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A STUDY OF THE DESEGREGATION OF THE LANSING, MICHIGAN ELEMENTARY SCHOOLS AND THE EFFECTS OF THAT DESEGREGATION ON WHITE AND NON-WHITE ENROLLMENT

Michigan State University PH.D. 1980

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A STUDY OF THE DESEGREGATION OF THE LANSING, MICHIGAN ELEMENTARY SCHOOLS AND THE EFFECTS OF THAT DESEGREGATION ON WHITE AND NON-WHITE ENROLLMENT

By

William L. Webb

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ABSTRACT

A STUDY OF THE DESEGREGATION OF THE
LANSING, MICHIGAN ELEMENTARY
SCHOOLS AND THE EFFECTS OF
THAT DESEGREGATION ON
WHITE AND NON-WHITE
ENROLLMENT

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William L. Webb

Since the United States Supreme Court in 1954 adjudicated in Brown v. Topeka that the notion of separate but equal had no place in American education, school desegregation has been a volatile issue. Few other events in American life have so permeated American thought and action. The issue of school desegregation is an extremely emotional one and in certain settings still defies rational and analytical scrutiny. Detractors of school desegregation have blamed decline in student achievement, minority population increase in urban cities, and minority increase in school population on school desegreation. However, a closer look at what have been some of the cause and effect relationships of school desegreation, doesn't necessarily bear out that school desegregation alone has been the cause of white flight and urban non-white majority populations in American urban cities.

This study was designed to determine what effects desegregation efforts had on the elementary enrollment of one medium sized

school district, the Lansing School District, Lansing, Michigan. The study sought to address three specific questions:

1. Did desegregation efforts in the Lansing School District have a significant effect on the rate of enrollment change in the elementary schools for either white or non-white students?

2. Did membership in a cluster make a significant difference in the rate of enrollment change for either white or non-white students?

3. Is there a tipping point which functions in the elementary schools of the Lansing School District?

The findings of this study were:

1. There was a significant difference in the rate of enrollment change related to desegregation. This was true for both white and non-white enrollment with the difference in change for both groups being in the same direction. The rate of enrollment change for white students, which was declining before desegregation, evidenced an increase in the rate of decline with the implementation of desegregation. Non-white enrollments, which had been growing prior to desegregation, continued to grow after the implementation of desegregation, but at a significantly lower rate.

2. Membership in a cluster was not shown to have a significant impact on enrollment change in Lansing's elementary schools for either white or non-white students. Schools which were naturally integrated prior to desegregation and, therefore, never became members of a cluster maintained enrollment better than those schools which were not integrated prior to desegreation and thus were made

members of a cluster. This pattern began several years before the implementation of the cluster, however, and no alteration in this trend was shown at the point of cluster implementation or in the years following that implementation.

3. The presence of a tipping point in the Lansing School District's elementary schools was not confirmed by this study. Individual schools with more than 30 percent non-white enrollments prior to final desegregation (September 1976) were not shown to be more likely to have significantly increased in percent of non-white enrollment by the end of the study than were schools with 29 percent non-white enrollment or less prior to final desegreation. Even when viewed as a group schools with more than 30 percent non-white enrollment prior to final desegregation showed no significantly greater gain in non-white enrollment by the end of the study than the group of schools with less than 30 percent non-white enrollment prior to final desegregation.

This dissertation is dedicated to my wife, Sue, without whose support and dedicated help it would not have been possible and to my parents who provided constant support and motivation.

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CHAPTER I

STATEMENT OF THE PROBLEM

The problem for study is to discern whether in one middle-sized urban school district, the Lansing School District, substantive white flight from the district has occurred and if any white flight measured is the result of desegregation efforts in the elementary schools.

Introduction

Since the United States Supreme Court in 1954 adjudicated in Brown v. Topeka that the notion of separate but equal had no place in American education, school desegregation has been a volatile issue. Few other events in American life have so permeated American thought and action. The issue of school desegregation is an extremely emotional one and in certain settings still defies rational and analytical scrutiny. Detractors of school desegregation have blamed decline in student achievement, minority population increase in urban cities, and minority increase in school population on school desegreation. However, a closer look at what have been some of the cause and effect relationships of school desegregation, does not necessarily bear out that school desegregation alone has been the cause of white flight and an increasing urban minority population in American cities.

