the number of pupils enrolled in the public schools. Consequently the school population in inner-city has been of a lower fraction of the total population than in non-metropolitan areas. As inner-cities' total population decreases, expenditures per pupil increases. Falling population here means emptier classrooms.

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<sup>36</sup>For an examination of urban renewal programs in educational finance of the metropolitan and non-metropolitan areas of the city see Gerald R. Smith, Perspective on Urban Education, Syracuse University, New York, 1970, pp. 85-97.

## Methods of Statistical Analysis

This study sought to identify causes of variations in instructional salary cost per student among schools, see to what extent they are due to variations in class size and variations in teachers' salaries. Causes in this study refer to differences in resources per student: number of staff members per student, degree qualifications of staff members, and teaching experience of staff members.

After separating the effects of these variables we hope to identify the cause for the systematically higher cost in inner-city schools. We reasoned that instructional costs are higher among inner-city schools due to recent educational reforms to offer the disadvantaged a more equal education. We expected programs offered in schools serving a relatively high percentage of minority and AFDC children to be more costly than programs offered in other schools; classes to be smaller in inner-city schools than elsewhere, since class size to a degree measures quality of education.<sup>37</sup> Teachers' salaries are expected to have a pronounced effect on instructional cost, since teachers' salaries increase for every year up to the eleventh year.

We will not attempt to discuss the rather complex details of computation, but will present the procedures

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<sup>37</sup>To review a study envisaging number of pupils per teacher as a quality measure, see Werner Z. Hirsch, Analysis of Rising Cost of Education, United States Congress, Joint Economic Committee Press, Washington, D.C., 1957.



and outcomes of the method. The availability of computers were essential to the practical use of this method for the present study.

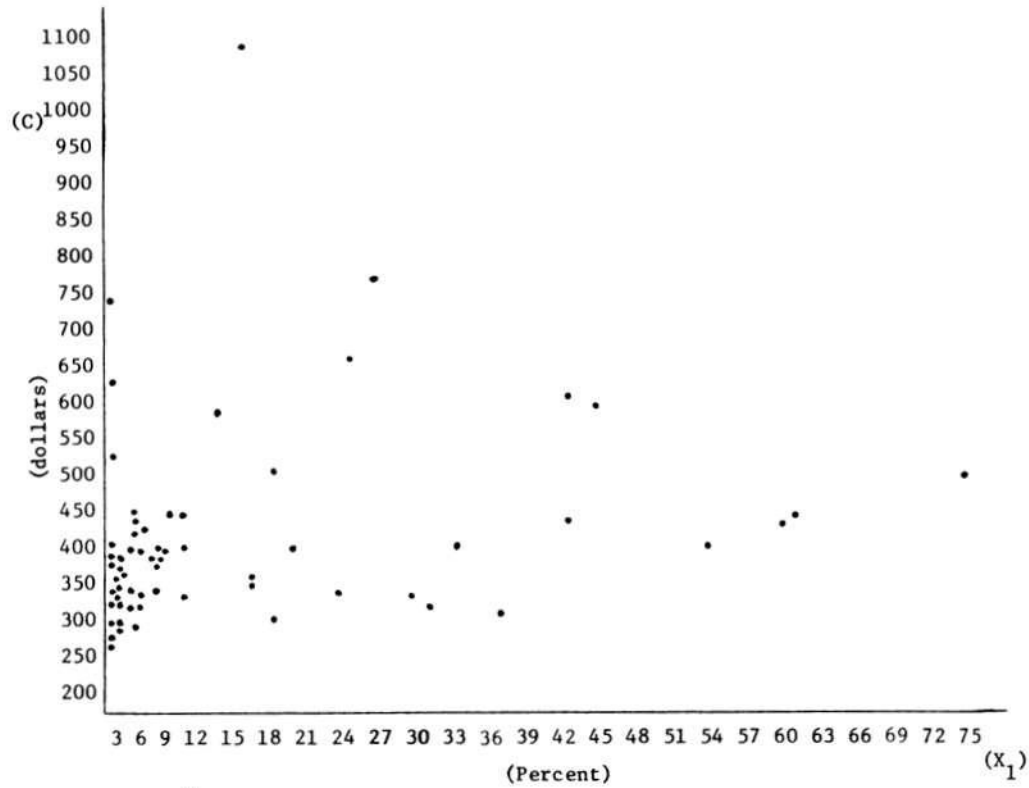
It is clear that costs are higher in the city schools than in schools serving the "outer rung" areas. Scattered diagrams illustrating the actual figures observed as a function of percentages of minority students ( $X_1$ ), and as a function of percentages of AFDC students ( $X_2$ ) are shown in Figures 2-1 and 2-2 respectively. In Chapter IV we shall first present regression results that give the precise relationships among the three variables.

#### The Design of Experimental Control

Our attempt to attribute cost differences to variations in class size and teachers' salaries proceeds by performing two hypothetical experiments. First we ask "what would cost per pupil be in each school if the teacher-pupil ratio were the same everywhere?" The differences between this adjusted cost ( $C_{T/p}$ ) and the actual cost ( $C$ ) represents the part of the school's cost which is due to an unusually high or unusually low teacher-pupil ratio.

