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ABSTRACT
        This study has four major objectives. They are: (1)
to describe Detroit's population and school enrollment trends as they
have occurred in the past and as they are likely to occur in the
future; (2) to describe the extent of segregation of students by race
in Detroit's public schools throughout the past decade; (3) to
describe the extent of segregation of instructional personnel by race
in Detroit's public schools throughout the past decade; and, (4) to
analyze the relationship between teaching staff quality and the
racial composition in Detroit's schools during the 1970-71 school
year. Chapter two describes an index developed for measuring
residential segregation which has been adapted for use as a measure
of school segregation. Chapter three presents population data for
Detroit over the past 70 years. Changes in the numbers of students
and faculty of different races between 1960 and 1970 are presented.
Chapter four describes the index of dissimilarity values for students
on an annual basis from 1960 to 1970. Chapter five repeats the
description in Chapter four, with instructional personnel as
subjects. Chapter six analyzes the distribution of instructional
resources to schools according to the racial composition of their
student bodies. Chapter seven concludes the report with a summary of
findings and a brief evaluation of Detroit's progress toward
desegregation. (Author/JM)

BLACK SCHOOLS, WHITE SCHOOLS:

A Descriptive Analysis of School
Attendance Patterns in Detroit

by

Stephen B. Lawton
Ontario Institute for Studies in Education

and

Gregory L. Curtner
Miller, Canfield, Paddock and Stone

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PREFACE

This report is the end result of an investigation undertaken by myself and Gregory Curtner, for the Board of Education of the City of Detroit, who financed the study. The overall structure of the study and the idea of applying the Taeubers' index of dissimilarity to school segregation are the work of Gregory Curtner. Everything else — research, writing, and interpretation — is my own work. As a result, I bear full responsibility for the accuracy of the report, as well as for all value judgments and interpretations it contains.

I should like to extend my thanks to the Detroit Public Schools and to their employees for providing the raw data upon which this report is based. The school district's willingness to support research into such a sensitive area as segregation, and to release all findings, once again supports one conclusion reached in the report: that Detroit has an unusually sensitive and enlightened school system.

Also greatly appreciated was the assistance of Dr. James Guthrie, University of California at Berkeley, and my co-workers as OISE — Lindsay Shanahan and Mrs. F. McCorkindale, who coded all data, Brenda Caplan, who typed the draft manuscript, and Susan Arbuckle, who typed the final version.

Stephen B. Lawton
Toronto
June 1972

TABLE OF CONTENTS

TABLES

FIGURES

CHAPTER I

INTRODUCTION

"[We] find that both the State of Michigan and the Detroit Board of Education have
committed acts which have been causal factors in the segregated condition of the
public schools of the City of Detroit."[1] So concluded the Court in the case of
Bradley v. Milliken. Explaining his verdict, the judge stated:

> The principal causes undeniably have been population
> movement and housing patterns, but state and local
> governmental actions, including school board actions,
> have played a substantial role in promoting segregation.
> It is, the Court believes, unfortunate that we cannot
> deal with public school segregation on a no-fault basis,
> for if racial segregation in our public schools is an evil,
> then it should make no difference whether we classify it
> de jure or de facto. Our objective, logically, it seems
> to us, should be to remedy a condition which we believe
> needs correction. In the most realistic sense, if fault
> or blame must be found it is that of the community as
> a whole, including, of course, the black components....
> There is enough blame for everyone to share.[2]

Considerable amounts of data are ,ented in Judge Roth's decision to
support the conclusions he reached, data similar to those presented in this report
on racial attendance patterns and their correlates in the City of Detroit. However,
this investigation uses some techniques new to the study of school segregation in
order to provide concise yet comprehensive summaries of attendance patterns
during the past decade.

There are four major objectives in this study. They are

(1) to describe Detroit's population and school enrollment trends as they
    have occurred in the past and as they are likely to occur in the future;

(2) to describe the extent of segregation of students by race in Detroit's
    public schools throughout the past decade;

1

(3) to describe the extent of segregation of instructional personnel by race in Detroit's public schools throughout the past decade;

(4) to analyze the relationship between teaching staff quality and the racial composition in Detroit's schools during the 1970-71 school year.

A proper understanding of these descriptions and analyses requires familiarity with Detroit's residential patterns and with the organizational subdivisions within its public schools.

The City of Detroit

Detroit is the largest city in Michigan. With a population of 1.5 million, it is the center of a metropolitan area containing 4.2 million people.[3] The city is also the home of 87 percent of the area's 757,000 blacks; while metropolitan Detroit is 18 percent black, the city itself is 44 percent black.

The distribution of black citizens in Detroit is no more uniform than it is in the whole metropolitan region. Figure 1.1 displays the residential pattern of non-whites within the city limits. Needless to say, there is considerable racial segregation among Detroit's residents. To the educational system, this means that so long as a policy of neighborhood schools is followed, the schools will also be segregated.

Detroit Public Schools

In 1970, the Detroit public schools enrolled 289,743 students in 282 schools. Of the students, 184,194 were black, 100,717 were white, and 4,832 belonged to other racial and ethnic groups. Of the schools, 219 were elementary schools, 42 were junior high schools, and 21 were senior high schools. Actually, the line between elementary and junior high schools is not precise. Many of Detroit's schools have unusual combinations of grades: K-2 and 7-9, K-9, 7-8, K and 7-8, 4-9, etc. For convenience, these have all been classified as elementary schools. Even the exact number of schools is open to question. School annexes and primary schools can be considered either separately or in combination with their associated
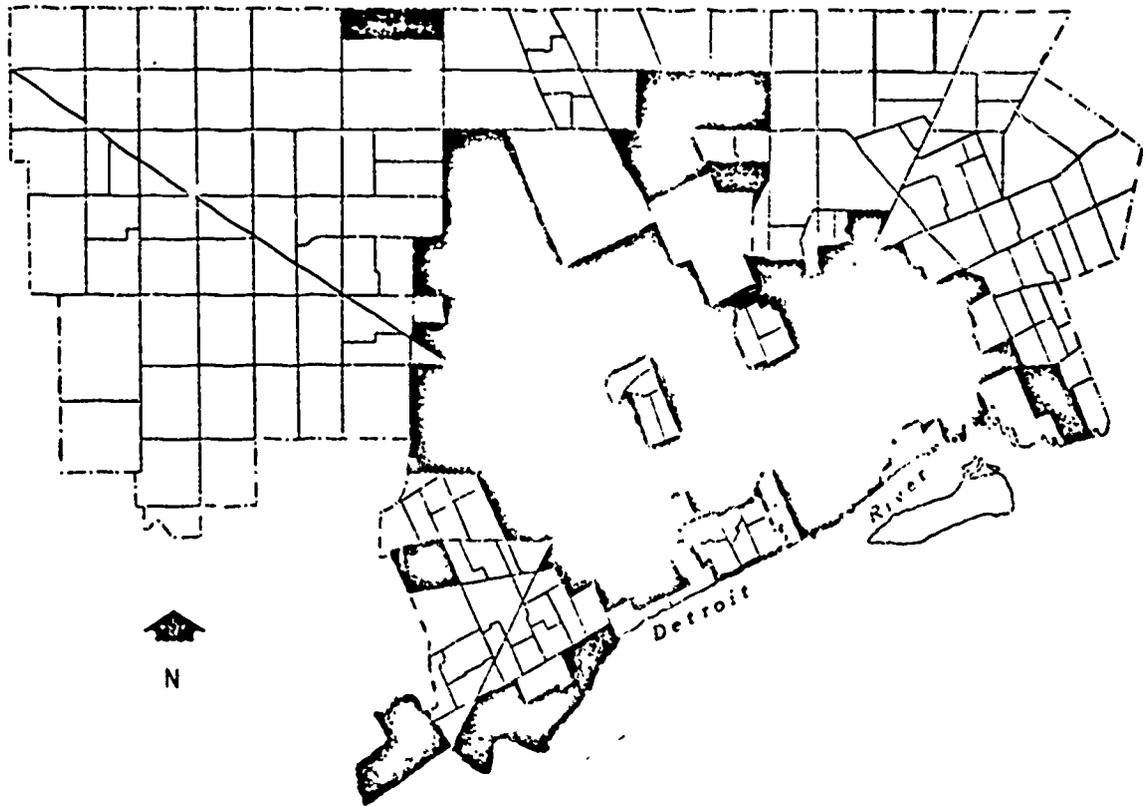
FIGURE 1.1. Detroit census tracts with
250 or more non-whites in 1960. [4]

elementary schools. The latter approach was taken here since official data are often reported in this way.

Schools are also grouped into larger units for administrative purposes. A constellation consists of a high school plus all elementary and junior high schools included within the high school's attendance area. Exceptions to this rule do occur; in a number of cases elementary or junior high schools lying within the attendance area of one high school have been reassigned to another high school's constellation. In practice, then, a constellation signifies a high school and all of its feeder schools, regardless of their location.

A still larger set of administrative units has been created for the purpose of achieving some degree of decentralization. Designated as regions, these generally consist of two or three constellations.

One of the purposes of this report is to describe the extent of segregation in a. elementary, junior high, and senior high schools, b. constellations, and c. regions. In the last two cases, all students attending schools within a constellation or region are counted without considering the school they attend. As a result, segregation of students in these larger units is rather abstract, relating to theoretical groupings of students rather than to actual groupings. Students could remain in segregated schools even though both constellations and regions were desegregated. Therefore, considerable care must be taken when interpreting data for these larger units.

Observations on "Value Free" Social Science

The ideal of value free social science, in which research is conducted totally without bias or dogma, has come under attack in recent years. The political left has accused social scientists of using the concept as an excuse to ignore the moral consequences of their work. In addition, radical social scientists have called into question the concept itself, claiming that values cannot be escaped: they appear in the very problems chosen and in the type of questions asked. Critics from the right of the

political spectrum take a similar stance, particularly where the application of discoveries in the social and behavioral sciences is concerned. Often, they view social scientists as liberals who design their work to coincide with their own political views. The extent to which recent legislation and court cases have depended on findings of social scientists certainly lends credence to this position.

As yet, no one has provided a viable alternative to the rational, scientific approach to understanding societies and their problems. Subjective analysis, unrooted in hard observations, is too susceptible to emotionalism. Differences become magnified while similarities are forgotten. Only reliable data, carefully collected and analyzed, can provide a common basis for discussion and understanding. This report provides such data, describing many racial characteristics of Detroit and its schools. But a purely descriptive, value free position is not maintained throughout. The last part of Chapter 2 and the whole of Chapter 7 assume that equality of treatment should take precedence over individual freedom of choice where public services such as education are concerned. Nonetheless, an equally valid argument could be constructed reversing the dominance of these two contrasting values—equality and individuality—which are both deeply held by most Americans. No doubt one result would be a different set of conclusions. However, one ought to consider the practical effects of decisions based upon either set of assumptions.

Assume, for example, that individual choices result in all-white and all-black schools. While nothing is intrinsically wrong with all-black or all-white schools, the social consequences of such a situation may be extremely detrimental to both groups. Thus, the interpretation of data requires that one's goals, values, attitudes, and preferences be made explicit, and that all conclusions be considered in terms of their social effects.

The desire of some groups for the preservation of their ethnic identities also reflects a belief in individual rights. Achievement of this goal probably does not require separate schools for each group, particularly if greater support is provided to private cultural institutions whose activities complement those of the public schools. This idea receives additional treatment in Chapter 2.

Finally, it is well to remember that individualism can complement equality; acceptance of one value does not require rejection of the other.

Overview

The value judgments in this report occupy a relatively minor position. The major part is concerned with a verbal description of the quantitative data presented in numerous tables and figures.

Chapter 2 describes an index developed for measuring residential segregation which has been adapted for use as a measure of school segregation. This "index of dissimilarity" measures the extent to which all schools deviate from proportional representation of students by race. The index has a literal interpretation. It indicates the percentage of black students who would have to be transferred in order to achieve proportional representation; that is, to desegregate the schools. An "index of replacement" can also be computed to yield the percentage of all students, regardless of race, who would require transfers in order to desegregate all schools.

Chapter 3 sets the stage for the analysis of segregation by presenting population data for Detroit over the past seventy years. In addition, changes in the numbers of students and faculty of different races between 1960 and 1970 are presented. All demographic trends are projected to 1980.

Chapter 4 describes the index of dissimilarity values for students on an annual basis from 1960 to 1970. Schools are grouped by level (elementary, junior high, and senior high), by constellation, and by region.

Chapter 5 repeats the description in Chapter 4, with instructional personnel as subjects. Data indicate that segregation among staff members has decreased considerably since 1960, while student segregation has remained relatively constant.

Chapter 6 analyzes the distribution of instructional resources to schools according to the racial composition of their student bodies. Teacher experience, training, and class size are used to indicate the quality of instruction, which is

found to be distributed somewhat unevenly. Results are also presented quantitatively, using the teacher salary schedule to assign a dollar value to each measure of quality.

Chapter 7 concludes the report with a summary of findings and a brief evaluation of Detroit's progress toward desegregation. This evaluation is obviously dependent on the set of values adopted by the investigator, and should not be considered the only assessment possible.

Footnotes

1. Bradley v. Milliken (Civil Action No. 35257, United States District Court, Eastern District of Michigan, Southern Division; September 27, 1971), p. 21.

2. Ibid., p. 22.

3. 1970 Census of Population Advance Report: Michigan General Population Characteristics (Washington, D. C.: United States Government Priniting Office, 1971), p. 4.

4. Adapted from Taeuber, K. E., and Taeuber, A. F., Negroes in Cities (New York: Antheneum, 1969), p. 257.

CHAPTER II

MEASURING SEGREGATION

Social scientists have developed a number of measures of residential segregation. Among these is the Taeubers' "index of dissimilarity,"[1] which can be adapted for use as a measure of school segregation. This index, denoted by the letter D, has many desirable characteristics: it is easily computed, easily interpreted, not dependent on the size or composition of the population under study, applicable to any city or area, and equal to a single numerical value between 0 (no segregation) and 100 (total segregation). For these reasons, it was the index chosen to measure the extent of school segregation in this study.

Indices of Dissimilarity and Replacement

The index of dissimilarity is even more satisfactory for investigating school segregation than for investigating residential segregation, the purpose for which the index was originally designed. Residential patterns are extremely complex. Unlike school systems, they have no natural unit for study. Census tracts, arbitrary units, such as city blocks, and streets, have each been used for this purpose. Unfortunately, both the size and placement of such units (i.e., their relationship to the residential pattern) affect the index value. Generally, larger units produce smaller values of D. In studying schools, no such problem is presented. Attendance, rather than residence, is the "behavior" of interest. The individual school, and larger administrative groups of schools, make natural units for study.

For the purposes of describing the calculation and interpretation of the index of dissimilarity, diagrams have been prepared showing three levels of segregation: no segregation, partial segregation, and complete segregation. The use of such diagrams in analyzing school segregation is based on two assumptions. First, it is assumed that all students within a given attendance area attend the school in that area. If students had free choices of schools, then residential patterns might not

9

be related to school attendance patterns. Second, it is assumed that students are evenly distributed across the district so that the number of students is proportional to area. Fortunately, these assumptions are not necessary when actually studying schools.

Interpretation of D

Figures 2.1, 2.2, and 2.3 represent a mythical school system with four hundred students: three hundred are white and one hundred are black. The blacks reside in a segregated area in the center of the town.

In Figure 2.1, attendance areas for four elementary schools have been drawn in order to avoid segregation and to maintain schools of equal size. Each school has seventy-five white students and twenty-five black students. One-fourth of each student body is black, just as one-fourth of all students in the system are black. Each school has a proportionate share of black and white students.

Figure 2.2, in contrast, represents an attendance pattern in which students are completely segregated by race. Each school is either 100 percent black or 100 percent white. Each has far more or far less than its proportionate share of black students.

Whether Figure 2.2 represents intentional or unintentional school segregation cannot be determined from the map alone. If the pattern of attendance areas ante-dated the immigration of blacks to this town, then the segregation would probably be considered unintentional, at least from the school system's viewpoint. However, if the attendance pattern had once been similar to that in Figure 2.1, but changed to that in Figure 2.2 after black immigration and construction of a new school, then the segregation would appear intentional. It might be noted that some systems having an attendance pattern similar to the one shown in Figure 2.2 have desegrated by closing the black school and creating new boundaries like those in Figure 2.1.