In an early study which caused much debate and stimulated a number of related studies, James Coleman stated that desegregation in a school district does accelerate the loss of white students.[1] He went on to say that not only does the loss of white families from urban areas have a negative impact on those areas, but it also results in a resegregation of the schools originally desegregated.

David Armor similarly interpreted the results of studies he conducted to show that desegregation does result in increased white loss. Armor went on to say that this is especially true when the desegregation is forced on a district, involves busing white students to schools with total or large minority populations, and the district enrollments exceed 10 percent minority.[2]

Other researchers have disputed the conclusions reached by Coleman and Armor. Christine Rossell has indicated that "school desegregation has little or no effect on white flight."[3] She feels that Coleman's opposite conclusion is due to "error in his measure of the phenomenon"[4] citing studies of her own to support this conclusion.

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[1]James S. Coleman, "Liberty and Equality in School Desegregation," Social Policy, Vol. 6, No. 4 (Jan./Feb. 1976): 9-13.

[2]David J. Armor, White Flight Demographic Transition and the Future of School Desegregation (Santa Monica: The Rand Corporation, 1978), pp. 1-77.

[3]Christine H. Rossell, "School Desegregation and White Flight," Political Science Quarterly, Vol. 90, No. 4 (Winter 1976-77), p. 676.

[4]Ibid.

Reynolds Farley similarly disputes Coleman's conclusions. Farley feels that not only does desegregation, including the busing of students to achieve it, not cause white flight but that it is a good short range solution to a major urban problem.[5]

Gary Orfield states that attributing the difference in the number of whites before and after desegregation solely to white flight ignores the declining enrollment trend, established patterns of white movement to suburbs, and local circumstances which occur simultaneously with desegregation. He claims, in fact, that desegregation of schools can have a reverse effect by encouraging a growth in integrated housing. Orfield asserts that while whites will not remain in or move into a largely minority neighborhood if it includes all minority schools, they may make such a move if given assurance of integrated schools.[6]

Another phenomenon of desegregation which has received much attention is the so called tipping point. Michael Giles, et al., describes a tipping point as having significant impact on the loss of white students. He says that once a school reaches 30 percent or more minority enrollment that it tips minority, that its minority

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[5]Reynolds Farley, "Is Coleman Right?" Social Policy, Vol. 6 No. 4 (Jan./Feb. 1976): 15.

[6]Gary Orfield, "White Flight Research, Its Importance, Perplexities, and Possible Policy Implications," Symposium on School Desegregation, ed. Gary Orfield (August 1975), pp. 44-68.

enrollment exhibits rapid growth while white enrollment declines at a correspondingly rapid rate.[7]

Charles Clotfelter acknowledges that a tipping point does exist, perhaps around the 50 percent level, but that so many other factors enter into the equation that identifying a specific point is difficult. He does say that schools under 25 percent minority are not likely to be affected while schools reaching 80 percent minority are likely to be abandoned by whites.[8]

These and other related studies are dealt with in greater detail in Chapter II.

Background

The Lansing School District is centered in the city of Lansing, Michigan, serving the city and portions of several surrounding townships. The schools of the district are organized as elementary (K-6), junior high (7-9), and senior high (10-12). The Lansing School District also operates an extensive Continuing Education program. Lansing Community College originated as a part of the Lansing School District but has severed that tie and now operates as a separate entity.

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[7]Michael W. Giles, Everett F. Cataldo, Douglas S. Gratlin, "Desegregation and the Private School Alternative," Symposium on School Desegregation, ed. Gary Orfield (August 1975), pp. 21-31.

[8]Charles T. Clotfelter, "School Desegregation, 'Tipping,' and Private School Enrollment," The Journal of Human Resources Vol. XI, No. 1 (Winter 1976), University of Wisconsin Press, p. 45.