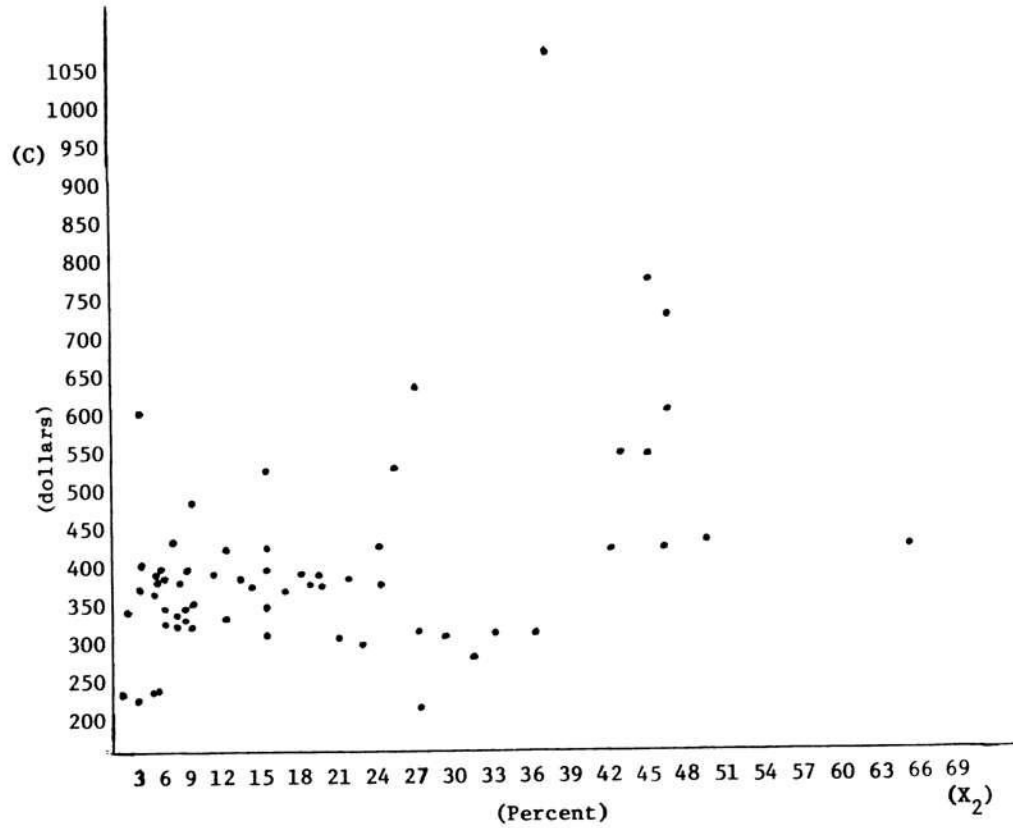
Next we ask "What would cost per pupil be in each school if teachers' salaries were the same everywhere?" The difference between the adjusted cost ( $C_S$ ) and the actual cost ( $C$ ) represents the part of the school's cost which is due to an unusually high or unusually low teachers' salaries figures.

Figure 2-1  
 Instructional Costs\* as Function of  
 Minority,  $C=F(X_1)$  for 67 Schools



\* Instructional Costs estimates equal the quotient obtained by dividing the total number of students at the individual schools into total teachers salaries. Estimates of teacher's pay are obtained from salary figures given in the data.

Figure 2-2  
 Instructional Costs\* as Function of  
 AFDC,  $C=F(X_2)$  for 67 Schools



The following equation was formulated and solved for the two hypothetical questions in order to examine the relationships among instructional cost differentials-- actual cost, weighted teacher-pupil cost, and average teachers' salary cost--for each school:

$$C - C_{T/p}^* - C_A^* = K$$

where C represents actual costs per pupil;  $C_{T/p}^*$  is the adjustment in per pupil cost holding teacher-pupil ratio constant at the city-wide teacher-pupil average, teachers' salaries remaining unchanged ( $C_{T/p}^* = C - C_{T/p}$ );  $C_A^*$  represents the difference between the two cost figures  $C_{T/p}$  and  $C_S$  (where  $C_{T/p}$  equal instructional cost when teachers' salaries are held constant.  $C_A^* = C_S - C_{T/p}$ ); and K determines the extent to which variations in higher cost per pupil can be explained by differences in teacher-pupil ratios and teachers' salaries.<sup>38</sup>

#### Cost Per Student as a Function of Teacher-Pupil Ratios ( $C_{T/p}$ )

The theoretical cost per student expressed as a function of the city-wide teacher-pupil ratio represents here the best cost estimates of instructional resources, especially teachers, needed to educate a group of students. This study postulated that since the average teacher-pupil ratio for the city constitutes a fixed class size,

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<sup>38</sup>I am indebted here to Professor Edward Foster for his assistance in formulating and interpreting the cost of variance equation used in this study that avoided potential inconsistencies.

the number of teachers must increase (or decrease in relation to enrollment above (or below) the mean student enrollment level. The employment of teachers directly increases the current instructional expenditure level of the schools.

The rationale that follows this theoretical cost measure is considered axiomatic that the quality of education falls (or rises) rapidly as the city-wide average teacher-pupil ratio is exceeded (or fell short of). It is harder to teach more children than it is to teach less.

The common teacher-pupil ratio used in this calculation is the average teacher-pupil ratio actually observed for the sixty-seven schools. The ratio will serve as a proxy for class average size and teaching loads of the sixty-seven schools by negating the effects of extremely large or extremely small class sizes.

To obtain an average class size estimate for the individual school, the student enrollment figure is simply divided by total number of teachers. By dividing the total number of students of all sixty-seven schools by total number of teachers at these schools, the city-wide average size is estimated.

To obtain an instructional cost estimate for each school expressed as a function of average city-wide class size the following steps are performed:

- (1) The city-wide average teacher-pupil ratio is multiplied times the actual student enrollment figures of each school = number of teachers.

(2) The teachers' estimate of (1) is multiplied times the actual average salary level of each school = total salary figure.

(3) Total salaries' figure of (2) is divided by actual student enrollment figure of each school = instructional cost per pupil.

Cost Per Student as a Function  
of Teachers' Salaries ( $C_S$ )

The hypothetical cost per student estimate expressed as a function of teachers' salaries reflect the academic preparation and teaching experience of the schools' faculty. The cost measure among other things indicates the ability of the teaching profession to attract personnel, both of high quality and in sufficient numbers related to the district needs. It should be emphasized, however, that salary levels are not the only factors which determine the ability of a school district to attract teachers. Other things would include climate, recreational facilities, cost of living, and proximity to higher educational institutions. Since teachers' salaries comprise a rather large percentage of instructional costs, higher teachers' pay directly increases instructional cost per student.