The dissimilarity index computed for the schools in Figure 2.1 is 0; that for those in Figure 2.2 is 100. Attendance areas falling between these extremes, such as those represented in Figure 2.3, will produce an intermediate value of D.
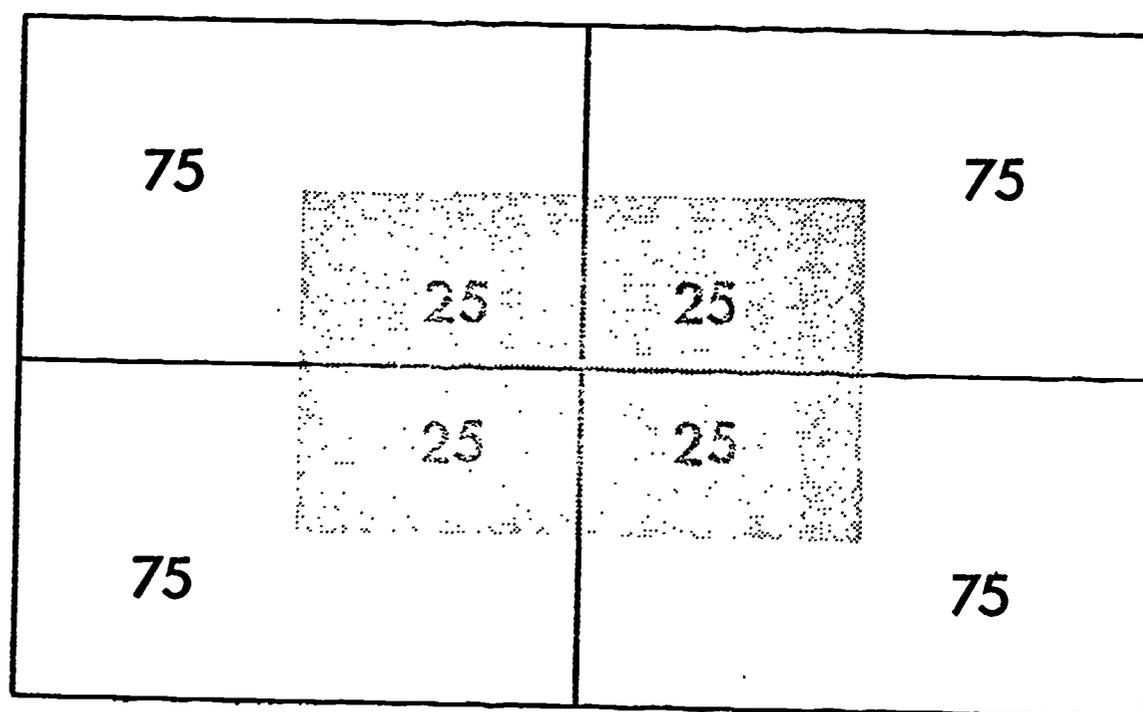
FIGURE 2.1.   No segregation, D = 0.
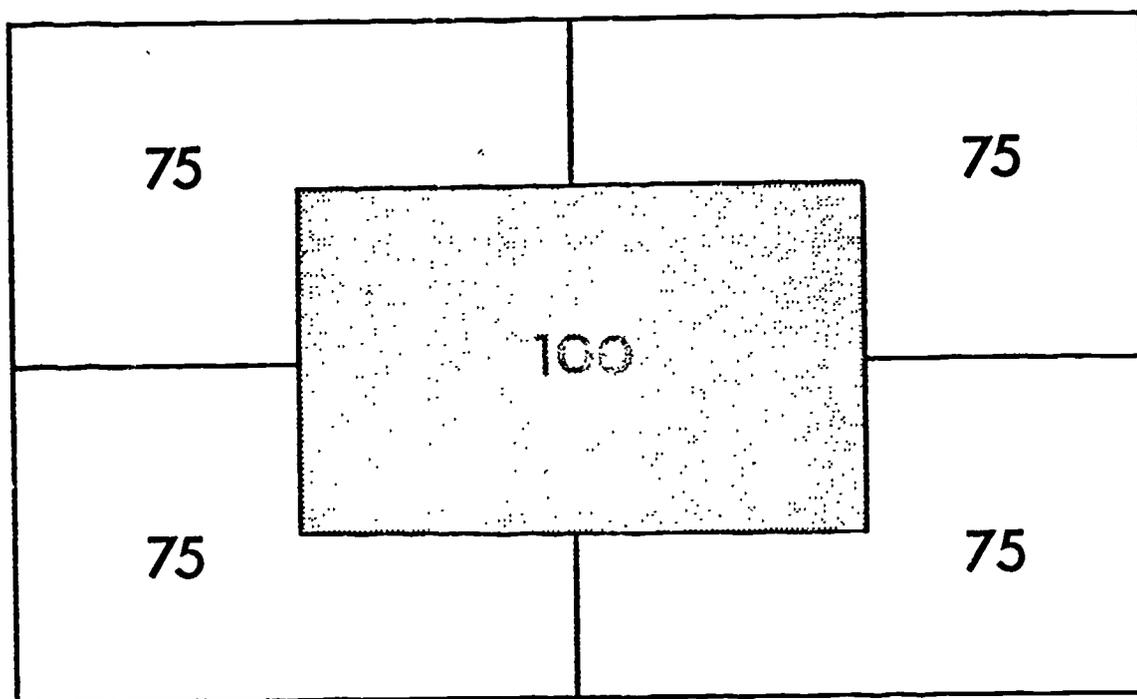
FIGURE 2.2.   Complete segregation, D = 100.
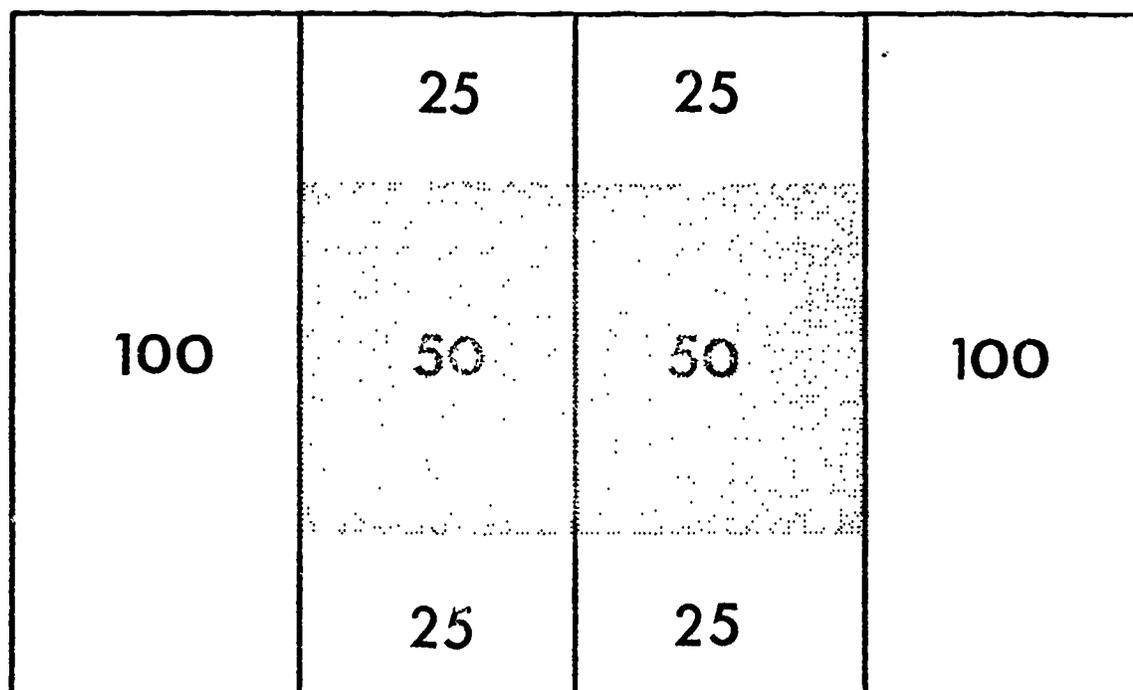
FIGURE 2.3. Partial segregation, D = 67.

In Figure 2.3, two schools are disproportionately black, each with fifty percent, while two are disproportionately white. The district is neither completely segregated, nor completely desegregated. This is the condition one would expect in most school systems. Furthermore, D has a straightforward interpretation: it is the percentage of black students who must be transferred in order to fully desegregate the district. If 66.7 percent of the black students (i.e., 66 students) were transferred to the adjoining white areas, then each school would be fully desegregated. Two schools would have thirty-three black students and one hundred white students; two would have seventeen black students and fifty white students. All would be approximately twenty-five percent black and seventy-five percent white.

Index of Replacement

The literal interpretation of D is useful in understanding the index, though it assumes the logic of one-way bussing, an idea which is neither practical nor popular in most cities. Fortunately, it is possible to compute an index of replacement, Re, which equals the smallest percentage of all students who, regardless of race, must be transferred in order to achieve complete desegregation. For Figure 2.3, Re equals 25, implying that one hundred of the four hundred students would have to be transferred. If fifty black students (one half of their total number) are divided equally among the two all-white schools, while fifty white students (one-sixth of their total number) are divided equally among the two disproportionately black schools, then complete desegregation would be accomplished. Each school would then be one-fourth black and three-fourths white, as in Figure 2.1. Formulas for computation of these numbers and percentages are presented in the following section.

It may appear that Re is a better index of segregation than D because of its more practical meaning. A two-way interchange is generally more practical, in physical terms, than a one-way system. However, unlike D, Re depends upon the proportion of blacks in a population. Whenever these proportions differ, as among cities or for different years in the same city, comparing values of Re is meaningless.

As was suggested earlier, the comparison of dissimilarity index values from two different points in time may be valuable in discriminating between intentional and unintentional segregation. In addition, such comparisons can be used to assess the success of a desegregation policy or to discover trends in segregation which might go unnoticed. Such trends could develop from new residential patterns among blacks and whites, or from changes in the age distributions of black and white students. Indeed, the true cause of an increase or decrease in D from one year to the next may be impossible to discover in many cases.

Computation of D and Re

Five numbers are necessary to compute D: the total number of blacks, B; the total number of whites, W; the proportion of blacks in the population under study, $B/(B+W)$; the number of blacks in schools which are disproportionately black, B'; and the number of whites in schools which are disproportionately black, W'. D is 100 times the difference between the proportion of all blacks in disproportionately black schools and the proportion of whites in these disproportionately black schools:

$$D = \left[\frac{B'}{B} - \frac{W'}{W} \right] \times 100$$

The minimum value for D is 0.0, indicating no segregation. In Figure 2.1, each of the four schools in the system has a proportionate share of black students: one out of four. Hence, B' and W' are zero, since there are no disproportionately black or white schools, and the index is zero.

The maximum value that D may assume is 100, as in Figure 2.2. There, all one hundred black students attend a single school. Therefore, B' = 100. No whites attend this school, so W' = 0. Hence,

$$D = \left[\frac{100}{100} - \frac{0}{300} \right] \times 100 = (1-0) \times 100 = 100$$

Finally, in Figure 2.3 two schools are disproportionately black, each with 50 black and 50 white students. Therefore, B' = 100. There are a total of 100

whites in these disproportionately black schools, so W' = 100. Therefore,

$$D = \left[\frac{100}{100} - \frac{100}{300}\right] \times 100 = (1.00 - .333) \times 100 = 66.7$$

Clearly, D may take on 〔ny value between 0 and 100, with more extreme segregation being reflected in higher index values.

It should be noted that reference has been made only to black and white students. In fact, this index may be used with any two groups. In a school system, many different ethnic groups may be represented. These must be analyzed two at a time. For three groups, we would have the following comparisons:

<div style="text-align:center">

black v. white

black v. other

white v. other

</div>

In a cosmopolitan system such as San Francisco, where the school population is 33 percent white, 29 percent black, 10 percent Asian, 12 percent Spanish surname, and 8 percent other non-white, ten pair-wise comparisons would be necessary for complete analysis.[2]

The index of replacement, Re, is defined by the equation

$$Re = 2pqD$$

where

p = proportion of blacks, $\dfrac{B}{B+W}$

q = proportion of whites, $\dfrac{B}{B+W}$

D = index of dissimilarity

For Figures 2.3, where one-fourth of all students are black,

$$Re = 2\left[\frac{1}{4}\right]\left[\frac{3}{4}\right]\left[\frac{2}{3} \times 100\right]$$

$$= 25$$

The fractional form of D is used to simplify computations.

The percentage of black students who must transfer equals qD, while the percentage of white students to replace them is pD;

$$qD = \left[\frac{3}{4}\right]\left[\frac{2}{3} \times 100\right] = \left[\frac{1}{2} \times 100\right] = 50\%$$

$$pD = \left[\frac{1}{4}\right]\left[\frac{2}{3} \times 100\right] = \left[\frac{1}{6} \times 100\right] = 16.7\%$$

Multiplying by the number of students in each group reveals that fifty black and fifty white students must exchange places for the schools to be racially balanced.

Some Observations on Terminology

Segregation of students by race is often classified int, t.,, types: de facto and de jure. Since these legal terms have both a popular and a technical meaning which are somewhat at variance, they have been avoided here. Instead, the adjectives "intentional" and "unintentional" have been used. It is, in fact, the intent of an action, rather than the action itself, that must be judged. Unintentional actions are accidental; their occurrence is due to chance alone. Ethically speaking, they are neutral—neither good nor bad, right nor wrong. If school segregation is to be judged by moral standards, it is necessary to be able to distinguish intentional segregation from unintentional segregatioa.

It is possible for a school system to be racially segregated by chance alone. To prove this point, imagine the following "game." The playing board is a simple square divided into quadrants. It represents a town with four school attendance areas, as in Figure 2.1. The player is provided with four hundred beans, three hundred colored white and one hundred colored black. With a single throw, he casts all four hundred onto the board. One outcome, albeit the least likely, is a clustering of all the black beans in one quadrant, with the white beans spread throughout the other three. This outcome corresponds to an unintentionally segregated system; it occurred by chance alone. Unlikely though it is, it is possible.

This game makes sense only if the beans represent black and white students who attend neighborhood schools. Consequently, in a school system with a policy of atten lance at neighborhood schools, unintentional segregation can occur only if all

persons choose their places of residence at random. If these choices are not completely random, then any segregation occurring in the schools is to some degree intentional. Indeed, this is the case. Individuals choose their places of residence for many reasons, including housing costs, the racial composition of neighborhoods, and the quality of schools which their children will attend. In deed, the very existence of neighborhood schools, which may affect choice of residence, almost guarantees that students will not be assigned to schools at random. Racial segregation of students is one result. Since it is not accidental, it is perfectly proper to judge it by moral and ethical standards.

There are, of course, different degrees of intent. Classical de jure school segregation in the South clearly reflected the intent to separate students on the basis of their race. Existing segregation in the North is somewhat less intentional.[3] It is a final product of numerous social and personal decisions—housing and transportation policies favoring suburban growth, jurisdictional policies favoring small units of government, such as towns and local school districts, over larger units, such as counties and metropolitan authorities. All too often, there has existed an unstated and perhaps unconscious desire to create and preserve white communities. It might be said that while the South segregated blacks from whites, the North has segregated whites from blacks.

It is also possible to refer to intentional and unintentional desegregation. On a second toss, the player might find the white and black beans spread evenly across all quadrants, with both black and white beans being proportionately represented: three-fourths white and one-fourth black in each quadrant. This result is analogous to unintentional desegregation. While it is the single most likely outcome, its probability is still small. Nonetheless, the probability of achieving an outcome that is close to proportional representation is very high.

If, instead of making a second toss, the player carefully moved the beans one by one in order to achieve proportional representation in each quadrant, the result would be intentional. This action would be analogous to the intentional desegregation that has taken place in various parts of the United States and that,

since it is an intentional action, can properly be judged by ethical and moral standards

Indeed, purposeful desegregation has been criticized as being as evil as intentional segregation. While some critics suggest that the act of mixing children like so many beans is morally wrong, this criticism is not too convincing. Children have, in fact, been sorted. Most attend schools that are highly segregated. That the sorting has not been done, at least in the North, by bussing students, does not mean that children have not intentionally been placed where they are. Desegregation seeks to counteract this process by establishing school attendance patterns similar to those that would be expected under random assignment.

Why should random assignment be used as a criterion to judge the morality of school attendance patterns? The primary reason is that it is generally agreed to be fair. It meets the criterion of equal treatment set down in the Constitution and accepted as a basic belief by most Americans. Since, when applied to school attendance, it would result in proportional representation by race, intentional desegregation must be judged morally better than either intentional segregation in the South or partly intentional segregation in the North.

A discussion of conditions under which plausible inferences as to intent can be made appears in Chapter 4. As it stands, the index of dissimilarity, D, says nothing about intent. It merely reports how near to proportional representation the distribution of black and white students is, suggesting that D might be better termed an "index of disproportionality." In addition, a complementary "index of proportionality" might also be computed as a measure of the extent of desegregation.

If this index of proportionality is denoted by P, then $P = 100 - D$. The maximum value for P would be 100, occurring when desegregation is complete. The minimum value would be $P = 0$, occurring when a school system is totally segregated. Psychologically, P might be a more effective index than D since, as segregation increases, the index would rise. Perhaps Dow Jones has had too great an influence but a rising graph tends to have a positive connotation. It suggests progress is being made. Nevertheless, D, the Taeubers' index of dissimilarity, is used throughout this study since it is more widely known.

One might consider P, as defined above, as a measure of integration. However, the term integration has come to signify something more than desegregation. It connotes the development of a socially cohesive unit rather than simply the physical mixing of students from different racial and ethnic backgrounds. At the same time, integration does not imply assimilation—i.e., that everyone becomes similar, that social and ethnic identities are lost. Integration does require tolerance and a degree of cooperation, so that various groups, working together harmoniously, can create a solid yet pluralistic social system.