The Lansing School District reached its peak K-12 enrollment in 1971 with 33,080 students. Of this number 18,702 were elementary. The elementary enrollment of the district had actually reached its peak in 1969 at 19,004 students and had started a steady decline by 1971.[9]

The district began to keep statistics on students by race in 1967. In that year the total enrollment of the elementary schools was 18,644 of which 15,766 or 85 percent were white and 2,878 or 15 percent were non-white. By 1971 the elementary enrollment of 18,702 was composed of 14,516 or 78 percent white and 4,186 or 22 percent non-white.[10]

In 1967 the Lansing Board of Education had redrawn the junior and senior high boundary lines so that each junior and senior high school approximated the minority enrollment of the over-all district. At the elementary level, however, over 85 percent of the non-white students attended schools which contained a majority of non-white students. By 1971 despite the closing of two majority non-white enrollment schools and the assignment of their students to majority white enrollment schools the situation had not greatly changed. In addition there was a growing dissatisfaction among non-white parents that their children were bearing the brunt of efforts to desegregate the Lansing elementary schools through a pattern of one way busing.

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[9]Lansing School District Child Accounting records.

[10]Lansing School District Ethnic Count Records, September 1967 and September 1971.

In the fall of 1971 the Board of Education formed a citizens committee to study the problem and to make recommendations to desegregate the Lansing elementary schools. The committee submitted its report in April 1972. The report included four alternate plans for desegregating the elementary schools all of which involved the busing of pupils away from their home school area.

The Board of Education held six public hearings on the committee report during the month of May 1972. Following the hearing the Board developed a modified elementary desegregation plan calling for less busing than any of the four citizen committee plans. The Board then held a public hearing on the modified plan.

The modified plan called for each elementary school to have an enrollment of no less than 10 percent nor no more than 45 percent non-white students. Schools which met this criteria were to be left alone. Schools which did not meet the criteria were to be grouped or "clustered" in clusters of from two to five schools. Each of the cluster schools would retain its own neighborhood enrollment in grades kindergarten through second. In addition each cluster school would contain grades three and four or grades five and six. Students in these four grades would spend two of the years in their home school and the other two years in a different school within the cluster. Students in grades one and two were to have joint activities with other cluster schools to prepare them for the time they entered the desegregation plan. The plan specified that two clusters of four schools each would be initiated in the 1972-73 school year and a third cluster involving an additional five schools would be

initiated in the 1973-74 school year. Following this would be a period of study to evaluate the cluster plan and to develop recommendations for its modification and/or expansion.

During the period of public hearings in May a group calling itself Citizens for Neighborhood Schools (CNS) was formed. The CNS declared that it opposed any attempt to bus students away from their neighborhood school and that any Board members who voted for such a plan would be recalled.

In June, 1972 the Board adopted the modified elementary desegregation plan by a five to four vote. The CNS filed recall petitions against the five Board members who voted for the plan. A recall election was scheduled to be a part of the regular November 7, 1972 election. Efforts by CNS to have the Board enjoined by court order to prevent implementation of the elementary desegregation plan in September 1972 were not successful.

In September the Lansing schools opened and implemented the elementary cluster plan without incident.

In November the electorate recalled the five Board members who had voted for the cluster plan, leaving the Board without a majority of its members and unable to operate. Governor Milliken appointed five interim Board members to allow the district to operate until a new Board election could be held. In January 1973 five candidates endorsed by CNS were elected to the Board of Education.

The new Board voted six to three in February to discontinue the cluster plan effective September 1973. The NAACP sought an injunction in federal district court to prevent the Board from

discontinuing the cluster plan. Judge Noel Fox denied the NAACP request and asked both sides to reach an out of court settlement. In July 1973 Judge Fox held a hearing on the NAACP motion when the two sides failed to reach agreement.

In August 1973 Judge Fox issued a preliminary injunction against the Board ordering reinstatement of the cluster desegregation plan. The Board appealed Judge Fox' ruling to the Court of Appeals but the appellate court denied the appeal and remanded the case back to Judge Fox for a trial on the merits.

The opening of school in September 1973 was delayed two weeks due to a teacher's strike but when school did open the three clusters were in place and the opening took place without incident.

During the 1974-75 school year the cluster program was evaluated. Student achievement levels in math and reading indicated no loss in academic achievement in these fields for white or non-white pupils and both groups actually showed some gains in the upper elementary grades. A public opinion survey commissioned by the Board of Education showed that while the community did not favor busing it had been accepted and parents, students, and teachers all had positive feelings about what was happening in schools.