The common salary used for this calculation is the average salary actually observed for the sixty-seven schools. The average teachers' salary estimate reflects the influence of teaching experience, education preparation level, and the consequent placement of teachers on an

existing salary schedule in accord with their training and experience.

To obtain an average teachers' salary for each individual school, total teachers' salary is simply divided by total number of teachers. By dividing the total teachers' salary estimate of all sixty-seven schools by total number of teachers at these schools, the city-wide average teachers' salary level is estimated.

To obtain an instructional cost estimate for each school expressed as a function of average city-wide teachers' salary level the following steps are performed:

(1) The city-wide average teachers' salary level is multiplied times the actual number of teachers = total salary figure.

(2) Total salaries' figure of (1) is divided by actual student enrollment figures of each school = instructional cost per pupil.

#### Harrison School Example

The theoretical cost estimates will be determined and analyzed for Harrison School to illustrate the extent to which cost reflects differences in teacher-pupil ratios and in teachers' salaries.

Given: In the 1968-69 school year 811 students enrolled at Harrison Elementary School and 37 professionals made up the teaching staff. Actual instructional cost (C) of a student attending Harrison is estimated to be

447 dollars; a teacher earned on the average 9,804 dollars. The average class size is figured at one-to-twenty.

Subjected to: Teacher-pupil ratio equals the weighted teacher-pupil ratios of all sixty-seven schools, that is,  $T/P = \frac{1}{26}$ .

To obtain an estimate of instructional cost as a function of teacher-pupil ratio, first multiply the weighted teacher-pupil ratio times the enrollment figure. The computation gives a staff estimate.

Now multiply the staff estimate times the actual average salary per teacher. A total salary figure is obtained from which an estimated instructional cost ( $C_{T/P}$ ) is derived by dividing the given student enrollment figure into the total salary estimate.

$$(1) \frac{1}{26} \text{ times } 811 = 31 \text{ teachers}$$

$$(2) 31 \text{ times } 9804 = 303,924 \text{ dollars}$$

(3) 303,924 divided by 811 = 375 dollars, the estimated per pupil cost holding teacher-pupil ratio constant.

Similarly instructional costs ( $C_S$ ) is estimated assuming the given condition stated earlier and

Subjected to: Teachers' salaries equal the mean salary level of all 67 schools, that is, assume  $S = 9920$  dollars.

The computation procedures are the same in both cases. Instructional cost ( $C_S$ ) at Harrison is estimated



to equal 453 dollars holding teachers' salaries at the mean salary level.

Variances in instructional salary cost per student equal 297 dollars of which 74 dollars can be explained by differences in teacher-pupil ratio, and 78 dollars can be explained by differences in teachers' salaries, over and above the influence of teacher-pupil ratio.

#### The Data

The data used in this study is obtained from a list of instructional codes provided by the Minnesota State Department of Education; and from statistical publications by the Information Services Center for Minneapolis Public Schools. The analysis is based on statistics of the 1968-69 school year of sixty-seven Minneapolis Public Schools. The listing of professional staff by schools, provided by the Department of Education is based on their certification files. It shows each staff members' tenure, class and duties. Unfortunately however, it is not an up-to-date list of people actually teaching in the specific school, and the information is not complete for each staff member.

These inadequacies in the data provide grounds which could lead to distortions in the empirical results. Several categories indicating job specification of some staff members were left blank, or more than one job criterion was listed. In all cases, blank spaces are included as teachers having primarily classroom responsibilities. In cases of the latter, the staff members are

included as performing duties of the higher job specification. For example a person listed as performing duties of a classroom teacher and of principalship is included as a principal.

A similar discrepancy arose in the treatment of number of teachers at the schools. Teachers' figures listed in the statistical publications are taken as the accurate teachers' statistics for the 1968-69 school year. For most schools, the number of teachers listed in the instructional codes was slightly higher than the reported figures in the publications. Table 3 shows the number of teachers from computer print-out for each of the four socio-economic groups. This variance among the teachers' statistics led us to believe that some teachers had transferred from the Minneapolis Public Schools to some other district or profession, and the computer had failed to correct it in the instructional codes. We adjusted the teachers' salary cost computed from the instructional codes to the published figures as follows:

$$\$'s = S \times \frac{P}{N}$$

where S represents total salaries based on teachers' listing in the codes; P is the number of teachers reported in the statistical publication; N represents number of teachers listed in the instructional codes; and \$ is the adjusted total salary cost figures (the salary figures used in the analysis). This adjustment has the effect of using the average salary per staff member implied by the computer print-out, and the number of teachers implied by the printed statistics.

Table 3  
 Number of Teachers From Publications  
 Number of Teachers From Instructional Codes  
 For Each Social Group -- Group 1

(1)	(2)	(3)	(4)
School	Number of Teachers Listed by Published Statistics	Number of Teachers from Computer Print-out	Ratio of (2) to (3)
Hay	33	42	33/42
Bethune	29	33	29/33
Willard	35	38	35/38
Field	25	27	25/27
Clinton	19	20	19/20
Adams	17	17	17/17
Harrison	37	45	37/45
Mann	35	41	35/45
Hall	16	22	16/22
Bancroft	30	34	30/34
Greeley	24	26	24/26

Table 3 (continued) -- Group 2

(1)	(2)	(3)	(4)
School	Number of Teachers Listed by Published Statistics	Number of Teachers from Computer Print-out	Ratio of (2) to (3)
Motley	10	13	10/13
Madison	15	17	15/17
Lyndale	32	21	32/21
Irving	22	23	22/23
Shingle Creek	21	20	21/20
Agassiz	17	18	17/18
Emerson	25	27	25/27
Seward	27	32	27/32
Webster	14	14	14/14
Page	10	11	10/11