This vision of social mosaic rather than melting pot is somewhat inconsistent with the concept of equality discussed earlier. It places greater emphasis on individual freedom, another value deeply embedded in the American ethos. This belief, which was the source of religious freedom in the United States two hundred years ago, can now form the basis for ethnic freedom. The continued existence of the nation does not depend on the elimination of ethnic differences any more than on the elimination of religious differences.

But if all children are to attend desegregated public schools, how can ethnic identities be preserved? One solution is to reduce the social role of the school, accompanying this by a strengthening of ethnic organizations. Let schools focus on developing tolerant students with basic skills, while letting ethnic organizations instruct students in music, drama, languages, crafts, foods, traditions, athletics, and so forth. If the time, effort, and expense now devoted to teaching a narrow selection of instruments, dances, and games in the schools were redirected toward the hundreds of voluntary associations dedicated to preserving ethnic traditions and customs, both students and nation would benefit greatly.

Tolerance and even appreciation of ethnic differences by all members of society is the foundation for building such a social mosaic. Intolerance remains its greatest threat. The success of desegregated schools will be judged by their effectiveness in reducing intolerance, of becoming increasingly integrated.

The indices described in this chapter as measures of segregation and desegregation are of little use in measuring the progress of integration. Other,

more subtle measures are necessary. Nevertheless, they do provide a sound method of determining progress toward the first stage of an integrated society: desegregated schools.

Summary

The Taeubers' index of dissimilarity, denoted D, is used to measure school segregation. Taking on values from 0 (no segregation) to 100 (complete segregation), D can be interpreted as the percentage of all black students who would have to be transferred into predominately white schools in order to achieve proportional representation of the races. A second index, Re, the index of replacement, gives the minimum percentage of all students—black or white—who must be moved in order to achieve this goal.

While some individuals have criticized purposeful desegregation as being as racist as purposeful segregation, this is not so. If children were assigned to schools at random—a method generally accepted as fair since all are treated equally—then each race would tend to be proportionately represented in each school. Since the goal of desegregation is to achieve a similar result, desegregation must be judged to be more equitable than retention of the present system of school assignment, which promotes segregated schools.

The subject of the next chapter is Detroit's demographic history. Current problems regarding school segregation stem from an increasing black population in a city whose overall population is decreasing.

Footnotes

1. See K. E. Taeuber and A. F. Taeuber, Negroes in Cities (New York: Antheneum, 1969), Appendix A.

2. "Desegregation Developments," Phi Delta Kappan, No. 1, 53, (1971) p. 70.

3. "Attack on De Facto," Time (Canada), 98, 15, pp. 19-20. Included is an Oliphant political cartoon—"Northern liberals: 'But we segregate (blush) gently !'"

CHAPTER III

DETROIT POPULATION AND

SCHOOL ENROLLMENT TRENDS

Detroit, like all large cities, is in a constant state of flux. People move into the
city, around the city, and out of the city. They leave their marks on all its institu-
tions, including the public schools. In order to provide an adequate setting for the
analysis of school segregation, this chapter describes several important demo-
graphic trends. Among these are the changing size and composition of the city's
population and its school system.

Population Trends

Throughout the first five decades of this century, Detroit was proud to share a
population trend with most other large American cities. Every decennial census
revealed still more persons had chosen the city as their home. The trend was
not even. Between 1910 and 1930 the population trebled, from about one half
million to 1.6 million. The next two decades saw a gain of only three hundred
thousand.[1] Then the unexpected occurred. Between 1950 and 1960, Detroit lost
almost two hundred thousand residents, and in 1970 the city had fewer inhabitants
than it had had in 1930. Projected into the future, Detroit's population may drop
still lower. Only 1.3 million residents are expected in 1980, though the downward
trend displayed in Figure 3.1 appears to be slackening.

Totals of Detroit's population tell one story; subtotals showing its black
population tell another. The number of blacks living there had increased steadily
since the turn of the century. Though the Depression period in the thirties saw
a slowing of this trend, it has been strong throughout the postwar years and will
probably continue unabated.[2]

The percentage increase in the number of black residents has been even
more substantial than their numerical increase since the decrease in total popula-
tion has multiplied the impact of increases in the black population. Even if the

23
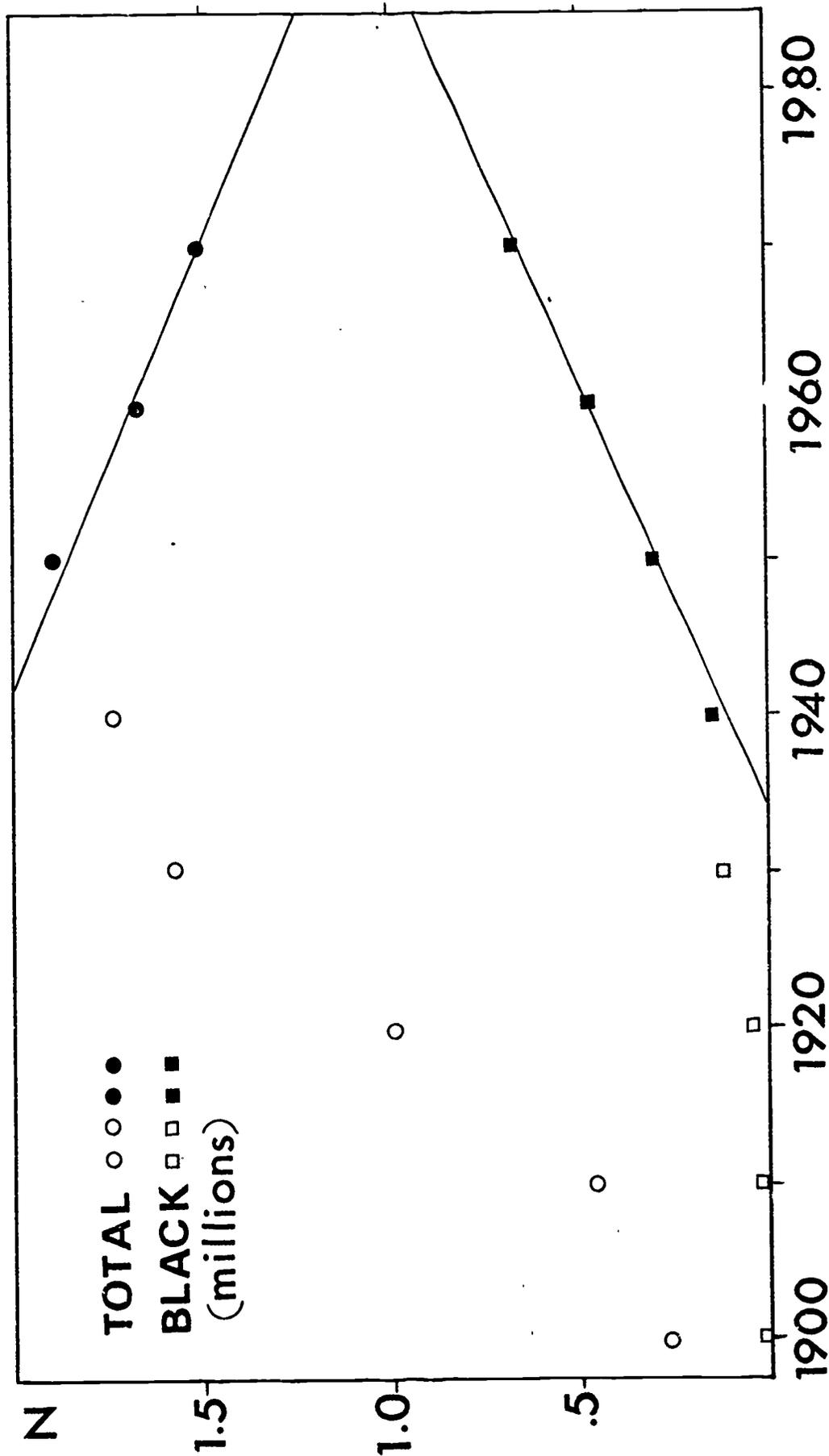
FIGURE 3.1 Detroit population trends, 1900–80.

numbers of blacks had not increased, their representation in the city would have been greater owing to the outward flow of white residents. As can be seen in Figure 3.2, blacks will constitute over 50 percent of Detroit's population by 1980.

Recent population trends, as well as projections for 1980 based on least-square regression estimates, are shown in Table 3.1. On the average, Detroit has lost 169,500 residents per decade since 1950, but has gained 179,500 black residents. This suggests a net outflow of 349,000 white residents in each ten-year period. The combination of these factors has meant an 11.6 percent increase in black citizens each decade.

A less obvious population statistic than those reported above is the population of blacks of school age. The 1970 census figures for Detroit indicate that while 43.7 percent of the city's population was black, 54.3 percent of the 5- to 14-year-old age group was black. As a result, the schools appear disproportionately black when compared to the city as a whole.

Trends in School Enrollment

The substantial population loss experienced by Detroit during the past decade was not reflected in its schools. As can be seen in Figure 3.3 and Table 3.2, the schools' total enrollment increased by roughly four thousand, from 285.5 thousand to 289.7 thousand, though the latter figure represents a decrease from 1966's peak enrollment of 297.0 thousand.[3] Black and white trends, however, are very similar to city-wide trends; the number of blacks steadily increased while the number of whites steadily decreased.

In the schools, there was a relatively even trade-off between the numbers of black students gained and white students lost. The city, in contrast, lost two whites for every black it gained. As a result, it may appear that the public schools experienced less rapid change than the city, but this is not the case. While the city lost only 9.5 percent of its white population, the public schools lost 51.7 percent of their white students. The 40.8 percent increase in the number of black students was in fact slightly more than the city's 36.9 percent increase in black residents.
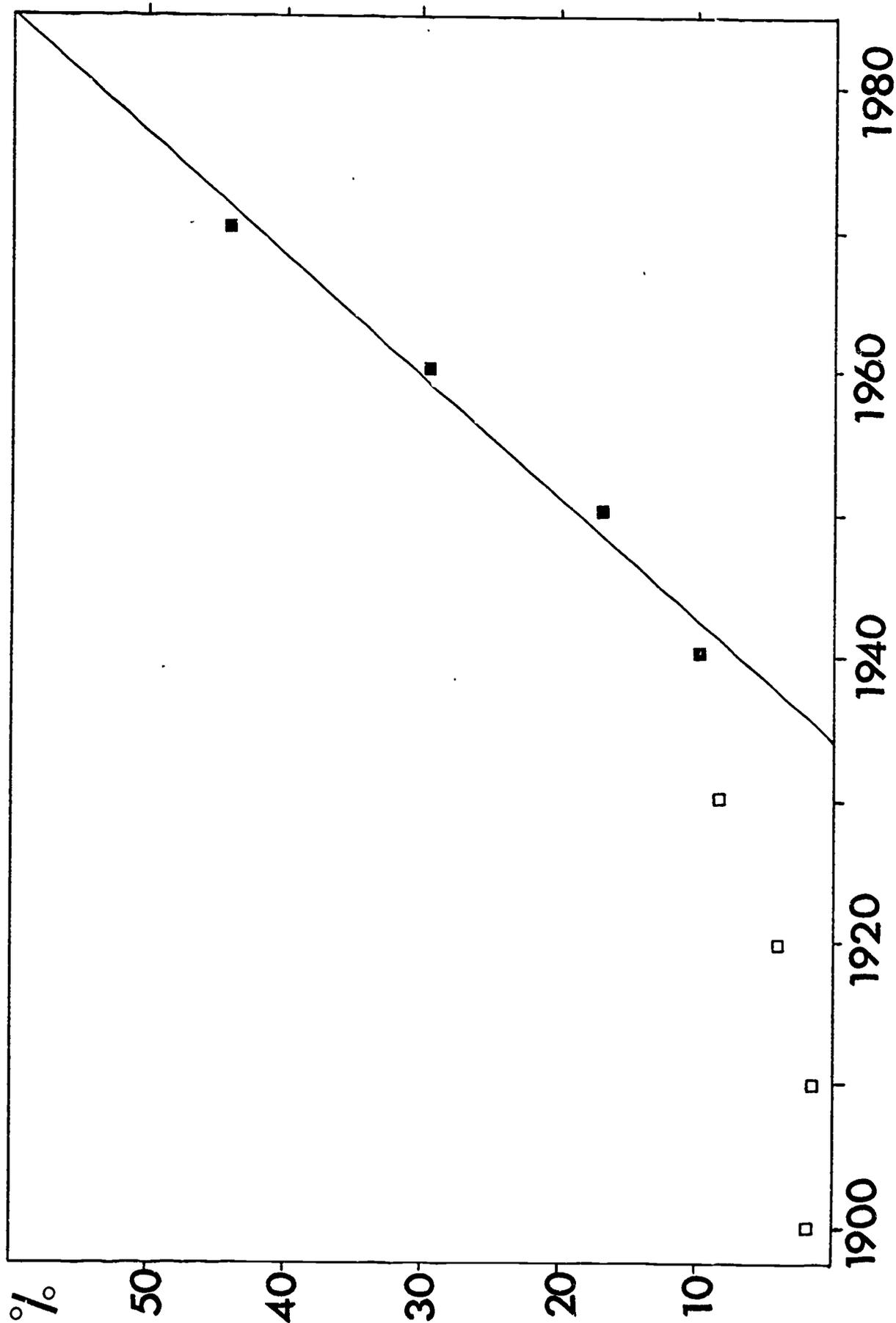
FIGURE 3.2.   Percentage blacks in Detroit, 1900–80.
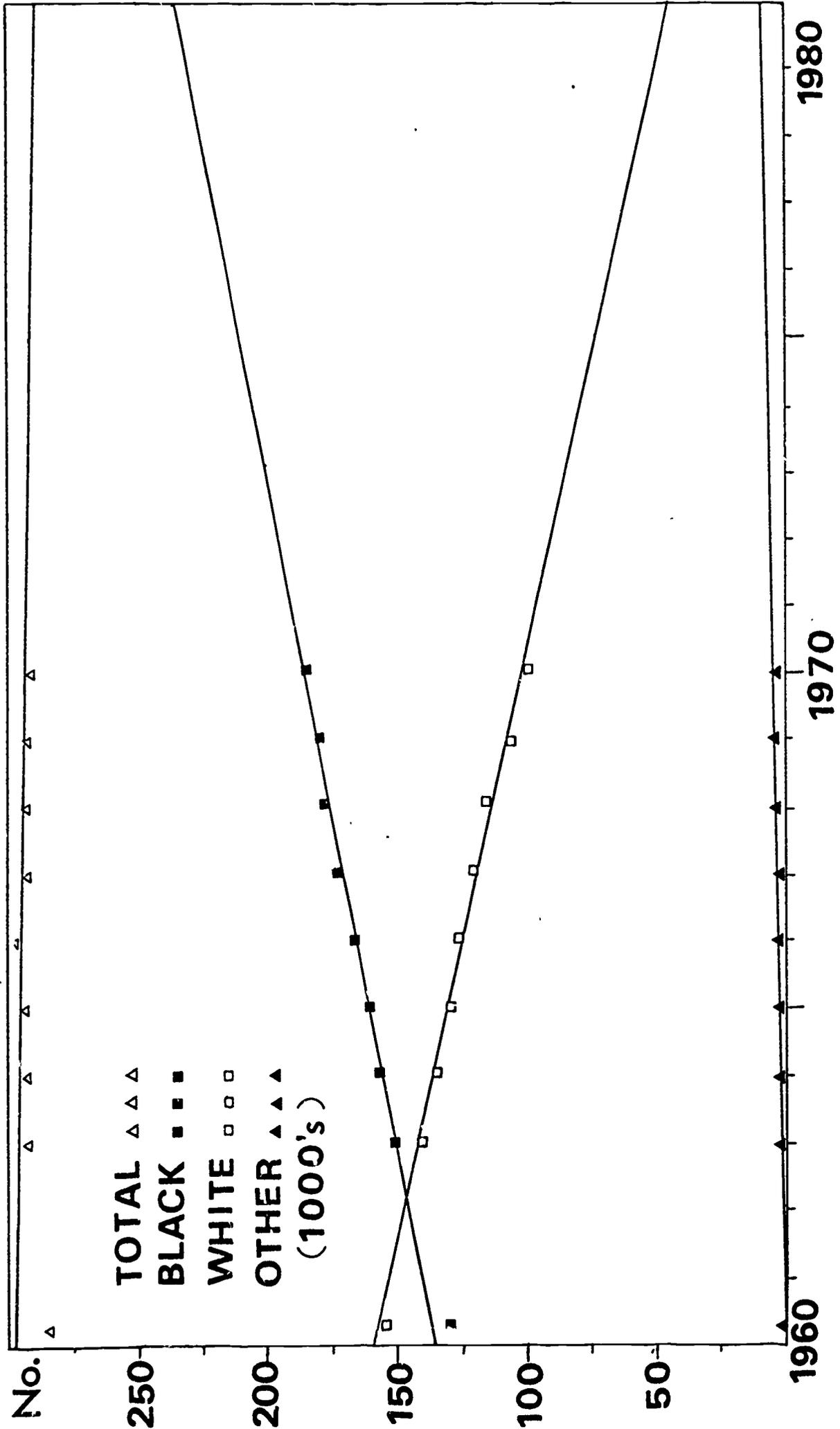
FIGURE 3.3. Actual and projected enrollment by race, 1960–80.