In September 1975 Judge Fox conducted a pre-trial hearing on the Lansing desegregation case and asked for a total desegregation plan by October 14, 1975. The Board of Education developed several plans all of which were unsatisfactory to the court.

In October 1975 Judge Fox ordered a trial on the merits of the case. In December 1975 Judge Fox ruled that the Lansing School

District and its Board of Education had been guilty of acts of segregation in violation of the Constitution and laws of the United States and of the Constitution of the State of Michigan. He ordered the Board to submit to him by March 1, 1976, a comprehensive desegregation plan.

The Board was unable to agree on a plan so in May 1976 Judge Fox ordered the implementation of a desegregation plan submitted instead by the NAACP. The plan called for the addition of three new clusters containing a total of nine schools. The original three clusters were to continue but the grade structure was adjusted. Under the new plan all kindergarten students would remain in their home schools. One school in each cluster would house all fifth and sixth grade students of the cluster. The remaining schools in the cluster would divide the students in grades one through four between them.

The court ordered plan was to be implemented in September 1976. Schools opened in September without incident. The Board appealed the order of Judge Fox to the Court of Appeals where their appeal was denied and on to the United States Supreme Court, which refused to hear the appeal.[11]

The cluster plan ordered by Judge Fox is still operating in the Lansing School District but in September 1979 four elementary schools, including three cluster schools, were closed due to declining enrollment. The controversy surrounding this action added

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[11]"Elementary School Desegregation in Lansing, A Brief Summary," compiled by the Information Services Office, Lansing School District.

a variable to enrollment change which would make the continuation of this study beyond the 1978-79 school year impractical.

Purpose of the Study

The purpose of this study is to investigate:

1. If the rate of white loss increased or decreased significantly during the planning for and/or implementation of the Lansing School District desegregation plan. Does the pattern of white enrollment change vary from the pattern of non-white enrollment change over the same period?

2. If there is a relationship between white loss from a school in the Lansing School District and membership in a cluster. Is the relationship between membership in a cluster and enrollment change different for whites and non-whites?

3. If the tipping point has been a functioning concept in the Lansing School District's student enrollment patterns during the process of desegregation or subsequent to its implementation.

Importance of the Study

It is important that data concerning white flight and desegregation in the Lansing School District be added to the literature in the field, whether those data are in conflict with or supportive of data derived from other districts during a period of desegregation.

It is of special importance to this study to look specifically at those schools included in the clusters as compared to schools not

so included as the clusters constitute the major thrust of Lansing's desegregation plan.

There are three specific areas to be addressed in collecting these data:

1. The Lansing School District has experienced an increase in the percentage of non-white students and a decline in the percentage of white students in its enrollment since implementing a usable system for the collection of racial statistics in 1967. This has given the impression that desegregation efforts in the district did trigger a significant loss in the percent of white students. It is important to determine if this is true. It is also important to determine if the effects were the same or different for non-white student enrollment as for white enrollment.

2. The Lansing School District grouped those schools involved in the desegregation effort into several clusters. It is important to see if schools grouped into a cluster for desegregation purposes experience a greater percentage of white loss than schools not involved in a cluster. Further it is important to see if the effect is the same or different on non-white enrollment.

3. It is important to determine if individual schools in a school district such as Lansing, with an overall non-white enrollment under 30 percent at the time of desegregation, experience tipping when they pass 30 percent in non-white enrollment.

The Scope and Delimitation of the Study

The study is delimited as follows:

1. It will be limited to a study of the elementary schools (K-6) of the Lansing School District.

2. It will be limited to studying the rate and direction of change in both the non-white and white enrollment before, during, and following major desegregation.

3. It will be limited to the period beginning with the 1967-68 school year, when racial enrollment data are first available in usable form, through the 1978-79 school year.

Limitations of the Study

The study is limited by the following factors:

1. The inability to control completely for the variable of birth rate as it impacts enrollment changes.

2. The lack of census data, especially birth statistics, for the Lansing School District as a separate unit.

3. The lack of a clear, universally accepted, definition of ethnic/racial groups.

Definitions

Desegregation: For the purpose of this study desegregation is defined as the transfer of students in such a way that no school has less than 10 percent nor more than 45 percent minority enrollment.