Table 3 (continued) -- Group 3

(1) School	(2) Number of Teachers Listed by Published Statistics	(3) Number of Teachers from Computer Print-out	(4) Ratio of (2) to (3)
Pratt	15	18	15/18
Whittier	25	27	25/27
Hawthorne	24	22	24/22
Ericsson	15	18	15/18
Longfellow	26	20	26/20
Kenwood	20	26	20/26
Bremer	31	27	31/27
Lowell	21	23	21/23
Tuttle	15	18	15/18
Corcoran	24	22	24/22
Putnam	18	6	18/6
Marcy	14	12	14/12
Douglas	16	17	16/17

Table 3 (continued) -- Group 4

(1)	(2)	(3)	(4)
School	Number of Teachers Listed by Published Statistics	Number of Teachers from Computer Print-out	Ratio of (2) to (3)
Calhoun	27	22	27/22
Bryn Mawr	12	12	12/12
Lind	22	22	22/22
Cleveland	17	20	17/20
Morris Park	18	20	18/20
Sheridan	14	14	14/14
Minnehaha	18	17	18/17
Kenny	23	22	23/22
Prescott	22	23	22/23
Cooper	21	22	21/22
Hiawatha	21	23	21/23
Penn	18	20	18/20
Schiller	17	19	17/19
McKinley	21	22	21/22
Northrop	12	14	12/14
Waite Park	23	27	23/27
Fuller	19	19	19/19
Howe	15	18	15/18

Table 3 (concluded) -- Group 4

(1) School	(2) Number of Teachers Listed by Published Statistics	(3) Number of Teachers from Computer Print-out	(4) Ratio of (2) to (3)
Windom	16	17	16/17
Hamilton	26	30	26/30
Fulton	30	32	30/32
Holland	15	17	15/17
Wenonah	12	13	12/13
Loring	16	17	16/17
Lowry	17	17	17/17
Armatage	24	28	24/28
Audubon	14	14	14/14
Standish	21	24	21/24
Keewaydin	16	18	16/18
Hale	23	26	23/26
Lake Harriet	11	12	11/12
Pillsbury	15	16	15/16
Burroughs	25	27	25/27

Both factors of discrepancies in the data affected figures for teachers' salaries. From the statistical publication listing, teachers' income for the 1968-69 school year is based on experience and training; we estimated each teachers' salary level. The sum of teachers' salaries for each school is divided by student enrollment at the school to get the actual expenditure per pupil figure.

Due to insufficient data and to certain uncommon characteristics (those of serving the physically handicapped, mentally retarded, etc.) making them unsuitable for use as typical academic institutions, some schools are not included in comprising the school sample. Schools that are not included in the study are Barton, Dowling, Sheltering Arms, and the Hennepin County Home Schools.

#### List of Variables Used

The following variables were tested for significance during the course of this study. Since the discussion will be generally confined to those variables that did appear to be specifically related to instructional costs per pupil, some variables are included in the list below that are not mentioned explicitly in the discussion.

- C: Observed per pupil cost of an individual school
- $\bar{C}$ : Cost per student in terms of what will be called standard instructional cost. The mean cost figure expressed in terms of the partial regressions



- $C_{T/P}$ : Cost per student at an individual school estimated as a function of the weighted teacher-pupil ratio of the sixty-seven schools
- $C_S$ : Cost per student at an individual school estimated as a function of the city-wide mean salary level.
- $X_1$ : Percent minority children attending the individual school
- $X_2$ : Percent AFDC children attending that school
- $b_1$ : Partial regression coefficient associated with  $X_1$
- $b_2$ : Partial regression coefficient associated with  $X_2$
- $a$ : Value of  $\bar{C}$  when  $b_1$  and  $b_2 = 0$
- $r_1$ : Simple correlation coefficient between  $C$  and  $X_1$ , when  $X_2$  is held constant
- $r_2$ : Simple correlation coefficient between  $C$  and  $X_2$ , when  $X_1$  is held constant
- $r_{12}$ : Partial correlation between  $C$  and  $X_2$ , when  $X_1$  is held constant
- $r_{13}$ : Partial correlation between  $C$  and  $X_1$ , when  $X_2$  is held constant
- $R^2$ : Coefficient of multiple determination
- $C_{T/P}^*$ : Difference between  $\bar{C}$  and  $C_{T/P}$
- $C_A^*$ : Difference between  $C_S$  and  $C_{T/P}$
- $T$ : Number of teachers in the individual school
- $P$ : Student enrollment in the individual school
- $K$ : Number of independent variables

- T/P: Teacher/pupil ratio for the individual school
- $\bar{X}_{1i}$ : Average minority percentage for each group,  
where  $i = 1, 2, 3, 4$
- $\bar{X}_{2j}$ : Mean AFDC statistics for each group, where  
 $j = 1, 2, 3, 4$

## CHAPTER IV

### EMPIRICAL RESULTS

#### Introduction

The design of the study and the methods of analysis were set forth in detail in Chapter III. Chapter IV is organized in parallel fashion to Chapter III with each portion of the analysis of the data and findings from the analysis presented in the same order in which the various methods of analysis were set forth in the previous chapter.

#### Regression Findings

Figures 2-1 and 2-2 in Chapter III show that cost per pupil rises as percent minority rises and as percent AFDC rises. Regressions based on these charts show

$$(2-A) \bar{C}_1 = 373 + 1.65X_1$$

(1.37)

where  $C_1$  is instructional cost as a function of percent minority in units of dollars;  $X_1$  is the percent of the minority variable; and the standard error of the regression coefficient is 1.37. The equation states that instructional cost is a function of the percent minority variable.

$$(2-B) \bar{C}_2 = 360 + 1.85X_2$$

(1.19)

where  $C_2$  is instructional cost as a function of percent

AFDC in units of dollars;  $X_2$  is the percent of the AFDC variable; and the standard error of the regression coefficient is 1.19. The equation states that instructional cost is a function of the percent AFDC variable.