TOTAL △ △ △
BLACK ■ ■ ■
WHITE □ □ □
OTHER ▲ ▲ ▲
(1000's)

No.

250

200

150

100

50

1960

1970

1980
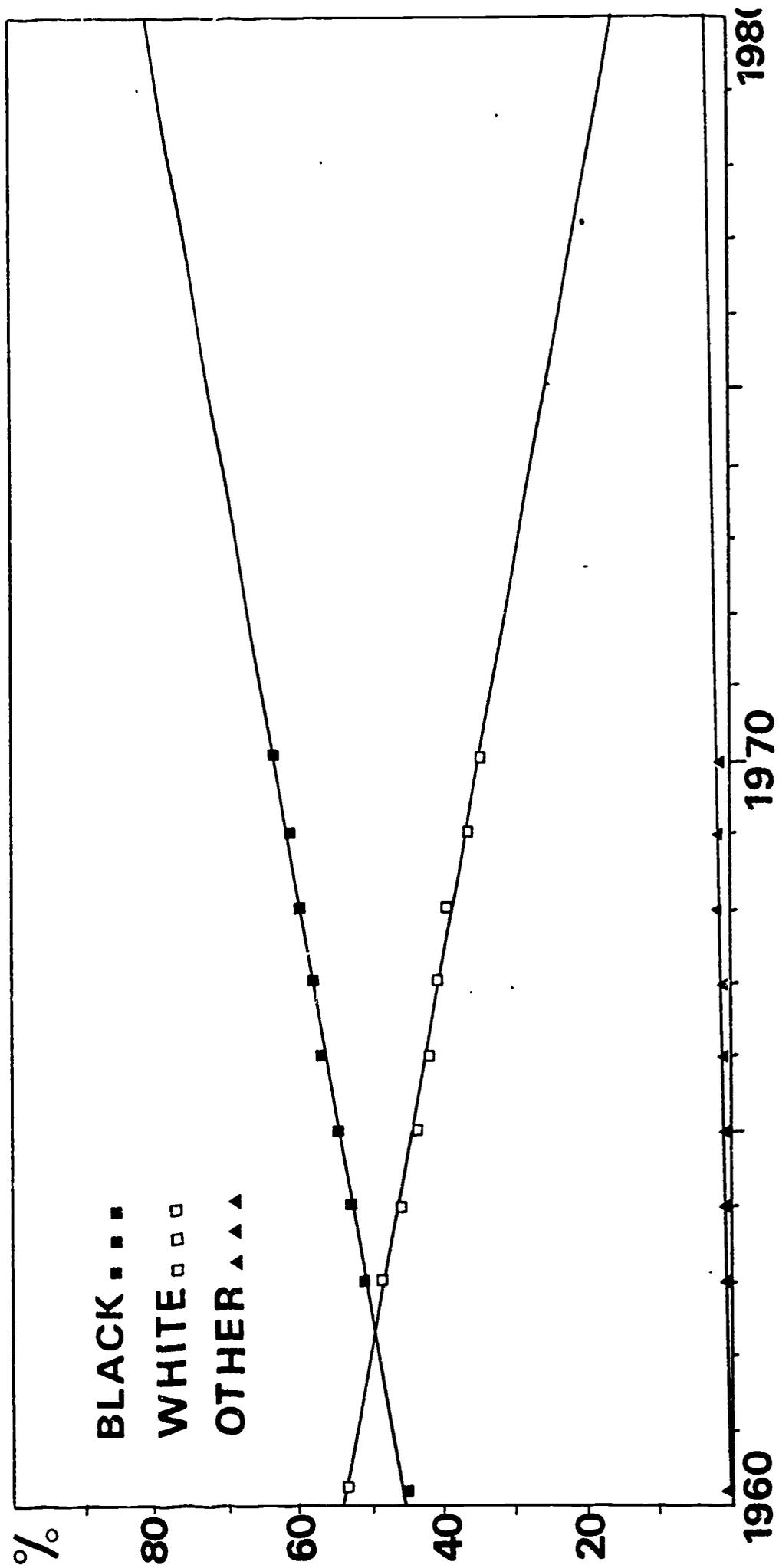
FIGURE 3.4. Actual and projected percentage enrollment by race, 1960-80.

TABLE 3.1. Actual and Projected Population

(in thousands) and Percentage Black

Year	Total population		Black population		Percent Black	
	Actual	Projected	Actual	Projected	Actual	Projected
1940	1623	--	149[a]		9.2	7.1
1950	1850	1847	301	302	16.2	18.7
1960	1670	1677	482	481	28.9	30.3
1970	1511	1508	660	661	43.7	41.9
1980	--	1338	--	840	--	53.6
Average 10-year change		-169.5		+179.5		+11.6

Source: Detroit Department of Health, Population of Detroit (Detroit:
DDH, 1968). Also, 1970 Census of Population Advance Report: Michigan
General Population Characteristics (Washington, D. C.: United States
Government, 1970), p. 4.

a. Not used in estimation procedure.

TABLE 3.2.   Actual and Projected Enrollments and Percentage Distribution by Race

School year	White enrollment		% White		Black enrollment		% Black		Other enrollment		% Other		Total enrollment	
	Obs.	Est.	Obs.	Est.	Obs.	Est.	Obs.	Est.	Obs.	Est.	Obs.	Est.	Obs.	Est.
1960	153,046[a]	159,228	53.6[a]	53.9	130,765[a]	137,212	45.8[a]	46.1	1701[a]	7	.6[a]	.1	285,512[a]	296,432
1961	--[b]	153,567	--[b]	52.0	--[b]	142,030	--[b]	47.8	--[b]	488	--[b]	.3	--[b]	296,084
1962	--[b]	147,906	--[b]	50.1	--[b]	146,847	--[b]	49.6	--[b]	782	--[b]	.4	--[b]	295,735
1963	141,240	142,245	48.1	48.2	150,565	151,665	51.3	51.3	1940	1478	.7	.6	293,745	295,387
1964	136,077	136,584	46.3	46.3	155,852	156,482	53.0	53.0	2037	1972	.7	.7	293,966	295,038
1965	130,957	130,923	44.4	44.4	161,487	161,300	54.8	54.7	2378	2467	.8	.8	294,822	294,689
1966	126,354	125,262	42.5	42.5	168,299	166,117	56.7	56.5	2382	2962	.8	1.0	297,035	294,341
1967	120,544	119,601	40.9	40.6	171,707	170,935	58.2	58.2	2614	3457	.9	1.1	294,865	293,991
1968	115,295	113,940	39.0	38.7	175,474	175,752	59.4	59.9	4531	3952	1.5	1.3	295,300	293,643
1969	108,264	108,279	36.8	36.8	180,630	180,570	61.5	61.7	4965	4447	1.7	1.4	293,859	293,295
1970	100,717	102,618	34.8	35.0	184,194	185,387	63.8	63.4	4832	4942	1.4	1.6	289,743	292,946
1971		96,957		33.1		190,205		65.1		5437		1.7		292,598
1972		91,296		31.2		195,022		66.9		5932		1.9		292,249
1973		85,635		29.3		199,840		68.6		6427		2.0		291,901
1974		79,974		27.4		209,657		70.3		6921		2.1		291,552
1975		74,313		25.5		209,475		72.0		7416		2.3		291,203
1976		68,652		23.6		214,203		73.7		7911		2.4		290,856
1977		62,991		21.7		219,110		75.5		8406		2.6		290,507
1978		57,330		19.8		223,927		77.2		8901		2.7		290,158
1979		51,669		17.9		228,744		78.9		9396		2.9		289,809
1980		46,008		16.1		233,562		80.7		9891		3.0		289,461
r^2		.99		1.00		.99		1.00		.84		.77		

a. Not used in estimation procedure. Census date: February, 1971.
b. No data reported in racial census.

Equations

White Enrollments = 159, 227.5 − 5661.0 · (Year).   Percent White Enrollment = 53.86 − 1.89 · (Year).

Black Enrollment = 137,212.0 + 4817.5 · (Year). Percent Black Enrollment = 46.09 + 1.73 · (Year).

Other Enrollment = −7.237 + 494.9 · (Year).   Percent Other = .126 + .144 · (Year).

Actual years are not used. Instead, 1960 = 0, 1961 = 1, 1962 = 2, ..., 1980 = 20. Note that projections are based on data for 1963 through 1970.

30

Thus, the white exodus from public schools was actually five times greater than it was from the city, while the black influx into the schools matched the black influx into the city.

Not only were white students over-represented in the exodus from the city, they were under-represented in its public schools. In 1970, the 5- to 14-year-old age group in the city was 54.3 percent black while 63.8 percent of all public school students were black. Though the groupings are not quite comparable, it is obvious that many white students living in Detroit were enrolled in private or parochial schools, while most black students attended public schools.

Projections for 1980 predict that while total enrollment will not decrease substantially the percentage of white students will drop to 16.1 percent and the percentage of black students will exceed 80.0 percent. Since these are linear extrapolations made on the assumption that all factors affecting the population will remain unchanged, they should be viewed with some skepticism. Just as the total population trend for Detroit suddenly changed between 1950 and 1960, so these trends can change. In particular, the minor role played by students of other racial backgrounds could change markedly. The correlations between observed values and estimates for this group are far lower than those for blacks and whites, indicating that the estimates are far less reliable. In addition, it is possible that trends for blacks and whites, even though well established, may change drastically.

Trends in Instructional Staff

One would expect the demographic trends apparent in Detroit and its public school enrollment to be reflected in the composition of its schools' instructional staff, which includes principals, counsellors, teachers, and other certificated personnel serving in individual schools. This is, indeed, the case.

First, the increase in number of students ought to have created a demand for additional staff members. The actual increase, reported in Table 3.3, exceeded 1,700 personnel and is far more than would have been necessary to serve the modest increase in students.[4] Detroit obviously has been able to reduce its

TABLE 3.3.   Number of Instructional Staff and Percentage Black, 1960-70

Level	60-61	62-63	63-64	64-65	School Year 65-66	66-67	67-68	68-69	69-70	70-71
Elementary	6488 24.0%	6587 26.4	5771 30.7	6357 30.3	6593 32.0	6783 33.4	6908 36.3	6796 39.4	6654 41.2	6655 43.9
Jr. High	1292 30.3%	1460 33.6	1542 34.6	1692 36.1	1808 37.8	1918 40.7	2013 43.9	2008 45.7	1952 49.6	1811 47.7
Sr. High	2099 8.1%	2060 12.5	1938 13.5	2097 16.5	2239 13.7	2282 21.6	2426 24.8	2420 27.6	2270 30.4	2389 32.7
District[a]	9808 22.0%	10045 24.1	9748 26.6	9879 27.7	10646 30.2	10942 32.4	11348 35.2	11182 37.6	11560 40.4	11582 42.1

a.   District figures and percents equal those for constellations and regions.

pupil/teacher ratio, an improvement no douu financed, at least in part, by fe ral

funds which became available during the past decade.

Second, the racial composition of the instructional staff ought to have

changed as more and more black students enrolled. Table 3.3 confirms this

expectation. The percentage of blacks on the instructional staff increased from

22.0 percent in 1960 to 42.1 percent in 1970, thereby eliminating the discrepancy

between minority representation on the instructional staff and minority representa-

tion in the city, which changed from 30.3 percent black in 1960 to 41.9 percent

black in 1970. This record is impressive, particularly when one considers that

the police force, which does not demand college graduates, is only 13 percent

black.[5] The discrepancy between the percentage of blacks on the instructional

staff and the percentage of black students is still large, but this is to be expected

since the proportion of children who are black exceeds the proportion of adults

who are black by over 10 percent, and a disproportionate number of white children

do not attend public schools.

Statistical projections for 1980 were not prepared for instructional staff

trends, bur they follow easily from those prepared for students and for the city

as a whole. It is expected that the number of instructional staff members will

remain relatively constant, perhaps decreasing slowly because of a decrease in

the number of students. It is assumed that all economic and social factors relevant

to these predictions will remain constant and that blacks will hold an increasing

percentage of instructional staff positions—a percentage that will probably keep

pace with the percentage of blacks in Detroit, graphed in Figure 3.2. Only major

events such as the closing of parochial schools or the creation of a metropolitan

school system, are likely to affect these relationships.

Summary

Detroit is becoming a black city. This trend, which it shares with a number of

other American cities, is ol postwar origin, coinciding with suburban growth out-

side the central city's jurisdiction. The data presented in this chapter suggest

the trend is well established and irreversible. While blacks are still a minority
of the total population, their predominance in the public schools apparently makes
the schools unattractive to whites. The data clearly indicate that many white city
residents prefer to educate their children outside the Detroit public school system.
Indeed, it is not unknown for them to enroll their children across the border, in
the schools of Windsor, Ontario. The lack of a public school system in which they
have faith, makes it doubtful that many white residents will continue to make
Detroit their home.

It is unlikely that Michigan's citizens wish for Detroit to become a black
city. Yet they chose detached dwellings over apartments, freeways over rapid
transit, suburbia over the (y. Had they known the ultimate price, they might
have made different decisions.

Predicting ten or twenty years in advance is always difficult. Many unsuspected
events can occur which will affect the future. If their effects are small, then the
Detroit of 1980 can be described quite well. It will be a city of 1.3 million persons,
54 percent of whom are black, and will have a school system which is 81 percent
black. Only major changes, such as the formation of a desegregated metropolitan
school system, are likely to have a noticeable affect on these projections. The
next chapter reports on the extent of segregation between black and white students
in Detroit and the numbers that would have to be transferred in order to achieve
total desegregation. The data suggest that the problem is of considerable magnitude.

Footnotes

1. Detroit Department of Health, Population of Detroit (Detroit: DDH, 1968).
   Also, 1970 Census of Population Advance Report: Michigan General Population
   Characteristics (Washington, D. C.: United States Government, 1970), p. 4.

2. Detroit Department of Health, Population of Detroit (Detroit: DDH, 1968).

3. Detroit Public Schools, Racial-Ethnic Distribution of Students and Employees
   (Detroit: DPS, annually 1961-1970).

4. "The Black Cop: A Man Caught in the Middle," Newsweek, 16 August 1971,
   pp. 19-20.

CHAPTER IV

STUDENT SEGREGATION

In this chapter, indices of dissimilarity for each level of school organization in the Detroit Public Schools are reported. Emphasis is placed on an explanation of trends occurring between 1960 and 1970, including the consistent differences among indices for elementary, junior high, and senior high schools. First, however, is a detailed description of trends in the proportion of black students within each level of the educational system.

Composition and Enrollment of Detroit Schools

Table 4.1 presents the percentage of black students by level from 1960-61 through 1970-71, except for 1961-62 when no racial census was taken in the Detroit schools. More precisely, the numbers reported equal one hundred times the ratio of the number of black students to the total number of black and white students. Students of other racial and ethnic groups—Oriental, Chicano, etc.—have been omitted from calculations, an omission which is necessary in computing indices of dissimilarity for black and white students. It would be possible to compute indices for other combinations, but since the focus of this report is black-white segregation, this was not done. As a consequence, the percentages in Table 4.1 are larger than would be found had the total number of students been used as the divisor, as would normally be done in reporting population distributions.

Elementary schools, the first entry in Table 4.1, are defined to include K-7, K-8, and K-9 schools, as well as K-6 schools. This definition was necessary to simplify the analysis and reporting of the data. Omitting K-7, K-8, and K-9 schools would have biased results by ignoring several thousand students; presenting these schools separately would have doubled the amount of work and the size of the tables required. Junior high schools consist of grades 7 to 9, and senior high schools include grades 9 to 12.

36

TABLE 4.1. Percentage of Black Students in Schools, 1960-1970

Level	School Year										
	60-61	61-62	62-63	63-64	64-65	65-66	66-67	67-68	68-69	69-70	70-71
Elementary	47.3	--a	50.9	55.1	54.1	55.7	57.1	58.7	60.8	62.7	63.9
Jr. High	56.4	--a	63.9	62.8	63.8	64.6	66.3	69.6	71.4	71.5	72.9
Sr. High	35.1	--a	39.0	40.1	43.2	47.7	49.4	50.8	53.7	57.8	61.6
District[b]	46.2	--a	50.3	51.8	53.6	55.4	57.3	58.9	60.6	63.0	64.9

Note: Percentage of total black and white students: [B/(B+W)] x 100. Students of other racial and ethnic groups have been omitted from computations.

a. No racial census taken.
b. District figures apply to constellations and regions.

The annual increase in the percentage of blacks in elementary schools, which equals approximately 1.5 percentage points, has been quite consistent. In some years, as between 1962-63 and 1963-64, the increase has been greater. In others, as between 1969-70 and 1970-71, it has been less. This variation is slight, however, and part of it may be attributable to the different times of year in which the censuses were taken.