Non-White (Minority): The Child Accounting Department of the Lansing School District classifies students as American Indian, Black, Asian, Latino, White, and Other. All students classified in any classification other than White are considered Non-White for purposes of this study. Non-White and Minority will be used interchangeably.

Cluster: The Lansing desegregation plan was based on grouping schools together into clusters. Elementary schools which fell outside of the 10 percent - 45 percent minority enrollment guidelines were grouped together in groups of from two to five schools. Each cluster is considered to be one school and students are assigned to a given building within the cluster based on their grade level. Generally one building in the cluster houses all fifth and sixth grade students and the other buildings house students in grades one through four. All kindergarten students remain in their home school.

Tipping: According to the literature when a school reaches a given percentage of non-white enrollment that school will tip non-white, that is the enrollment will rapidly approach 100 percent non-white. There is no true consensus on what percentage of non-white enrollment causes a building to tip, but the most often used figure is 30 percent. For purposes of this study 30 percent is used as the suspected tipping point.

Control Years: The control years will be the school years beginning with the 1967-68 school year through the 1971-72 school year. The 1967-68 school year was the first year for which usable racial[12] enrollment statistics are available for the Lansing schools. The 1971-72 school year is the last year prior to implementation of the desegregation plan of the Lansing elementary schools.

Desegregation Years: The desegregation years will be the school years following desegregation of the Lansing elementary

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[12]White and Non-White categories as defined on page 12 of this report.

schools beginning with the 1972-73 school year through the 1978-79 school year.

Hypotheses

There will be three major hypotheses tested in this study. These hypotheses are restated in testable form in Chapter III.

1. There will be significant change shown in the rate of enrollment change in Lansing elementary schools between the control years and the desegregation years.
2. Membership in a cluster will be shown to have a significant effect on enrollment change in Lansing elementary schools.
3. Tipping will be shown to be a factor in enrollment change in Lansing elementary schools since desegregation.

Overview of the Dissertation

Chapter II will contain a review of literature in two areas: the legal background for court ordered desegregation and related studies on the effect of desegregation on white loss from central city school districts.

Chapter III contains a description of the methods, sample and procedures used in the study.

Chapter IV contains an analysis of the results of the data generated from testing the hypotheses.

Chapter V contains the summary, discussion and conclusions drawn from the study.

CHAPTER II

REVIEW OF RELATED LITERATURE

The review of literature relevant to this study provides an overview in two areas. The first section traces the legal background for court ordered desegregation in a chronological order commenting on the implications of some of the major court decisions. The second section reviews some significant studies which have been done seeking to measure the effect of desegregation on white loss from central city school districts. While most of the existing studies deal only with black-white desegregation, care has been taken here to include and identify some studies which deal with non-white--white desegregation as this study will do.

Legal Background

The issue of school desegregation first gained national prominence in 1954 with the Supreme Court's ruling in Brown v. Topeka, 347 U.S. 483 (1954) later known as Brown I, overturning the separate but equal doctrine established by the court in Plessy v. Ferguson, 163 U.S. 537, 559 (1896).[1] In Brown I the court ruled that dual

[1] League of Women Voters, School Desegregation (Detroit: League of Women Voters in the Detroit Metropolitan Area, December 1972), p. 1.

school systems in the South based on race were unconstitutional. It remained for a second ruling by the court, however, to require the desegregation of dual systems. In Brown v. Board of Education II, 349 U.S. 294 (1955), the court ordered all states maintaining dual systems to desegregate "with all deliberate speed."[2]

Following the Brown decisions the court issued a number of decisions both clarifying and expanding the impact on school desegregation. In Cooper v. Aaron, 358 U.S. 1 (1958) the court ruled that the rights of children to attend integrated schools cannot be "frustrated or postponed because of violence, disruption or objection to integration."[3] In Green v. County School Board of Kent County Virginia, 391 U.S. 430 (1968), the court ruled that school districts with dual systems have an affirmative obligation to provide a unitary system "now."[4] The so called busing case, Swann v. Charlotte-Mecklenburg, 402 U.S. 1 (1971), established a number of remedies, including busing, which could be ordered by lower courts to eliminate segregation in schools.[5] Moving into the North for the first time in Keyes v. School District No. 1, 413 U.S. 189 (1973) the court stated that any present or past practice of a school district which

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[2]Ibid., p. 2.