It would be desirable to separate out the effect on costs of minority ( $X_1$ ) and AFDC ( $X_2$ ). A multiple regression shows:

$$\bar{C} = 364 + 1.01(X_1) + .92(X_2)$$

(.97)      (1.37)       $R^2 = .854$

where  $\bar{C}$  represents per pupil costs in units of dollars;  $X_1$  is the percent of the minority variable;  $X_2$  is the percent of the AFDC variable. The coefficient of multiple determination is .854 and the standard errors of the partial regression coefficient are .97 for  $X_1$  and 1.37 for  $X_2$ . The equation states that instructional cost is a function of the variances in percent minority and percent AFDC estimates.

Notice that the standard errors of the coefficient of  $X_1$  and  $X_2$  are about the same size as the coefficients themselves; while the overall correlation is high, it is not possible to separate the effects of the two variables on cost. This result arises because of the high correlation between  $X_1$  and  $X_2$ : the simple correlation coefficient between them is .797.

We have established that instructional salary cost per pupil rises as the concentration of minority students and the concentration of AFDC students rise together. We have not been able to conclude from statistical

analysis whether the money is going primarily to the schools with high concentrations of minorities or primarily to those with high concentrations of AFDC children, because the two are statistically related.

We can try to get some evidence on the question, though, by looking at individual schools. Schools serving low minority and a relatively high AFDC group of students costs are slightly higher than costs at schools serving a low AFDC and a relatively high minority group of pupils. Seven schools made up the first classification, of which three schools' cost figures are higher than the actual average cost figure of all of the schools which is 393 dollars. The three schools include Calhoun where cost per pupil is 432 dollars, Lind where cost is 399 dollars, and Prescott where cost is 421 dollars. The four remaining schools of this classification are Douglas, Cleveland, Schiller, and Fulton. The minority distribution ranges from 1.6 percent to 5.2 percent, and the relative AFDC level ranges from 12 percent to 19 percent.

Four schools served a low AFDC and a relatively high minority group of students. The actual average cost figure is higher than cost at each of the four schools. This classification of schools includes Field, Shingle Creek, Page, and Kenwood. The percent AFDC ranges from 2 percent to 18 percent, and the relatively minority percentages range from 7.8 percent to 53 percent. Schools' costs are greater at high AFDC and the relatively low minority populated schools than costs are at schools

serving low AFDC and a relatively high minority group of pupils. (The cost pattern exists among a few schools in Group 2, Group 3, and Group 4, but does not apply in general to these groups.)

#### Findings of the Experiment

In an attempt to explain the higher instructional costs, we analyzed cost in terms of two determinate variables--teacher-pupil ratio and teachers' salary--to see if class size or teachers' salary influence instructional expenditures per pupil; to determine the degree to which the two determinants can account for variances in instructional costs, and the extent to which costs are unexplained.

To estimate the determinate variable's impact upon instructional costs, two differential cost figures ( $C_{T/P}$ ,  $C_S$ ) are calculated for each school using the following equation:

$$C - C_{T/P}^* - C_A^* = K$$

where  $C$  represents actual instructional cost per pupil;  $C_{T/P}^*$  is the adjustment in per pupil cost to hold teacher-pupil constant at the city-wide teacher-pupil ratio average, teachers' salaries remaining unchanged ( $C_{T/P}^* = C - C_{T/P}$ ); and  $K$  determines the extent to which variations in higher cost per pupil can be explained by differences in teacher-pupil ratios and teachers' salaries.

Table 4 shows results of our findings. The sixty-seven schools are listed according to their minority rank

Table 4.  
Standard Instructional Cost ( $\bar{C}$ ), Weighted Teacher-Pupil  
Cost ( $C_{T/P}$ ), Average Salary Cost ( $C_S$ ) For Each School -- Group 1

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
School	Actual Enrollment	Actual Number of Teachers	Actual Total Salary	Average Salary/Teacher	$\frac{(4)-(2)}{(6)}$ Average Cost/Pupil	Adjusted Number of Teachers	Adjusted Total Salary (T/P=1/26)	Adjusted Average Cost/Pupil	Readjusted Total Salary (Average Salary=\$9922)	Readjusted Average Cost/Pupil	(6) - (9) $C - C_{T/P}$	(11) - (9) $C_S - C_{T/P}$
Hay	715	33	319,408	9,697	447	28	271,012	379	327,426	457	68	78
Bethune	584	29	278,830	9,614	477	22	211,508	362	287,738	493	115	131
Willard	897	35	322,690	9,129	360	35	322,665	360	347,270	387	0	27
Field	657	25	256,935	10,277	391	25	256,925	391	248,050	378	0	-12
Clinton	376	19	214,652	11,297	571	14	158,158	421	188,518	501	150	80
Adams	328	17	183,200	10,776	559	13	140,088	427	168,674	514	132	87
Harrison	811	37	362,756	9,804	447	31	303,924	375	367,114	453	72	78
Mann	908	35	240,582	6,873	265	35	240,555	265	347,270	382	0	117
Hall	402	16	131,858	8,241	328	15	123,615	308	158,752	395	20	87
Bancroft	973	30	299,929	9,997	308	37	369,889	380	297,660	306	-72	-74
Greeley	646	24	208,569	8,690	323	25	217,250	336	238,128	369	-13	33