Detroit junior high schools have had the highest proportion of blacks throughout the period. These percentages, also increasing 1.5 points annually, rose from 56.4 in 1960-61 to 72.9 in 1970-71. While one would suspect from the student-grade distribution by race that elementary schools would have the highest proportion of blacks,[1] a greater proportion of white than black students attends grades 7 through 9 in K-7, K-8, and K-9 schools. As a result, black students are over-represented in junior high schools. In part, this is an artifact of the categorization scheme. Had K-7, K-8, and K-9 schools been designated as junior high schools, then white students would have appeared over- rather than under-represented at that level.

High schools have experienced the most rapid increase in the percentage of black students. These gains, averaging 2.4 points a year, should slow once the proportion of blacks in high school approaches that for the system as a whole.

The overall trend in the percentage of blacks shows a similar increase to that in elementary schools, which accounts for a majority of the student population. Note that district figures also apply to high school attendance areas, termed constellations, and the eight administrative regions, since both these sets of units encompass all students.

The total numbers of black and white students are reported by level in Table 4.2. The data suggest that enrollment has already peaked in elementary and junior high schools, and is now peaking in the high schools. Note that the omission of other ethnic groups, which constitute less than 2 percent of all students, makes all figures somewhat small.

TABLE 4.2. Numbers of Students by Level, 1960-1970

Level	School Year									
	60-61	62-63	63-64	64-65	65-66	66-67	67-68	68-69	69-70	70-71
Elementary	198,015	197,950	193.863	191,731	193,225	191,714	187,809	182,276	181,248	175,698
Jr. High	30,889	33,599	37,682	40,274	41,245	45,345	44,270	43,2466	41,287	41,4 9
Sr. High	44,531	48,603	49,734	50,892	52,055	50,901	52,901	53,050	53,715	54,947
District[a]	273,419	280,786	280,754	283,221	285,261	287,495	284,512	283,287	276,335	272,985

Note: Only black and white students in schools included in a constellation have been counted. In October 1970 there were 4,629 students of other racial or ethnic groups in these schools. In addition, schools not in constellations had 5,386 black students, 2,588 white students, and 156 others. Thus, total enrollment numbered 248,853.

a. District totals apply to constellations and regions. Since special schools were excluded in the first three rows, yet sometimes included in census reports of regions and constellations, district totals do not equal the sum of the columns.

Total enrollments, by themselves, are of little theoretical importance to the question of segregation. However, they do suggest the practical problem of reducing segregation. A one-point reduction in the elementary index of dissimilarity, for example, would be equivalent to one-way bussing over 1,000 children.

School Segregation

Even though Detroit's schools are 64.9 percent black, it does not necessarily follow that they are segregated. If blacks were proportionally represented in each school, then the system would be considered fully desegregated. From a state-wise perspective, of course, Detroit might still be considered "segregated," since it has a disproportionate share of Michigan's black population. But the analysis here concerns segregation within a single school system, Detroit's, not segregation among all districts in the state.

The instrument used to measure the extent of segregation is the Tauebers' index of dissimilarity, described in Chapter 2. It is applied to each level, to constellations, and to regions.

Elementary Schools

Table 4.3 displays the values of the Taeubers' index of dissimilarity computed annually for all schools. For elementary schools a downward trend is revealed, from D = 82.8 in 1960-61 to D = 79.0 in 1970-71, a drop of 3.8 points. In 1960 terms, this drop is equivalent to one-way bussing 3.8 percent of all black elementary students, a total of approximately 3,300 students. Taking into account the larger proportion of black students and smaller overall number of students in 1970, it amounts to 4,200 students.

Whether or not the one-way bussing of students is the cause of this reduction of segregation is difficult to answer. Black students have been transferred from overcrowded schools in the city core to schools with excess space in outlying white areas. This action probably accounts for part of the reduction. In addition, seventeen junior high schools opened between 1962 and 1970. Accompanying changes in

TABLE 4.3. Indices of Dissimilarity, 1960–1970

	School Year										
	60–61	61–62	62–63	63–64	64–65	65–66	66–67	67–68	68–69	69–70	70–71
Elementary school students											
Index	82.8	––[a]	81.8	82.6	81.2	80.5	79.6	78.4	78.7	78.3	79.0
				(82.4)[b]							
Five-year mean			82.4						78.8		
Junior high school students											
Index	70.2	––[a]	70.8	72.6	73.8	73.1	73.9	73.7	78.6[c]	79.1	78.2[d]
Five-year mean			72.1						76.7		
Senior high school students											
Index	72.5	––[a]	68.4	67.2	67.1	69.3	70.4	68.2	70.9	70.6	74.8
Five-year mean			68.9						71.0		

a. No racial-ethnic census was taken for 1961–62.
b. Index, excluding grade 9 in K–9 schools, for 1963–64.
c. Post junior high school data which reported 246 white students in 1967, 0 in 1968, and 140 in 1969 may be in error. Such a pattern is very unlikely.
d. Tappan 4–9 and Longfellow 7–8 were included with junior high schools.

attendance areas and ratios of black to white students in elementary and K-9
schools may have served to decrease segregation, though the complexity of such
changes makes it impossible to describe how this may have occurred. Finally,
the residential pattern of blacks and whites may have become more integrated,
a trend suggested by the Taeubers. For Detroit they report the following values
of D for residential segregation computed on a block by block basis: 1940, D =
89.9; 1950, D = 88.8; 1960, D = 84.5.[2]

Unfortunately, comparisons of values of D computed for schools with those
for residential segregation cannot be made in order to discover if schools are more
or less segregated than the city. Residential values are usually computed using
city blocks, not schools attended, as units. The use of city blocks would be expected
to yield a higher index of dissimilarity since small units, like city blocks, are more
likely to be all-black or all-white, than larger units such as school attendance
areas. At the same time, countervailing factors are at work. Each residence
on a block is weighted equally and assigned to the race of the head of household.
Hence, it is possible for an area with young black families and older white couples
to have desegregated housing but segregated schools, since the majority of children
would be black. This objection is not academic. It is, in fact, a normal condition
for neighborhoods in transition. As former white residents die or move to apartments
for retirement they are replaced by young black families who find the homes as
suitable for their present needs as their predecessors did a generation before.
Also, older black couples whose children are grown or in college may purchase
homes in a white area. In this case, housing may again be less segregated than
the schools.

Though indices for residential and school segregation cannot be compared
directly, similar trends would be expected. If the trend toward desegregated
housing in Detroit has continued between 1960 and 1970, then it could be a factor
contributing to the decrease in elementary school segregation. Of course, even
with this decrease, Detroit's elementary schools remain very segregated.
Unfortunately, it is a problem of considerable magnitude. Assuming a two-way

bussing plan, approximately 31,000 black and 31,000 white students would have to exchange places to desegregate all schools.

Junior High Schools

Unlike elementary schools, the junior high schools have become increasingly segregated over the past decade. As can be seen in Table 4.3, a slight increase occurred between 1960 and 1966, and a moderate increase between 1967 and 1968. It is possible that the latter increase of 4.9 index points is incorrect. The data for one school, Post Junior High, are extremely unusual. This school is reported to have had 246 white students in 1967, none in 1968, and 140 in 1969. The lack of any white students in 1968 is doubtful; perhaps the actual count was omitted in printing. If so, the correct index value for 1968-69 would be midway between the 1967-68 value (73.7) and the 1969-70 value (79.1).

Even if the index of dissimilarity for 1968 is incorrect, the eight-point net gain between 1960 and 1970 needs an explanation. Unfortunately, no single reason emerges from an analysis of racial censuses. Schools with a disproportionate share of blacks appear to have lost white students at a faster rate than schools with a disproportionate share of whites. While the attendance of many white students of junior high school age at K-9 schools may have prevented the maintenance of segregation at the lower 1960 level, the opening of sixteen new junior high schools between 1962 and 1966 may have prevented a more rapid increase. Segregation increased more slowly during this period than between 1967 and 1970, when only one new junior high school was opened. It appears the subsequent placement of many black students in new junior high schools reduced segregation in elementary schools, but caused it to increase in the junior high schools.

In 1970 terms, the eight-point increase in the junior high index since 1960 amounts to the "wrong-way" bussing of about 2,400 black students. Thus, even if the decrease in elementary school segregation is related to the increase in junior high school segregation, there has been a net gain: the equivalent of 4,400 black students attend less-segregated elementary schools, while 2,400 black students attend more-segregated junior high schools.

The increase in junior high school segregation casts doubt upon the proposition that decreased segregation in housing has caused elementary school segregation to decrease. If this proposition were correct, then it should also apply to junior high schools. Nevertheless, the proposition still cannot be discarded, since junior high schools are not evenly distributed across the city. It appears that they are in more segregated areas than are K-9 schools. Only the latter may have benefited from residential desegregation.

Senior High Schools

Dissimilarity indices for senior high schools display more variation and a less regular trend than do those for either elementary or junior high schools. The senior high school index of dissimilarity dropped 5.5 points, from 72.5 in 1960 to 67.1 in 1964. Since then, it has shown several gains and losses, culminating in a moderate increase of 4.2 points between 1960 and 1970.

Recent trends have negated the gains made in the early 1960s. As with junior high schools, it appears that disproportionately black high schools lose white students more rapidly than disproportionately white high schools gain black students. This phenomenon was particularly evident between 1969 and 1970. Schools which were disproportionately black in 1969 averaged 88.6 percent black. A year later, this percentage had increased 3.0 points to 91.6. Meanwhile, in disproportionately white schools, the percentage of black students increased only 1.7 points, from 21.1 to 22.8. It is impossible to determine the reason for this difference from racial censuses alone. In some cases, a change may have resulted from alterations in attendance boundaries. For example, Southwestern became less segregated between 1969 and 1970, decreasing from 88.9 percent black to 75.2 percent. Though it gained 26 black students, it also enrolled 272 more white students. Table 4.4 contains complete data for all high schools.

The net change in high school segregation between 1960 and 1970 is small, a gain of 2.3 points as measured by the index of dissimilarity. In view of the irregular behavior of the high school index values, one should not read too much

TABLE 4.4. High School Enrollments and Percentage Black

	1969-70			1970-71		
	Black	White	% Black	Black	White	% Black
Central	2095	2	99.9	2140	0	100.0
Chadsey	828	768	51.9	907	680	57.2
Cody	87	3382	2.5	141	3348	4.0
Cooley[a]	1798	1226	59.5	2192	667	76.7
Denby	104	2196	3.4	73	2861	2.5
Finney	888	1746	33.7	973	1669	36.8
Ford	390	2498	13.5	617	2451	20.1
Kettering	2830	411	87.3	3373	91	97.4
King[a]	1679	21	98.8	1876	3	99.8
MacKenzie[a]	3065	263	89.0	3145	104	96.8
Mumford[a]	2778	152	94.8	3001	50	98.4
Murray-Wright[a]	2046	90	95.8	1974	84	95.9
Northeastern[a]	1262	149	89.4	1339	94	93.4
Northern[a]	1443	26	98.2	1748	16	99.1
Northwestern[a]	2966	1	99.9	2977	78	97.4
Osborn	476	2775	14.6	431	2656	
Pershing[a]	1766	1274	58.1	2069		
Redford	88	3638	2.4	107	36.	
Southeastern[a]	2318	199	92.1	2630	79	97.1
Southwestern[a]	1286	160	88.9	1312	432	75.2
Western	843	962	47.2	827	1029	44.6

a. Disproportionately black schools having over 57.8 percent black in 1970. Percentage black in these schools averaged 88.6 in 1969; 91.6 in 1970. Other schools increased from 21.1 percent to 22.8 percent black.

into this increase. A steady time series, such as that displayed by the elementary index, or one which displays a sudden dislocation, can be interpreted with confidence. A time series that displays largely random behavior, such as this high school time series, ought to be interpreted with care.[3] Since the percentage of high school students who are black has increased from 35.1 to 61.6 percent, and the increase in junior high school segregation has been moderate, such a slight increase is surprising. In fact, senior high school segregation has remained less than that in junior high and elementary schools throughout the period. The larger geographical areas from which high schools draw their students has probably held down segregation, though such an outcome is by no means automatic. Note that in two recent years junior high school segregation indices exceed those for elementary schools, though elementary attendance areas tend to be smaller.

Constellations

With the exception of a dip in 1967 and 1969, the index of dissimilarity for constellations has remained quite constant. The net gain between 1960 and 1970 is 2.5 points, similar to that for senior high schools. The relatively low values for 1967 and 1968 are of particular interest.

In 1967, the index value dropped to 56.2 from 61.5 the previous year, a decrease of 5.3 points. This drop coincided with a minor reorganization of constellations (see Table 4.5, footnote b). In 1968 the index dropped again to 55.6, then rose to 59.8 in 1969, a gain of 4.2 points (see Table 4.5, footnote c). This increase is also attributable to reorganization. Had the 1969 definitions of constellations been used in 1968, the index value would have been 60.1, 0.3 more than the actual value a year later. Thus, the dip in constellation values is accounted for by two administrative changes. There is no simple explanation for the 2.2 gain between 1969 and 1970. It is probably attributable to natural changes in residence and school attendance by black and white students. A similar increase was noted in elementary and senior high school indices.

Several other sets cf indices were computed in order to answer specific questions. To estimate the effect on segregation of special schools not included in constellations, indices for 1969 and 1970 were recalculated, using these schools as an additional constellation. Since they tend to be less segregated than the district as a whole, including them decreased the index by 1.8 points in 1969 and 1.6 points in 1970.

Still a third and fourth set of estimates were computed for constellations in 1969, one with students assigned to constellations by residence and one by attendance. The second value proved to be lower, indicating that schools were less segregated than housing. The index value based on residence, 60.5, was 1.1 points higher than that for attendance. This is the same difference that would be achieved by bussing over 1,900 black students to white schools.

Regions

Analysis of segregation by region is only possible for six of the eleven years from 1960 to 1970. The racial censuses do not designate schools by region before 1964, nor in 1968.

As Table 4.6 shows, between 1964 and 1969, their index of dissimilarity was consistently low, averaging 20.6. In 1970, it virtually doubled to 42.5. The source of this change was a reassignment of high school constellations to regions. If the same regions had been used in 1969, that index value would have been 45.0. Conversely, if the 1969 regions had been used in 1970, the value would have been 23.6. This means that the apparent increase in segregation is only on paper; segregation in the schools themselves in fact changed only slightly. Similarly, the low index values between 1964 and 1969 represent paper desegregation. Throughout the period there was little real change in the extent of segregation in schools, as measured by the index of dissimilarity.

TABLE 4.6. Indices of Dissimilarity for Students Grouped by Region, 1960-1970

	School Year										
	60-61	61-62	62-63	63-64	64-65	65-66	66-67	67-68	68-69	69-70	70-71
Index	--[a]	--[b]	--[a]	--[a]	23.8	20.0	19.9	17.7	--[a]	21.8[c] (45.0)[d]	42.5 (23.6)[e]

a. No regions reported in racial census for this year.
b. No census was taken for 1961-62.
c. Regions as defined in the racial census for 1969-70, not as in Plaintiffs Exhibit 132.
d. Index value using regions as defined in racial census for 1970-71.
e. Index value using regions as defined in racial census of 1969-70.

Overview

Trends in school segregation, as measured by the Taeubers' index of dissimilarity, differ considerably among levels. Segregation in elementary schools has steadily decreased, in junior high schools it has steadily increased, in both senior high schools and constellations it has moved up and down, and in regions it has doubled in one year after remaining steady during previous years. These trends are displayed graphically in Figure 4.1.

The trends should be considered in two groups: by schools and by larger administrative units. On a school by school basis, it is apparent that segregation has remained relatively constant. Table 4.7 includes the unweighted average dissimilarity index for elementary, junior high, and senior high schools. Compared with radical changes in many population statistics during the past decade—the percentage of black students, average per capita income, cost of education per pupil, etc. —the index of dissimilarity has remained unusually constant.

The trends, taken individually or together, yield little insight into the question of whether existing segregation is intentional or unintentional. The net increase in the average index value is too small to be considered the effect of a successful policy to increase segregation. Since contrasting trends exist among levels—for example, decreasing in elementary schools and increasing in junior high schools—it is more reasonable to conclude that increases in school segregation, when they have occurred, have resulted from alterations in attendance patterns accompanying the opening of new schools and from changes in residential patterns. Conversely, the continuation of a high level of segregation in Detroit schools indicates the absence of a successful policy to desegregate schools. In short, current segregation trends suggest an underlying desire to retain the status quo, probaoly by maintaining a system of neighborhood schools at all levels.