[3]"Cooper v. Aaron," Current Education Law, Vol. 4, No. 3 (March 1974): 32.

[4]"Green v. County School Board of Kent County," Current Education Law, Vol. 4, No. 4 (April 1974): 37.

[5]Robert J. Simpson, "Desegregation Since Swann and Keyes," Current Trends in School Law (Topeka: The National Organization on Legal Problems of Education, 1973), pp. 179-180.

results in the establishment of racially identifiable schools even in the absence of statute, has the effect of creating a dual system which must be remedied.[6]

In each of the cases cited here, plus others similar in nature, the court has dealt with single districts. The issue of multi-district desegregation plans arose as central city school districts developed an increasingly higher percentage of minority enrollments while suburban school districts surrounding them remained primarily white. Two major cases have addressed this issue without fully clarifying it. In Bradley v. School Board, 412 U.S. 92 (1974) a divided Supreme Court let stand an Appeals Court decision that no "joint interaction" was found among the involved districts, Richmond, Chesterfield, and Henrico, Virginia. There was no unconsitutional act which demanded a multi-district solution.[7] In Milliken v. Bradley, 418 U.S. 717 (1974), the court again ruled out a multi-district remedy when it found that sufficient grounds had not been shown to prove discrimination or segregative intent on the part of the State of Michigan or 53 districts surrounding Detroit. The court did not, however, rule out the possibility of a multi-district plan where such intent could be shown.[8]

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[6]Lewis C. Bose, "After Keyes and Bradley: The Practicalities," Current Trends in School Law (Topeka: The National Organization on Legal Problems of Education, 1973), p. 193.

[7]Simpson, op. cit., p. 176.

[8]U.S. Commission on Civil Rights, Desegregation of the Nations Public Schools: A Status Report (Washington: U.S. Government Printing Office, 1979), pp. 2-6.

These cases, while certainly not all inclusive, do present a background for a study of white flight from urban school districts. It is not this author's intent to state or imply any relationship between white flight and the decisions of the United States Supreme Court. It would seem useful, however, to have a more complete understanding of the court cases cited above as a basis for assessing the effects of desegregation on white and minority enrollments in the schools.

The doctrine of separate but equal established by Plessy in 1896 actually concerned a railroad accommodations law from Louisiana, but it was applied to schools and led to the development of the dual, black and white, schools systems of the South.[9] A dissenting opinion by Justice Harlan in the Plessy case was a half-century ahead of its time. He said, "Our Constitution is color-blind, neither knows nor tolerates classes among citizens. In respect to civil rights, all citizens are equal before the law."[10]

It was not until 1954 and Brown I that Justice Harlan's views were reflected by the court in a school desegregation case. Brown I was actually a combination of four cases coming from Kansas, South Carolina, Virginia, and Delaware. Each of the four cases involved a black child requestion to attend a desegregated school.[11]

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[9]Robert J. Simpson, "Brown I: The Historical Perspective," NOLPE School Law Journal, Vol. 8, No. 2 (1979): 113.

[10]Ibid.

[11]"Brown v. Board of Education of Topeka (Brown I)," Current Education Law, Vol. 4, No. 3 (March 1974): 28.

In the Kansas case Linda Brown was denied the right to attend a white elementary school five blocks from her home and was required to attend a black school more than four times further away.[12] Kansas law permitted but did not require cities over 15,000 population to maintain separate school facilities for black and white children.[13] The court held that separate was not equal thereby initiating the era of school desegregation.[14]

While in Brown I the court ruled that dual school systems were unconstitutional, nothing much happened. A year later the court again entered the school desegregation arena with Brown II. In Brown II the court required all states maintaining dual systems to desegregate "with all deliberate speed."[15] To accomplish this end, the Supreme Court gave lower courts the authority to order remedies where dual systems existed. The lower courts were to take local interests into account when ordering remedies, but were not to allow those interests to prevent remedies.[16] It proved to be one thing to order a remedy and sometimes another to cause it to happen. In Little Rock, Arkansas, resistance to desegregation efforts became so violent that the Governor called out the National Guard and

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[12]H.C. Hudgins, Jr., "Brown and Public School Segregation: 25 Years Ago," NOLPE School Law Journal, Vol. 8, No. 2 (1979): 117.