Table 4. (Continued) -- Group 2

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
School	Actual Enrollment	Actual Number of Teachers	Actual Total Salary	Average Salary/Teacher	(4)÷(2) Average Cost/Pupil	Adjusted Number of Teachers	Adjusted Total Salary (T/P=1/26)	Adjusted Average Cost/Pupil	Readjusted Total Salary (Average Salary=\$9922)	Readjusted Average Cost/Pupil	(6)-(9) C-C <sub>T/P</sub>	(11)-(9) C <sub>S</sub> -C <sub>T/P</sub>
Motley	134	10	102,492	10,249	764	5	51,245	382	99,220	740	382	358
Madison	193	15	125,060	8,337	648	7	58,359	302	148,830	771	346	469
Lyndale	929	32	296,114	9,253	319	36	333,108	359	317,504	342	-40	-17
Irving	590	22	229,900	10,450	390	23	240,350	407	218,284	370	-17	-37
Shingle Creek	547	21	219,710	10,465	403	21	219,765	402	208,362	381	1	-21
Agassiz	522	17	160,716	9,453	308	20	189,060	362	168,674	323	-54	-39
Emerson	234	25	253,185	10,127	1,082	9	91,143	390	248,050	1,060	672	670
Seward	669	27	203,626	7,541	304	26	196,066	293	267,894	400	11	107
Webster	271	14	147,435	10,531	544	10	105,310	389	138,908	512	155	123
Page	315	10	108,922	10,892	346	12	130,704	415	99,220	316	-69	-99



Table 4. (Continued) -- Group 3

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
School	Actual Enrollment	Actual Number of Teachers	Actual Total Salary	Average Salary/Teacher	(4)÷(2) Average Cost/Pupil	Adjusted Number of Teachers	Adjusted Total Salary (T/P=1/26)	Adjusted Average Cost/Pupil	Readjusted Total Salary (Average Salary=\$9922)	Readjusted Average Cost/Pupil	(6)-(9) C-C <sub>T/P</sub>	(11)-(9) C <sub>S</sub> -C <sub>T/P</sub>
Pratt	418	15	137,870	9,191	330	16	147,056	352	148,830	356	-22	4
Whittier	600	25	251,305	10,052	419	23	231,196	385	248,050	413	34	28
Hawthorne	644	24	222,845	9,285	346	25	232,125	360	238,128	369	-14	9
Ericsson	416	15	169,137	11,275	407	16	180,400	434	148,830	357	-27	-77
Longfellow	725	26	267,375	10,295	369	28	288,260	398	257,972	355	-29	-43
Kenwood	580	20	210,550	10,527	363	22	231,594	399	198,440	342	-36	-57
Bremer	857	31	307,531	9,920	359	33	327,360	382	307,582	359	-23	-23
Lowell	647	21	204,228	9,725	316	25	243,125	376	208,362	322	-60	-54
Tuttle	411	15	148,804	9,920	419	23	231,196	385	248,050	413	34	28
Corcoran	712	24	253,489	10,562	356	27	285,174	401	238,128	334	-45	-67
Putnam	485	18	195,975	10,887	404	19	206,853	427	178,596	368	-23	-59
Marcy	266	14	120,989	8,642	455	10	86,420	325	138,908	522	130	197
Douglas	487	16	181,827	10,695	373	19	203,205	417	158,752	326	-44	-91

Table 4. (Continued) -- Group 4

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
School	Actual Enrollment	Actual Number of Teachers	Actual Total Salary	Average Salary/Teacher	(4)÷(2) Average Cost/Pupil	Adjusted Number of Teachers	Adjusted Total Salary (T/P=1/26)	Adjusted Average Cost/Pupil	Readjusted Total Salary (Average Salary=\$9922)	Readjusted Average Cost/Pupil	(6)-(9) C-C <sub>T/P</sub>	(11)-(9) C <sub>S</sub> -C <sub>T/P</sub>
Calhoun	760	27	328,221	12,156	432	29	352,524	464	267,894	352	-32	-112
Bryn Mawr	302	12	125,810	10,484	417	12	125,808	417	119,064	394	0	-23
Lind	580	22	231,590	11,435	399	22	251,570	434	218,284	376	-35	-58
Cleveland	492	17	166,238	9,778	338	19	185,782	377	168,674	343	-39	-34
Morris Park	528	18	179,802	9,989	341	20	199,780	378	178,596	338	-37	-40
Sheridan	315	14	139,190	9,942	442	12	191,304	379	138,908	441	63	62
Minnehaha	536	18	164,053	9,114	306	21	191,394	357	188,518	352	-51	-5
Kenny	581	23	163,801	7,121	282	22	156,662	270	228,206	393	12	123
Prescott	558	22	235,185	10,690	421	21	224,490	402	218,284	391	19	-11
Cooper	585	21	256,329	9,825	438	23	225,975	386	208,362	356	52	-30
Hiawatha	609	21	208,539	9,930	342	23	228,390	375	208,362	342	-33	-33

Table 4. (Continued) -- Group 4

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
School	Actual Enrollment	Actual Number of Teachers	Actual Total Salary	Average Salary / Teacher	(4)÷(2) Average Cost / Pupil	Adjusted Number of Teachers	Adjusted Total Salary (T/P=1/26)	Adjusted Average Cost/Pupil	Readjusted Total Salary (Average Salary=\$9922)	Readjusted Average Cost/Pupil	(6)-(9) C-C <sub>T/P</sub>	(11)-(9) C <sub>S</sub> -C <sub>T/P</sub>
Penn	481	18	180,315	10,017	363	22	231,594	399	198,440	342	-36	-57
Schiller	497	17	154,109	9,065	310	19	172,235	346	168,674	339	-36	-7
McKinley	548	21	192,760	9,175	352	21	192,675	352	208,362	380	0	28
Northrop	384	12	129,407	10,783	338	15	161,745	421	119,064	310	-83	-111
Waite Park	688	23	256,922	11,170	373	26	290,420	422	228,206	332	-49	-90
Fuller	570	19	159,090	8,373	279	22	184,206	323	188,518	330	-44	7
Howe	518	15	170,387	11,359	329	20	227,180	439	148,830	287	-110	-152
Windom	481	16	171,769	10,735	357	19	203,965	424	158,752	330	-67	-94
Hamilton	532	26	282,152	10,832	530	20	217,040	408	257,972	485	122	-77
Fulton	844	30	322,425	10,747	382	32	343,904	407	297,660	352	-24	-55
Holland	424	15	120,357	8,023	284	16	128,368	303	148,830	351	-19	48