Analysis of trends for the larger areas—constellations and regions— reveals two decisions which increased segregation among the units concerned. The reorganization of constellations in 1969 reversed a decrease in the constellation segregation index accomplished two years earlier, while the reorganization of
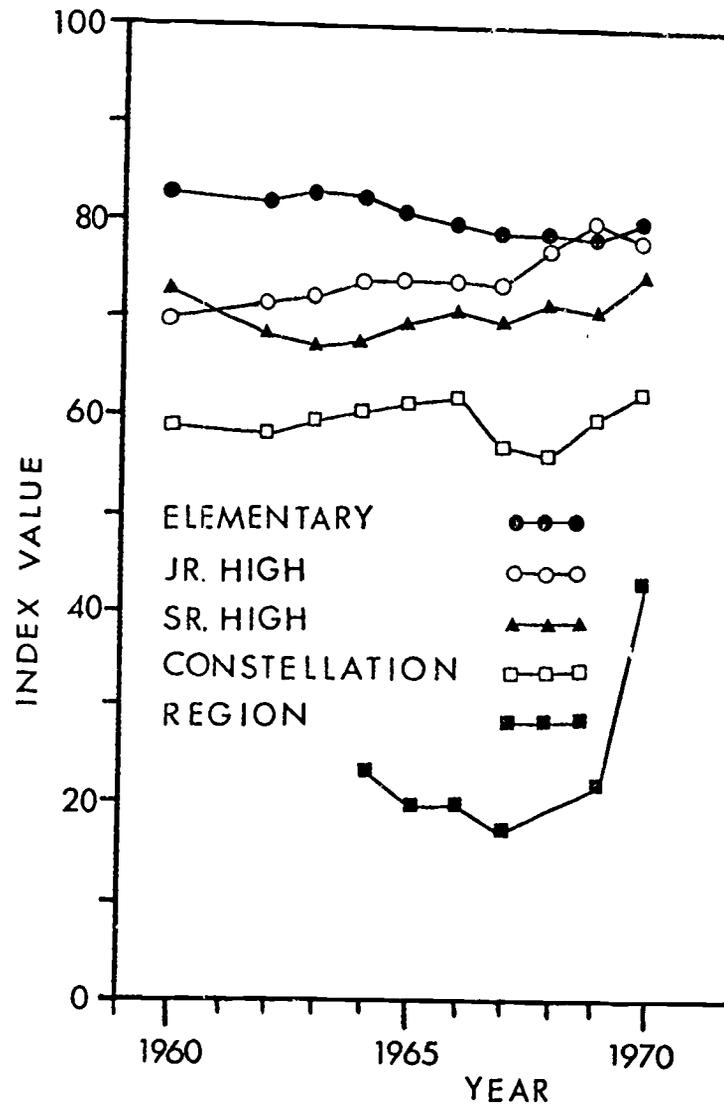
FIGURE 4.1.   Trends in student dissimilarity index.

TABLE 4.7. Indices of Dissimilarity for Students, 1960-1970

						School Year					
	60-61	61-62	62-63	63-64	64-65	65-66	66-67	67-68	68-69	69-70	70-71
1. Elementary	82.8	--a	81.8	82.6	81.2	80.5	79.6	78.4	78.7	78.3	79.0
2. Jr. High	70.2	--a	70.8	72.6	73.8	73.1	73.9	73.7	78.6	79.1	78.2
3. Sr. High	72.5	--a	68.4	67.2	67.1	69.3	70.4	68.2	70.9	70.6	74.8
4. Unweighted average of 1, 2, & 3	75.2	--a	73.7	74.1	74.0	74.3	74.6	73.4	76.1	76.0	77.3
5. Constellation	59.5	--a	58.8	59.5	60.1	61.0	61.5	56.2	55.0	59.8	62.0
6. Region	--b	--a	--b	--b	23.8	20.0	19.9	17.7	--b	21.8	42.5

a. No racial census was taken in 1961-62.
b. No regions were reported in the racial census.

regions in 1970 doubled the regional segregation index. It is impossible to infer whether or net the increase in the regional index was a desired consequence of reorganization, but it is certainly an obvious consequence. It is the type of effect which would be expected from an intentional policy to increase segregation among regions. However, it should be noted that the regional reorganization did not affect the racial composition of the schools themselves. As long as regional boards do not have responsibility for administering schools, regional segregation is irrelevant. But should they assume this responsibility, the segregation of regions would prevent their boards from desegregating their schools on a city-wide basis.

The Magnitude of Desegregation

The percentage and number of students who would have to be transferred in order to achieve complete desegregation is so large that complete desegregation may be an unrealistic goal.

Table 4.8 reports values of the index of replacement, denoted Re, by level and year. This index equals the percentage of all students who would be required to move under a policy of total desegregation. That is, in 1970, 36.4 percent of all elementary students would have to change schools if every elementary school were to have the district proportion of black and white elementary school pupils. Decreases in Re since 1960 have been caused by decreases in the index of dissimilarity and increases in the proportion of black students.

In terms of absolute numbers, desegregation at all three levels would require the movement of approximately 64,000 elementary school children (32,000 black and 32,000 white), 12,800 junior high school students, and 19,500 senior high school students, as reported in Table 4.9.

Part of the cost of desegregation can be estimated if it is assumed that all students taking part in a desegregation plan are provided transportation at district expense, and that the annual cost per student for this service equals $41.65 (the average 1968-69 cost for pupil transportation in Michigan, plus 15 percent for inflation).[4] In 1971 the total annual cost for transporting 94,900 students would have been approximately four million dollars.

TABLE 4.8. Indices of Replacement for Students, 1960–1970

Level	School Year									
	60-61	62-63	63-64	64-65	65-66	66-67	67-68	68-69	69-70	70-71
Elementary	41.3	40.9	40.9	40.3	39.7	39.0	38.0	37.5	36.6	36.4
Junior High	35.2	32.7	33.9	34.1	33.4	33.0	31.2	32.1	32.2	30.9
Senior High	33.0	32.5	32.3	32.9	35.8	35.2	34.1	35.3	34.4	35.4
Constellation	29.6	30.0	39.7	29.9	30.1	30.1	27.2	26.6	27.9	28.2
Region	--a	--a	--a	11.8	9.9	9.7	8.6	--a	10.1	19.4

a. No regions are indicated in the racial census.

TABLE 4.9. Student Transfers Necessary to Achieve

Complete Desegregation (in thousands)

Level					School Year					
	60-61	62-63	63-64	64-65	65-66	66-67	67-68	68-69	69-70	70-71
Elementary	81.8	81.0	70.3	77.3	76.7	74.8	71.4	67.9	66.7	64.0
Junior High	10.9	11.0	12.8	13.7	13.8	13.6	13.8	13.9	13.3	12.8
Senior High	14.7	15.ɔ	16.1	16.7	18.6	17.9	16.0	18.7	18.5	19.5
Total	107.4	107.8	108.2	107.7	109.1	106.3	102.9	99.7	98.0	94.9
Constellations	80.9	84.2	83.4	84.7	85.9	86.5	77.4	75.1	77.1	77.0
Regions	--[a]	--[a]	--[a]	33.4	28.2	27.9	24.5	--[a]	27.9	53.0

a. No regions are indicated in racial census.

An alternative method of desegregation is to wait. If the present percentage of black students continues to increase at its present rate of 1.7 points per year, then in 1992 the schools will be all black—and hence totally desegregated.[5] This is not a paradox, but simply the logical, yet absurd, conclusion that must be reached. Even if Detroit were to desegregate its schools immediately, they would remain "segregated"—when viewed from a state-wide perspective—since Detroit is a "segregated" city. In 1970, Michigan was only 11.2 percent black while Detroit was 43.7 percent black. Without a solution that takes in a larger area than the city alone, "desegregation" of Detroit's schools is impossible.

Summary

Most of Detroit's school children attend schools that are either disproportionately black or disproportionately white. This fact has remained virtually unchanged throughout the past decade. For 1970-71, the index of dissimilarity, which has a possible maximum value of 100 (total segregation) and minimum value of 0 (no segregation), equaled 79.0 for elementary schools, 78.2 for junior high schools, and 74.8 for high schools. Separate values are necessary for each level since the proportion of black students at each level differs considerably: elementary schools are 63.9 percent black; junior high schools are 72.9 percent black; and senior high schools are 61.6 percent black.

Index values for residential segregation are of a similar magnitude to those for schools, though for technical reasons the two are not strictly comparable. Nevertheless, the similarity between the values suggests that school segregation is the immediate result of a neighborhood school attendance policy applied to a city with segregated neighborhoods.

Only one major change in the dissimilarity index occurred between 1960 and 1970. The index for administrative regions doubled from 21.8 in 1969 to 42.5 in 1970 as a result of a state-mandated reorganization. However, this change had no immediate effect on school attendance patterns.

While school board policies have not altered the extent of student segregation, they have altered the degree of segregation between black and white instructional personnel. These changes are the subject of Chapter 5.

Footnotes

1. Detroit Public Schools, Racial-Ethnic Distribution of Students and Employees
    (Detroit: DPS, October 1970), p. 9.

2. Taeuber and Taeuber, op. cit., p. 39.

3. Campbell, D. T., and J. C. Stanley, Experimental and Quasi-Experimental
    Designs for Research (Chicago: Rand McNally, 1963).

4. Johns, R. L., K. A. Alexander, and K. F. Jordan, Planning to Finance
    Education (Gainesville: National Educational Finance Project, 1971), p. 344.

5. An alternative estimate, based on a regression equation for the decreasing
    number of white students, indicates that all white students will have left the
    Detroit schools by 1989. Part of the discrepancy in dates is accounted for by
    the omission of students of other ethnic groups.

CHAPTER V

INSTRUCTIONAL STAFF SEGREGATION

Unlike students, instructional personnel may be assigned to a school in any part of the city regardless of where they live. This does not mean, however, that assignments are made at random. In fact, at least two systematic factors affect staff placement.

First, black teachers are generally assigned to schools that have a high proportion of black students. As a result, it can be said that teachers are to some extent segregated on purpose. If the extent of teacher segregation matched that of students, then index of dissimilarity values computed for the instructional staff would be approximately equal to those for students. As we shall see, this is not the case.

Second, new teachers are generally assigned to schools in the poorest areas in the city. In practice, this means that black schools generally have the least experienced teachers. Also, since many teachers hired in recent years have been black, this practice tends to place black teachers in black schools.

The extent of staff segregation resulting from these and other factors is the subject of this chapter.

Composition and Size of Instructional Staff

Figures 3.3 and 3.4 show a breakdown by level of the instructional staff's numerical size and racial composition. Considerable growth is apparent, much of which is attributable to the increased federal funds which became available during the 1960s. The unusual growth in the numbers of junior high school instructional personnel can be explained by the opening of a number of new junior highs and the consequent transfer of many students in grades 7, 8, and 9 from K-9 schools.

Overall, there has also been a considerable increase in the percentage of instructional personnel who are black. This growth has been particularly great

59

in the senior high schools, where there has been a fourfold increase. In 1960, only 8.1 percent of the senior high school staff was black. By 1970, this had risen to 32.7 percent. While the increase at the junior high school level was not so great, the percentage of blacks on junior high school faculties in 1970 was the highest of all three levels. Against a district average of 42.1 percent, the junior high instructional staffs were 47.7 percent black. The elementary school instructional staff, at 43.9 percent black, were closest to the district average.

Staff Segregation

Are black personnel members of all-black faculties, or are they proportionally represented on school staffs throughout Detroit? To answer this question, the Tauebers' index of dissimilarity can be calculated for instructional staff, just as it was for students. This procedure yields the data tabulated in Table 5.1 and graphed in Figure 5.1.

Two features are notable. First, all figures indicate that there is, and has been, considerably less segregation among faculty members than among students. No value of the dissimilarity index for teachers exceeds 65, while in several cases the value exceeds 80 for students. Second, there is a strong downward trend in staff segregation. The unweighted average of D for all levels was 60.0 in 1960, but only 33.8 in 1970. There was a slight rise between 1967 and 1969, but the drop in 1970 more than compensated for it.

In general, staff segregation has been greatest in elementary schools and least in junior high schools. But the difference between the two decreased from 10.1 points in 1960 to only 3.3 points in 1970, suggesting a policy to reduce or eliminate these differences. Absolute values are now so low at all levels that staffs can hardly be considered segregated. Indeed, it may be desirable to maintain staffs with a somewhat disproportionate number of blacks in schools which have all black student bodies. If so, then total staff desegregation should not precede desegregation of students.
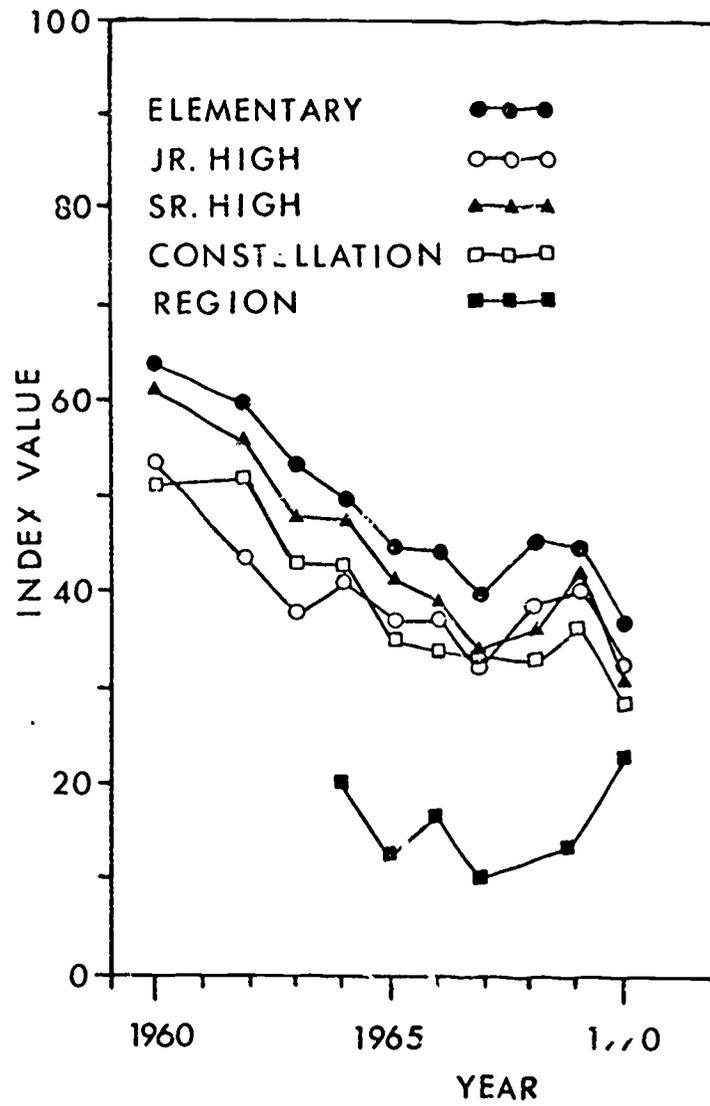
FIGURE 5.1.   Trends in teacher dissimilarity index.

TABLE 5.1.   Indices of Dissimilarity for Instructional Staff, 1960-70.

Level	60-61	61-62	62-63	63-64	64-65	65-66	66-67	67-68	68-69	69-70	70-71
					School year beginning						
(1) Elementary	64.4	--[a]	60.1	53.2	49.7	45.3	44.2	39.9	45.3	44.9	36.3
(2) Junior High	54.3	--[a]	44.2	38.6	41.0	37.1	37.6	32.4	37.6	40.1	33.0
(3) Senior High	61.4	--[a]	56.4	47.1	47.3	41.6	39.1	34.3	35.1	41.7	32.1
(4) Unweighted average of 1, 2, and 3	60.0	--[a]	53.6	46.3	46.0	41.3	40.0	35.5	39.3	42.2	33.8
(5) Constellation	53.2	--[a]	53.9	43.6	42.0	35.3	34.4	34.3	32.1	35.1	28.7
(6) Region	--[b]	--[a]	--[b]	--[b]	20.4	13.6	16.7	11.0	--[b]	14.2	22.9

a. No racial census.
b. No regions reported.
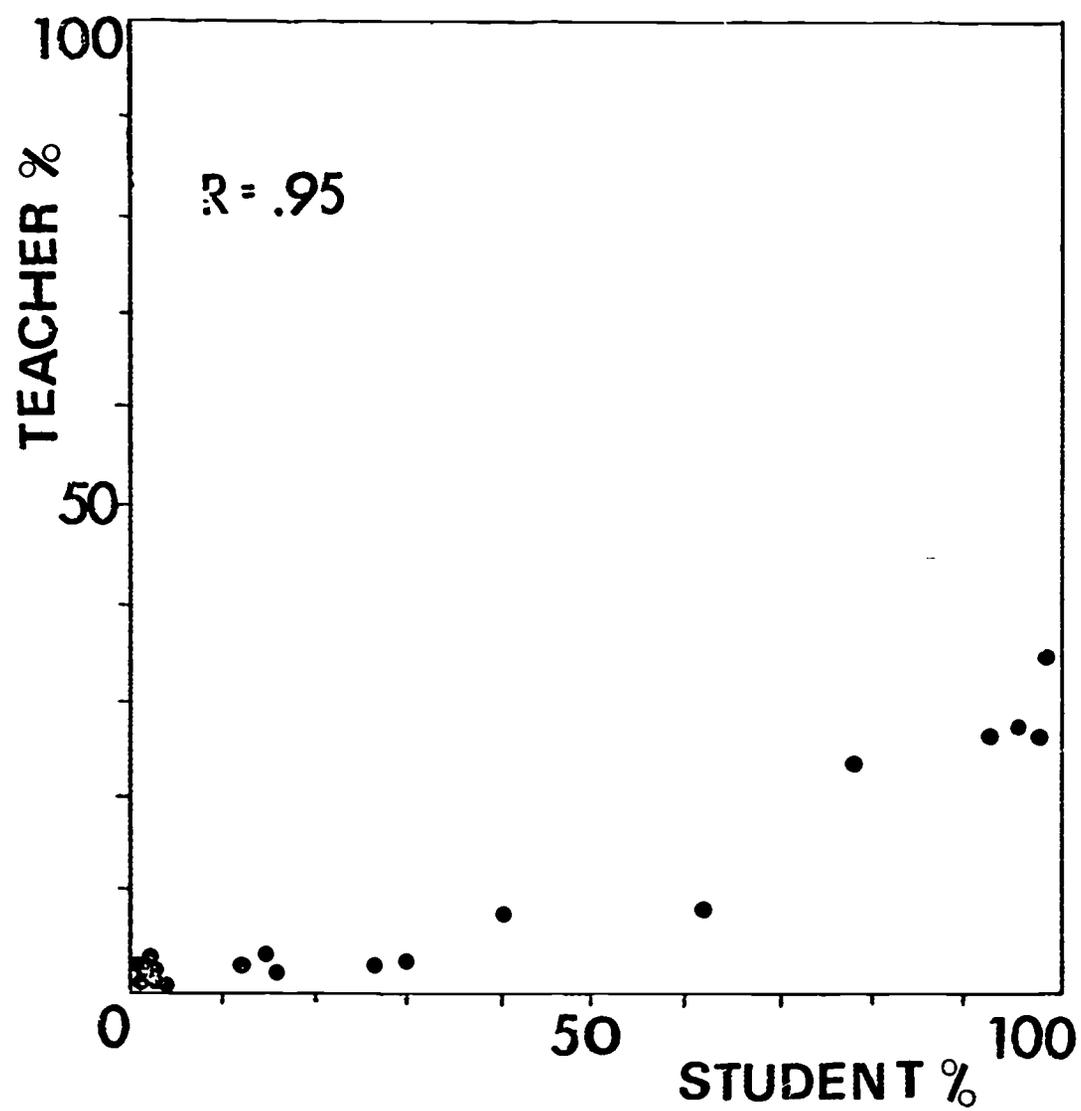
FIGURE 5.2. Percentage of black high school students
plotted against percentage of black teachers, 1960.
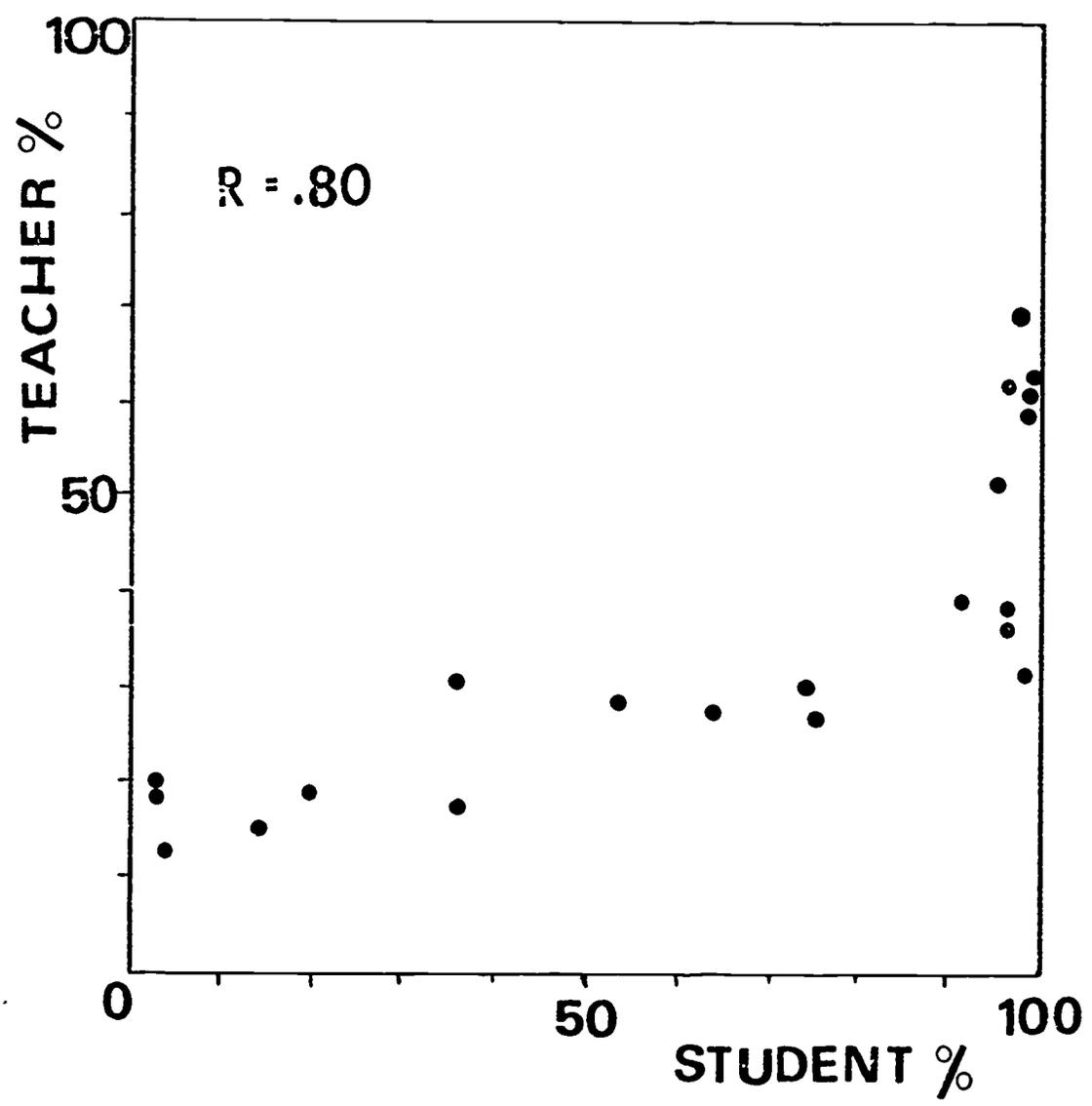
FIGURE 5.3.   Percentage of black high school students
plotted against percentage of black teachers, 1970.

Nevertheless, there is a strong relationship between the percentage of black students and the percentage of black faculty in all schools. This does not contradict the previous findings; it simply indicates that deviations from proportionality, however small, occur in a systematic manner.

Still other factors, described in Chapter 6, are related to the percentage of black students in a school. Particular emphasis placed on the distribution of experienced teachers and the allocation of federal and local funds.

CHAPTER VI

DISTRIBUTION OF INSTRUCTIONAL RESOURCES

In carrying out their educational responsibilities, school boards supply students with many goods and services: classrooms, supplies, curriculum materials, teachers, etc. Of these resources, probably the most important, and certainly the most expensive, is the teaching staff.

Though it is generally agreed that teachers vary in quality, there is little agreement on what characteristics a good teacher must have. Rightly or wrongly, salary schedules reward teachers for increased experience and advanced academic training, suggesting that both experience and training are related to teacher quality. Another factor, class size, is also accepted as a variable affecting the quality of education that students receive. In short, educators believe an experienced teacher with an advanced degree teaching a small group of children will be more successful than an inexperienced teacher with minimal training instructing a large class.

In addition, there is little agreement on the relative influence of experience, training, and class size, and the effects of specified increases in them on educational quality. Salary schedules offer the greatest rewards for increased experience; promotions often require advanced training; class sizes have been steadily reduced by at least one-third over the past twenty years. Thus, these three factors receive considerable support in practice, though their beneficial effects have not been unquestionably confirmed by research.

In the absence of empirical proof, one cannot avoid the basic assumption made here: that experience, training, and class size are determinants of instructional quality. The allocation of these human resources among Detroit schools, with particular emphasis on relationships which exist between the percentage of black students in a school and the quality of its instructional staff, is the subject of this chapter. These same relationships are also analyzed in terms of their dollar cost to the system.

Percentage Black and Instructional Inputs

Is the percentage of black students related to the quality of instructional services provided in a school? If so, does this relationship hold for all levels, or does it differ between elementary, junior high, and senior high schools?

All Schools

Table 6.1 presents a number of instructional variables broken down by the percentage of black students in a school.[1] In almost all cases there is a strong relationship. For example, the percentage of black students is related to both the experience and training of teachers in a school. On the average, black students have teachers with less experience and training than do white students. It should be noted that the relationships are probably somewhat understated due to the indirect manner in which teacher experience was measured. The mean salary step was used as an indicator of the level of experience of a school's teachers. In Detroit, teachers begin at Step 1 and are automatically advanced one step each year until they reach a maximum at Step 12. Thus, if "experience" is taken to mean "years of experience", the use of salary step tends to underestimate the actual experience of a teacher.

The academic training of a school's teachers was also measured somewhat indirectly. The highest college degree held by an individual was taken as the operational measure of training, with the following numerical assignments being made to facilitate analysis: Bachelor's = 1, Master's = 2, Master's plus thirty semester hours = 3, and Doctor's = 4. These same four categories are used in Detroit's salary schedule to reward advanced study and, by ignoring such matters as the quality of a degree, tend to underestimate the full ran_ of academic training among teachers.

To compute the average amount of experience or training for a school's staff members, their step or degree scores were simply averaged. This process may result in a fractional number, as would be the case if half the members of a faculty held bachelor's degrees and half held master's degrees. Such a sc ool would have an average degree score of 1.5.

TABLE 6.1.   Unweighted Average values of Instructional

Variables, Grouped by Percentage of Black Students in School

Instructional variable	Percentage of Black Students in School				
	Less than 10%	10 to 30%	30 to 70%	70 to 90%	Over 90%
(1) Number of schools	68	23	30	25	136
(2) Mean salary step	8.58	7.81	6.94	6.87	6.55
(3) Mean degree	1.43	1.40	1.31	1.34	1.29
(4) Teachers per student	.034	.036.	.037	.037	.039
(5) Mean class size	29.1	27.9	26.3	26.9	25.8
(6) Mean number of students	824.	897.	1039.	1033.	937.
(7) Teachers, percent black	18.1	24.2	36.5	47.3	59.8

Sources: Detroit Public Schools, "Analysis of Monthly Membership Report,"
Detroit, March 12, 1971. (Dittoed.) Also, "Selected School Data," Detroit,
February 1971. (Computer output.)

Though Table 6.1 indicates the quality of instructional inputs is lower for
schools with high percentages of black students, it also shows their quantity is some-
what greater. Approximately 3.9 teachers are provided per hundred students in schools
over 90 percent black, whereas only 3.4 teachers per hundred students are provided
in schools over 90 percent white. Taking reciprocals, class sizes tend to be smaller
in the former, which average 25.8 students per class, than in the latter, which average
29.1 students per class.

Does the smaller average class size in black schools increase the quality of
education enough to compensate for the lower average experience and training of
instructors? Unfortunately, there is no measure of educational quality sufficiently
precise to answer this question directly. However, if one is willing to assume that
a teacher's salary is realistically related to his or her ability, it is possible to develop
an answer to the question using dollar equivalents for differences in quality of education.

The first step to this solution is a statistical analysis of Detroit's 1970-71
salary schedule for teachers in order to derive dollar values for salary steps (exper-
ience) and additional degrees (training). Using linear regression, salary is regressed
on salary step (Step) and additional degrees (Degree) to provide what is called an
"estimate" of salary which is based on the two independent variables. The resulting
equation makes it possible to simulate school teaching staffs of a given quality and to
account for cost differences in schools by using the underlying variables — experience,
training and class size — rather than depending on the manifest variable of teacher
salary. Following this procedure, each additional salary step proves to have an
average worth of $604.81, while each degree above the bachelor's is worth $649.82.
The complete equation for predicting salaries is

$$\text{Estimated salary} = \$6928.72 + 604.81(\text{Step}) + 649.82(\text{Degree})$$

where Step takes on values from 1 to 12 and Degree takes on values from 1 to 4.
Using this equation to estimate the average teacher salary for each school on the
basis of the average qualifications of its teachers, produces values that are quite
accurate. Table 6.2 reports that actual and estimated salaries have a .97 correla-
tion with one another. Also, when schools are grouped by their percentage of black

TABLE 6.2.   Correlates of Average Teacher

Salary in All Schools

		1	2	3	4	5	6	7
(1)	Mean salary	1.00	.95	.69	-.12	.97	.25	.27
(2)	Mean step	.95	1.00	.56	-.13	.996	.23	.24
(3)	Mean degree	.69	-.12	1.00	-.02	.63	.21	.25
(4)	Teachers/student	-.12	-.13	-.02	1.00	-.12	.86	.92
(5)	Estimated mean salary	.97	.996	.63	-.12	1.00	..24	.25
(6)	Cost/student	.25	.23	.21	.86	.24	1.00	.93
(7)	Estimated cost/student	.27	.24	.25	.92	.25	.93	1.00

72

students, the average deviation of estimated mean salaries from true mean salaries for the groups is only $105, as can be seen in Table 6.3. These results confirm the validity of the regression-simulation approach.

To take class size into account as well as teacher quality, one can multiply dollars per teacher (i.e., average salary) by teachers per student (i.e., the reciprocal of class size) in order to obtain dollars per student. This final estimate of the average instructional cost per student for a school serves as an indirect measure of the net quality of instructional services it provides to students, since the estimate is a function of three fundamental variables: teacher experience, teacher training, and class size.

The previously posed question concerning the quality of instruction and racial composition of a school can now be answered. Table 6.3 indicates that estimated cost per student, and hence instructional quality, has a weak positive relationship with the percentage of black students in a school. Schools over 90 percent black receive $450.90 per student, whereas schools less than 10 percent black receive $438.80 per student. It can be concluded that smaller class sizes in black schools do offset the lower quality of teachers in those schools, though it should be emphasized again that this conclusion is based upon the assumptions that experience, degrees, and class size are valid measures of educational quality, and that dollar differentials attached to experience and degrees are valid measures of the educational importance.

Estimates of cost per student based on teacher experience, training, and class size are very close to actual costs, as would be expected. Their .93 correlation, reported in Table 6.2, validates the composite model that has been used, as does the fact that, when schools are grouped by percentage black, the average difference between estimated and actual cost per student is only eight dollars.

The existence of equal expenditures per student among Detroit's schools is largely dependent on federal grants which supplement local funds. In 1970, schools over 90 percent black received approximately $50.90 in federal funds per student, while schools less than 10 percent black received an average of only ten cents per student. It is clear that these funds were used to pay for lowering class sizes and hence for equalizing instructional inputs as measured by their dollar cost.

TABLE 6.3. Unweighted Average Expenditures for Instruction,

Grouped by Percentage of Black Students in School

Type of expenditure	Less than 10%	10 to 30%	30 to 70%	70 to 90%	Over 90%
	Percentage of Black Students in School				
(1) Mean teacher salary	$12,919	$12,441	$11,880	$11,865	$11,620
(2) Estimated mean salary	13,045	12,561	11.957	11,956	11,730
(3) Cost/student	438.8	438.8	450.8	430.9	450.4
(4) Estimated cost/student	444.5	445.8	446.2	442.1	450.9
(5) Federal funds/student	0.1	13.0	19.2	24.5	50.9

Source: Detroit Public Schools, "Selected School Data," Detroit, February 1971.
(Computer output.)

Schools by Level

Elementary schools dominate the previous analysis because unweighted averages were computed; one school counted as one school regardless of its size and level. It was felt that no weightings should be used since individual schools are the administrative units with which school boards are concerned. However, in 1970 Detroit had 219 elementary schools, 42 junior high schools, and 21 senior high schools, so the last two groups are submerged in the overall figures. Separating schools by level, as was done in the analysis of segregation, is necessary for a complete analysis and understanding of the distribution pattern of instructional resources.

Table 6.4 presents a series of correlations of selected variables with the percentage of black students in a school. From them, it can be seen that the relationships differ between levels. The percentage of black students in elementary schools is negatively correlated with mean teacher degree (-.36) and salary (-.53), but positively correlated with teachers per student (.26). The last relationship is strong enough to compensate in financial terms for the lower quality of teachers in schools, as can be seen from the slight positive (.08) correlations of the percentage of blacks with estimated and actual mean cost per student. This balance between class size and teacher quality does not occur in junior high schools, where the percentage of blacks strong negative correlation with Degree (-.65) and Step (-.70) are not offset by its .26 positive correlation with teachers per student. This fact can be inferred from the remaining negative (-.28) correlation between the percentage of blacks and estimated cost per student. A similar correlation (-.22) between the percentage of blacks and actual expenditure per student confirms this conclusion.