Table 4. (Concluded) -- Group 4

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
School	Actual Enrollment	Actual Number of Teachers	Actual Total Salary	Average Salary / Teacher	(4)-(2) Average Cost / Pupil	Adjusted Number of Teachers	Adjusted Total Salary (T/P=1/26)	Adjusted Average Cost/Pupil	Readjusted Total Salary (Average Salary=\$9922)	Readjusted Average Cost / Pupil	(6)-(9) C-C <sub>T/P</sub>	(11)-(9) C <sub>S</sub> -C <sub>T/P</sub>
Wenonah	376	12	127,495	10,624	339	14	148,736	395	119,064	316	-56	-79
Loring	417	16	155,934	9,745	374	16	155,920	374	158,752	381	0	7
Lowry	509	17	180,665	10,627	355	18	191,286	376	168,674	331	-21	-45
Armatage	742	24	268,281	11,178	362	29	324,162	437	238,128	321	-75	-116
Audubon	416	14	160,945	11,496	387	16	182,936	442	138,908	333	-55	-109
Standish	589	21	206,360	9,826	350	23	225,998	384	208,362	354	-34	-30
Keewaydin	476	16	179,613	11,225	377	18	202,050	424	158,752	333	-47	-91
Hale	629	23	232,132	11,397	369	24	273,528	435	222,206	362	-66	-73
Lake Harriet	355	11	130,130	11,830	367	14	165,620	467	109,142	307	100	-160
Pillsbury	425	15	161,329	10,755	380	16	172,080	405	148,830	350	-25	-55
Burroughs	775	25	192,787	7,711	249	30	231,330	298	248,050	320	-49	22

in their respective social groups. The teacher-pupil ratio costs ( $C_{T/p}$ ) are higher than actual cost figures for 40 of the 67 schools and except for Northrop and Howe, the estimates differed from (C) by less than 80 dollars. The weighted teacher-pupil costs are higher at Northrop by 83 dollars and at Howe by 110 dollars. About one-third of the weighted salaries' costs are higher than the actual cost figures (C).

An unexpected result was that only 25 of the 67 schools weighted salary costs ( $C_S$ ) are larger than the weighted teacher-pupil costs, since over half of the schools pay their teachers the higher salaries.

Except for schools that are considered to be high minority and high AFDC populated (schools comprising Group 1, except for Field School) there is no apparent cost pattern among the schools. The unexplained variances may be accounted to some factor not used in this study, since only teacher-pupil ratios and teachers' salaries are the determinate variables tested; or the percent minority ranges of the groups may be too small to compare costs among the schools.

Schools of Group 1 cost pattern show that the actual cost figures are higher than the weighted teacher-pupil costs. That is to say, smaller class sizes are being used in these schools. In only two of the eleven schools are ( $C_{T/p}$ ) greater than (C). The two schools are Bancroft where ( $C_{T/p}$ ) is greater by 72 dollars, and Greeley where ( $C_{T/p}$ ) is greater by 13 dollars. About

half of the weighted salary cost per pupil estimates are higher than actual costs. The weighted teacher-pupil costs are higher than the weighted salary costs in only two of the eleven schools.  $(C_{T/p})$  is higher than  $(C_S)$  in Field School by 12 dollars and in Bancroft School by 74 dollars.

In Group 1, we find that per pupil costs are 160 dollars, 60 percent higher in schools serving at least 40 percent of minority pupils. The percent minority enrollment for Group 1 ranges from 30 percent to 75 percent. Furthermore, the higher the AFDC percentages in these schools, the more money per child. We find per pupil costs are 164 dollars, 62 percent higher in schools serving at least 40 percent of AFDC pupils. Schools of a large minority differentiation and high AFDC level offer higher costs per child.

On the other hand, we find that in six out of ten schools the average salary per teacher is lower than the city-wide average (as we had hypothesized) while in four schools the average salary is higher. Thus it does not appear that there is strong evidence to support the hypothesis that more experienced teachers avoid the high-minority or high-AFDC schools. In the next section, we find further evidence however.

### Comparisons of the Four Groups'

#### Typical Schools

To look at the make-up of the cost figures, and to see if the higher costs in some schools are associated

with smaller class sizes, higher teachers' salaries, or both, an examination of each group's typical school will prove noteworthy. This will necessitate the construction of average class sizes, and mean teachers' incomes as well as the construction of generalized average cost estimates for the four groups. This experimental control may include some factors known to be false in the strict sense of scientific purity; it is useful, however in deriving our comparisons.

After determining the average instructional cost figures for the typical school of each group, the average size of class and mean salary level are estimated. Table 5 presents results of our findings.

It shows that a total of 663 pupils attended the average school in Group 1, of which 272 (41 percent) are considered economically deprived, and 305 (46 percent) were of the minority groups. In accord with recent education innovations to solve the classroom size problem-- particularly in schools serving the disadvantaged areas-- the results show that a teacher in the typical Group 1 school gave instruction to 22 pupils (the lowest class size of the four schools), and 31 professionals comprise the teaching staff (the lowest number of teachers of the four schools). The typical elementary school in Group 1 is found to be more ethnically integrated with the lowest teacher-pupil ratio as compared to other schools.

The average school in Group 2 served 440 pupils of which 114 (26 percent) were of AFDC and 79 (18 percent)

Table 5.

Cost Per Pupil, Class Size, Average Salary Per Teacher, Number of Teachers for the Average School of Each Social Group							
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Class	( $\bar{C}$ ) Instructional Cost/Pupil (Dollars)	( $X_1$ ) Minority Pupils (Percent)	( $X_2$ ) AFDC Pupils (Percent)	(P) Student Enrollment (Units)	(T) Number of Teachers (Units)	(T/P) Number of Students (Class Size) (Units)	( $\bar{S}$ ) Average Salary/Teacher (Dollars)
Group 1	448	46	41	663	31	22	9,497
Group 2	406	18	26	440	18	24	9,729
Group 3	388	8	17	558	26	26	10,075
Group 4	373	2	8	538	27	27	10,217



were of the minority groups. Eighteen professionals comprised the teaching staff and the teacher-pupil ratio is figured at 1:24. The typical school in Group 2 is found to serve more minority children compared to AFDC pupils, and next to the typical school in Group 1 it also has a low teacher-pupil ratio as compared to the other schools.

The average school in Group 3 served 558 pupils, the second largest student enrollment figure (the typical school in Group 1 served the largest student population). The figures show that of the 558 students attending the average school in Group 3, 95 (16 percent) are considered economically deprived and 45 (8 percent) are of the minority groups.

The average school in Group 4 served 538 pupils of which 43 (8 percent) are of AFDC and 11 (2 percent) are of an ethnic group. In comparison to other schools, the typical school in Group 4 served primarily children of the affluent.

Then, too, Table 5 shows that teachers' salaries and instructional costs contrast; that is, schools of lower instructional salary costs per student pay the higher salaries. Teachers' salaries in schools comprising Group 4 (those with the lowest instructional expenditures) are 8 percent above teachers' salaries associated with Group 1, 3 percent above teachers' salaries of Group 2, and 1 percent above teachers' salaries of Group 3.

### Overview

Because there are relatively few minority pupils and AFDC pupils in over 70 percent of the schools in our sample, or because of some determinate factor not included in this study, we were not able to isolate expenditures per pupil among most of the schools and determine their cost patterns. The schools were listed and grouped according to their minority rank.

In comparing the schools, we find instructional cost per pupil to be higher at schools serving a large percentage of both minority and AFDC students (Group 1 schools). Higher cost per pupil estimates in these schools are associated with small class sizes.

## CHAPTER V

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS FOR FURTHER STUDY

#### Summary

To provide an equal, yet individualized, educational opportunity to every pupil has become a goal of the system. When children have advanced through the common elementary and secondary schools in the United States, it is generally understood that they have been offered a certain standard amount and quality of instruction and other services. High school graduation is a specific achievement that appears to have a constant definition. However the wide variations are numerous.

Some inquiries into the school program as reviewed in the literature have revealed that the amount, and probably the quality, of schooling available to children varies between widely separated extremes.

This study investigated differences among schools' educational resources per student--number of staff members per student and academic preparation and teaching experience of staff members--as they were associated with the individual school's minority and AFDC student population. The following observations were made:

- (1) Instructional costs are found to be higher in schools serving primarily minority and AFDC students.

- (2) Instructional costs are directly influenced by the number of minority and AFDC students in schools by chance, even though a positive relation is found to exist between instructional cost, and the minority and AFDC variables.
- (3) Schools serving a larger percentage of the minority and AFDC population offer smaller class-sizes, more individualized instruction, and other things associated with low teacher-pupil ratios.
- (4) These schools of high minority and AFDC, on the other hand, paid the lower teachers' salaries in comparison to other schools.
- (5) As pointed out indirectly by the two hypotheses in Chapter III underlying most investigations of higher and lower instructional costs in inner-city education, high instructional costs illustrate efforts made by the government to offer minority and AFDC children an equal education.

To which school a teacher goes depends, to the greater degree, upon his personal preferences since there is no compensation for working in undesirable schools.

#### Findings and Conclusions

This study's findings show percentages of minority and AFDC student population to have a positive influence upon instructional cost per student. The positive

relationship reflects that higher costs may be associated with percentages of the minority and AFDC student population. The social variables are clearly associated with variations in cost, but there was no statistical way to separate the effects of the two social variables.

Schools serving a high percentage of AFDC and minority children (schools of Group 1) incurred the highest instructional salary cost per pupil, the lowest average teacher-pupil ratio, and the lowest mean salary per teacher. Schools serving a relatively high percentage of AFDC and minority children incurred a relatively high cost per student, low teacher-pupil ratio, and low mean salary per teacher (schools of Group 2).

Whereas schools of Group 3 (serving a relatively small percentage of the minority and AFDC student population) incurred a relatively low instructional cost per pupil, a large teacher-pupil ratio, and high mean salary per teacher. Schools of Group 4 served primarily children from affluent families (a few served children from high AFDC areas), and incurred the lowest instructional cost per pupil, the highest average teacher-pupil ratio, and the highest mean salary per teacher.

Do high average salaries for teachers in some schools mean that some students are being offered a better education than others? Do schools whose high costs reflect smaller classes reflect better schools?

If teacher-pupil ratios and teachers' salaries reflect equal influences upon instructional expenditures

per pupil, paradoxically the Minneapolis school system may appear to be somewhat narrowing the gap in inequality of education. Schools serving little or no minority and AFDC students tend to have the experienced and trained faculties, whereas schools serving the larger portion of the minority and AFDC student population offer smaller class sizes and more individualized instruction.

#### Recommendations for Further Study

It is the author's recommendation that further study of interest may be in regard to the trade-offs between lower teacher-pupil ratios and teachers' salaries in accord with tenure and degree qualification. A particular question emphasized by this study: Are older teachers worth the extra money? If so, the fact discovered in this study that, on the average, inner-city schools get younger, lower-salaried teachers, means that small class size is being offset by less-skilled teachers. But if older teachers are not worth more, there is no problem.

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