Senior high schools exhibit a pattern of instructional resource distribution quite similar to that in junior high schools. The percentage of blacks is negatively correlated with independent variables (Step (-.86) and Degree (-.82) and positively correlated with teachers per student (.22). However, the net result is a negative correlation between percentage black and expenditure per student (-.48). Thus, though average class size does tend to be smaller in senior high schools with a high

TABLE 6.4. Correlations of Percentage of Black

Students with Selected School Variables

		Ele-mentary	Junior high	Senior high	All schools
(1)	Total number students	.11	.31	-.40	.08
(2)	Teachers, percent black	.82	.85	.79	.82
(3)	Mean teacher degree	-.36	-.65	-.82	-.35
(4)	Mean teacher step	-.53	-.70	-.86	-.55
(5)	Mean teacher salary	-.51	-.70	-.88	-.53
(6)	Estimated mean salary	-.54	-.71	-.87	-.56
(7)	Teachers/student	.26	-.04	.22	.22
(8)	Cost/student	.08	-.22	-.48	.03
(9)	Estimated cost/student	.08	-.28	-.40	.02
(10)	Number federally funded teachers	.29	.20	.26	.26
(11)	Number ESRP teachers	.15	.42	.41	.21
(12)	Number schools	219	42	21	282

percentage of blacks, this difference is too small to counteract in financial terms the lower quality of teachers found in these schools.

Another indication that black high schools receive poorer services than white high schools is the moderate correlation (.4x) between the percentage of black students and the number of Emergency Substitutes in Replacement Positions (ESRP's). A similar correlation exists in junior high schools. Since ESRP's were arbitrarily assumed to be equivalent to first-year teachers with bachelor's degrees, these relationships are also reflected in the cost analyses.

Two final sets of relationships can also be considered relevant to the question of resource distribution. School size is often considered important, with relatively small schools viewed as superior to large ones. Elementary schools of eight hundred and a thousand students are thought to be too large, as are high schools of three and four thousand. Such large schools are often concentrated in urban cores, but this does not appear to be the case in Detroit. With the possible exception of junior high schools, where size has a .31 correlation with the percentage of black students, he correlations are weak (.11 for elementary schools) or negative (-.40 for high schools). It will be recalled that many white students in grades 7, 8, and 9 attend K-9 rather than junior high schools, so that the .31 correlation for junior high schools may reflect the practice of building new schools in predominantly black areas.

In summary, instructional resources were not distributed evenly throughout Detroit's schools in 1970. Benefits from experience and training were concentrated on white students, while benefits from small classes were concentrated on black students. In dollar terms, the resulting distribution appeared to be uniform for elementary schools, but uneven in junior high and high schools, with black students receiving the least. Yet in a larger sense, ignorance still exists about the actual quality of education received by all students since the measures used in this analysis are very crude, being justified more by tradition and practice than by solid research.

Salary Analysis by Level

Tables 6.5, 6.6, and 6.7 display correlations among key salary variables within each level. Their main value lies in validating the estimation procedures in which mean salary step, mean degree, and mean number of teachers per student were used to estimate mean salary and mean cost per student. In every case, the correlation between estimates and actual values exceeds .92.

The overall analysis of instructional expenditures presented there may appear trivial, but it does emphasize an important point often overlooked: the actual educational inputs are not dollars and cents, but trained and experienced personnel. Thus, when speaking of "equality of educational opportunity" or "quality education," the focus should not be on expenditures alone, but on the amount and quality of resources being provided. It might be possible, for example, to reward teachers in urban core schools more highly and thereby equalizing average salaries and expenditures per student, while doing nothing about the teachers' quality.

The assumption made in this analysis that teacher experience, training, and class size are v .. ' measures of instructional quality should not be accepted — or re ected — without additional study. More research is necessary to create, discover, or confirm reliable measures of teacher quality. Then it would be possible to guarantee an equitable distribution of high quality teachers and to base teacher s. laries on teacher quality. Currently, 85 percent of the variance in Detroit teacher salaries is accounted for by experience, while only twelve percent is accounted for by training. Is experience truly seven times as valuable as additional degrees? Cannot some direct measure of teaching skill be incorporated into salary schedules? These questions require serious study.

Summary

This chapter contains an analysis of the patterns of teacher assignment to ascertain whether or not all schools are provided instructional staffs of equal quality. Two major assumptions were made: that a teacher's experience and training reflect th

TABLE 6.5. Correlates of Average Teacher

Salary in Elementary Schools

	1	2	3	4	5	6	7
(1) Mean salary	1.00	.95	.68	-.09	.96	.25	.29
(2) Mean step	.95	1.00	.56	-.09	.997	.23	.25
(3) Mean degree	.68	.56	1.99	.04	.62	.24	.28
(4) Teachers/student	-.09	-.09	.04	1.00	-.98	.87	.93
(5) Estimated mean salary	.96	.997	.62	-.08	1.00	.24	.26
(6) Cost/student	.25	.23	.24	.87	.24	1.00	.93
(7) Estimated cost/student	.29	.25	.28	.93	.26	.93	1.00

Note: The low correlation between cost per student and mean salary indicates that net quality of instruction (as measured by expenditures) depends on other factors, particularly class size.

TABLE 6.6.   Correlates of Average Teacher

Salaries in Junior High Schools

		1	2	3	4	5	6	7
(1)	Mean salary	1.00	.97	.72	.13	.97	.40	.45
(2)	Mean step	.97	1.00	.64	.08	.998	.35	.39
(3)	Mean degree	.72	.64	1.00	-.01	.69	.21	.23
(4)	Teachers/student	.13	.08	-.01	1.00	.07	.92	.94
(5)	Estimated mean salary	.97	.998	.69	.07	1.00	.35	.39
(6)	Cost/student	.40	.35	.21	.92	.35	1.00	.96
(7)	Estimated cost/student	.45	.39	.23	.94	.39	.96	1.00

Note: The moderate correlation between cost per student and salary indicates
that differences in class size among schools partially counteracts differences
in teacher quality.

TABLE 6.7. Correlates of Average Teacher
Salaries in Senior High Schools

	1	2	3	4	5	6	7
(1) Mean salary	1.00	.99	.93	.02	.99	.77	.72
(2) Mean step	.99	1.00	.88	.07	.998	.77	.75
(3) Mean degree	.93	.88	1.00	-.17	.91	.64	.54
(4) Teachers/student	.02	.07	-.17	1.00	.03	.55	.71
(5) Estimated mean salary	.99	.998	.91	.03	1.00	.76	.73
(6) Cost/student	.77	.77	.64	.55	.76	1.00	.93
(7) Estimated cost/student	.72	.75	.54	.71	.73	.93	1.00

Note: The high correlations between cost per student and mean salary indicate that class size does not offset the effects of an uneven distribution of quality teachers.

quality of his or her teaching, and that small classes are better than large classes. The first is an assumption which is implicit in teacher pay schedules, and the second is inferred from a long standing trend toward higher teacher-student ratios.

Both teacher experience and training proved to be negatively correlated with the percentage of black students in a school. On the average, black students have teachers with less experience and fewer advanced degrees than do white students. In elementary schools, smaller class sizes counterbalance the lower quality of teachers so that net instructional cost per student is not related to a school's racial composition. Federal funds have been instrumental in achieving this equality, which does not exist in junior and senior high schools.

A complete review of the findings of this investigation is presented in the closing chapter. An overall evaluation attempts to apply a standard to the progress toward desegregation in Detroit schools over the past decade, though such a judgment is of questionable value in view of the contrasting trends which have been identified.

Footnotes

1. Detroit Public Schools, "Analysis of Monthly Membership Report: February 26, 1971," Detroit, March 12, 1971. (Dittoed) Also, "Selected School Data," Detroit, February 1971. (Computer Output)

CHAPTER VII

SUMMARY, ASSESSMENT AND IMPLICATIONS

The major objectives of the study were (1) to describe demographic trends in the City of Detroit and its schools; (2) to describe segregation among students; (3) to describe instructional staff segregation; and (4) to analyze the relationship between educational inputs, such as teacher quality, and the racial composition of schools. This chapter summarizes the findings and assesses Detroit's progress toward desegregation. The report concludes with a discussion of possible implications of the results, particularly in light of the Court's decision that the Detroit Board of Education bears some responsibility for existing school segregation.

Summary of Findings

The City of Detroit and its schools have experienced and are experiencing rapid demographic changes of considerable magnitude. There is no reason to expect that the future will be any different. An outline of existing trends and their projection follows.

The City of Detroit

A. Increasing percentage of blacks: Detroit was 28.9 percent black in 1960 and 43.7 percent black in 1970. It will be 53.6 percent black in 1980.

B. Decreasing total population: Detroit had a population of 1.67 million in 1960 and 1.51 million in 1970. It will have a population of 1.34 million in 1980.

C. Loss of white population: Detroit is losing 349,000 white residents and gaining 179,500 black residents every ten years. The city will be 100 percent black by 1995.

Students in the Detroit Public Schools

A. Increasing percentage of black students: Detroit schools were 45.8 percent black in 1960 and 63.8 percent black in 1970. They will be 80.7 percent black in 1980.

83

B.   Slightly decreasing total enrollment: Detroit schools enrolled 285, 512 students in 1960 and 292, 946 in 1970. They will enroll 289, 461 in 1980.

C.   Loss of white students: Detroit schools are losing 5, 661 white students and gaining 4, 817 black students every year. The schools will be 100 percent black by 1989.

D.   Continuing segregation: Detroit students were highly segregated in 1960, when D, the index of dissimilarity, equaled 75.2. They remained highly segregated in 1970, when D equaled 77.3.

Instructional Staff of t. e Detroit Public Schools

A.   Increasing percentage of blacks: Detroit schools' instructional staff " 22.0 percent black in 1960 and 42.1 percent black in 1970. They will be 53.6 percent black in 1980.

B.   Decreasing segregation: Detroit instructional staff members were moderately segregated in 1960, when D equaled 60.0; they were slightly segregated in 1970 when D equaled 33.8.

C.   Black teachers for black students: Schools with a high percentage of black students tend to have a larger percentage of black teachers than schools with a low percentage of black students.

Distribution of Instructional Resources

A.   Lower teacher quality in black scho ls: Schools with a high percentage of black students tend to have less experience teachers with less advanced training than schools with a low percentage of black students.

B.   More educational inputs in black schools: Schools with a high percentage of black students tend to have smaller classes and more federally paid teache 's than schools with a low percentage of black students.

C.   Uneven distribution of inputs: There is no relationship between the percentage of black students and mean instructional cost in elementary schools. Junior and senior high schools with a high percentage of black students tend to have lower mean instructional costs than junior and senior high schools with a low percentage of black students.

Assessment

In order to evaluate the changes that have occurred in Detroit, a number of value judgments must be made. Those stated here reflect the beliefs of the author. Others may wish to draw their own conclusions: in so doing, however, the probable social consequences from a historical perspective should be kept in mind.

The major premise of this evaluation is that it would be undesirable for Detroit to become an all-black city surrounded by all-white suburbs. The history of race relations throughout the United States, and in Detroit in particular, provides strong evidence of this. The racial isolation of both groups is a cause, as well as a result, of the crime, riots, and poverty in black ghettos. Logically, one must assume that an all-black city would encourage the development of social problems even more severe and destructive.

As yet, Detroit has not been able to stop the white exodus from the city. Assuming that present policies are not changed in a radical manner, this trend will not lessen. One result will be an all-black city with all-black schools before the end of this century. A few white enclaves may remain, but children living in these areas will attend private or parochial schools.

Is it possible that retention of moderately segregated schools has slowed the exodus of whites, while desegregation would have hastened it? There are data to support this contention. As noted earlier, disproportionately black schools lose white students more rapidly than disproportionately white schools gain black students. A "tipping-point" theory exists which suggests that once a school reaches approximately 50 percent black, whites leave it at a greatly increased rate and the school soon becomes 100 percent black.

Pragmatic application of this theory would indicate a city might slow white emigration by maintaining segregated schools. The Court's decision in Bradley v. Milliken states that such actions promoting segregation were taken in Detroit. These actions may be defended by emphasizing the beneficial effects they had in preventing a more rapid exodus of whites. However, there is a fundamental problem with the logic of this argument, which supports segregation. If an all-black city

is undesirable, are not all-black schools also undesirable? If so, then preventing an all-black city by maintaining a segregated school system is logically inconsistent.

An alternative to reducing white movement from city to suburb does exist. The "tipping-point" theory rega. ng racial composition of schools implies that there is a haven for white students who leave desegregated schools. Most often, white students transfer to suburban schools, though data suggest private and parochial schools also play this role. If these havens could be eliminated, then white students would have less reason to transfer. Presumably, they would remain in their present schools, thereby stopping the trend toward all-black schools and an all-black city.

The most drastic way of eliminating these havens for white students would be to close them, an imminent possibility for many parochial schools. The alternative, and probably more desirable, solution is to increase the number of black students in disproportionately white schools throughout the metropolitan area until blacks are fairly represented in every school. This action would lessen the suburban schools' value as a place of retreat for those seeking all-white schools, while simultaneously reducing the numbers of blacks in schools which are disproportionately black. One cannot claim that this approach for slowing the white exodus from Detroit is emminently practical, but then there appears to be no alternative. Its implementation would also remove a major reason for maintaining segregated housing, thereby hastening the process of residential desegregation.

A great irony lies in the willingness of most white parents and students to accept schools with a 10 or 20 percent black enrollment. Classes of twenty-five students, each with twenty white and five black pupils, would receive little criticism from most whites. Unfortunately, the interaction of school attendance areas, district lines, residential patterns, and other social phenomena create schools that are segregated far more often than desegregated. An intolerable situation has now evolved, a situation requiring corrective measures so strong that they too seem intolerable.

While neither Detroit nor its schools have exhibited desirable trends in their racial composition, the school system has implemented an effective program of faculty desegregation. Blacks are equitably represented not only on the district's instructional staff, but on most school faculties. Though school systems are often criticized as

being insensitive, it is clear that the Detroit schools have reacted swiftly and effectively to the influx of black residents. It is not a system of black students and white teachers.

In addition, the Detroit schools, utilizing federal funds, have equalized instructional expenditures per student in elementary schools. This too shows the system is sensitive to needs and capable of action. That junior and senior high schools have not benefited equally may reflect a policy to concentrate on elementary school education. Be that as it may, data suggest that Board policies affecting assignment of teachers to secondary schools are similar to those affecting elementary schools and are oriented toward achieving racially balanced faculties.

Implications

Among the conclusions reached in Bradley v. Milliken, the Court stated, "The affirmative obligation of the defendant Board has been and is to adopt and implement pupil assignment practices and policies that compensate for and avoid incorporation into the school system the effects of residential racial segregation."[1] It also notes that "A citizen's constitutional rights can hardly be infringed simply because a majority of the people choose t' it be."[2] And, "Where a pattern of violation of constitutional rights is established, the affirmative obligation under the Fourteenth Amendment is imposed on not only individual school districts, but upon the State defendants [as well]."[3].

Will the State of Michigan and the Board of Education of the City of Detroit be able to effect changes demanded by the Court? Ideally, there should be no question; in fact, there is reasonable doubt. The school system has proved itself capable of effective action, but it has been and is now bound by the views of Detroit's citizens. While it would be improper to consider all residents as a single group, able to reach consensus, their collective actions, as revealed in population trends, lead one to surmise that desegregation will be a slow process. Blacks may find civil rights they do not desire thrust upon them, while whites may be obliged to make sacrifices they would rather avoid. While both communities behave in a coherent manner when viewed from afar, detailed inspection reveals that this coherence results from thousands of independent actions. No leader exists who can persuade black families to limit the growth

and concentration of Detroit's black community; nor is there a leader who can inspire whites to seek desegregated communities. Yet these types of behavior are necessary if the Court's decision is to be implemented and if past trends are to be reversed. American citizens must realize they are one people, but one which is characterized by individual and group differences which create a diverse social mosaic. Biologically speaking, diversity is a prerequisite for survival; without it, a species cannot adapt to altered environments. The same principal holds true for a nation, which can capitalize on the heterogeneity of its people. Diversity among social groups will not vanish, nor can each group be sealed off into an ethnic, religious, or racial ghetto of its own.

For Detroit, metropolitan desegregation of schools and housing appears to be the only solution. As an industrial center with progressive and active schools, Detroit has a better opportunity than many American cities to succeed.

It has been said that there are two types of goals: the which men expect to reach and those for which men can only strive. Technological goals, such as landing men on the moon, are of the first kind. A relatively small number of individuals provided with sufficient financial resources and concentrating on a single goal will usually succeed. Racial and ethnic integration of American society is far more difficult. Great sums of money are not necessary, and the task cannot be completed by the actions of a few. Instead, changes must occur in the minds and hearts of all men. They must develop new beliefs and attitudes. But because integration demands a great deal from each individual, because it demands that everyone act in a selfless manner, it is a more worthwhile goal. While one cannot expect complete integration to be achieved, one can expect that in striving toward the goal a more humane world will be created.

Footnotes

1. Roth, *op. cit.*, conclusion of Law #6.

2. *Ibid.*, conclusion of Law #10.

3. *Ibid.*, conclusion of Law #6.