[13]League of Women Voters, op. cit., pp. 1-2.

[14]Ibid.

[15]Ibid., p. 2.

[16]"Brown v. Board of Education of Topeka, Kansas (Brown II)," Current Education Law, Vol. 4, No. 3 (March 1974): 31-32.

declared Central High School off limits for black students.[17] As noted earlier the court ruled in Cooper that the rights of children to attend integrated schools cannot be "frustrated or postponed because of violence, disruption or objection to integration." The court ordered federal intervention in the Little Rock situation and ruled that federal forces could be used if necessary to enforce desegregation orders of the courts.[18]

In Green the court took another look at the responsibility of a school district which had operated a legally mandated dual system to act affirmatively to desegregate. The Kent County Virginia School District had operated a dual system with one elementary and one secondary school each for blacks and whites. Following Brown II the Kent County Board of Education adopted a freedom of choice plan allowing any student to attend the school of his/her choice. No white students transferred to the black schools and only 15 percent of the black students transferred to the white schools.[19] The court ruled that school districts with dual systems have an affirmative obligation to provide a unitary system "now." Freedom of choice was not prohibited by the court but the effectiveness of such a plan must be evaluated. In the case of Kent County freedom of choice was not enough and more affirmative action had to be taken.[20]

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[17] Ibid.

[18] Ibid.

[19] Green v. County School Board of Kent County," op. cit., pp. 35-36.

[20] Ibid.

The court continued to look at methods available to school districts to desegregate, and in the landmark Swann decision spelled out a number of remedies which could be ordered by lower courts. While Swann is often referred to as the busing case, the court did not mandate busing for desegregation. It did, however, allow the ordering of busing where necessary "to help create a unitary system" and where the distances involved were "reasonable."[21] The gerrymandering of attendance areas, the placement of new schools, and the assignment of staff in order to bring about desegregation were also remedies allowed by the court in Swann. The court did not require equal racial balance in all schools but did require that reasonable racial balance be achieved. The burden was placed on school officials to prove that racial imbalance is not a function of deliberate acts of discrimination, past or present.[22]

Swann, like the cases before it, dealt only with legally mandated dual systems operated in the South. Unlike its predecessors, however, Swann hinted at the possibility of the existence of illegal dual systems which were a function of school board actions and not legal mandate. In Swann, the court alerted the North to desegregation concerns when it said that while predominantly one race schools do not of themselves indicate segregative actions by a school

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[21]Robert J. Simpson, "Desegregation Since Swann and Keyes," Current Trends in School Law (Topeka: The National Organization on Legal Problems of Education, 1973), pp. 179-180.

[22]Bose, op. cit., p. 189.

district, their presence brings a presumption of such actions which school officials bear the burden to disprove.[23]

The court came north with Keyes. In looking at the Denver schools the court said that the day to day actions of a board of education can have the effect of creating a dual system even in the absence of statute. Where such actions as the placement of new schools, the drawing of attendance lines, and the assignment of staff results in racially identifiable schools, then it can be assumed that segregation is the result of such action and the Swann remedies must be applied.[24] The court further ruled in Keyes that where segregative intent is found in one part of a school district, there is a presumption of such intent in all other parts, so the remedies ordered may apply to the entire district.[25]

Metropolitan desegregation plans do exist as illustrated by the county districts in Florida and Jefferson County, Kentucky. These plans generally involve a school district co-existing with a single political unit. Efforts to cross district lines to formulate a desegregation plan have been a different story. In Bradley, the Supreme Court divided four-four to let stand an appeals court reversal of a district court's order for metropolitan desegregation.[26]

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[23]Martha M. McCarthy and L. Dean Webb, "Intra-District Desegregation Remedies," NOLPE School Law Journal, Vol. 8, No. 2 (1979): 130.

[24]Bose, op. cit., p. 193.

[25]McCarthy, op. cit., p. 132.

[26]U.S. Commission on Civil Rights, op. cit., p. 2.

The court of appeals found no "joint interaction" among the three districts involved, therefore, no unconstitutional act.[27] The court went on to say that the constitution does not require the imposition of a fixed racial quota as called for in the three district Richmond plan.[28]

In Milliken, the court, on a five-four vote, did not allow metropolitan relief for desegregation in the Detroit schools. The court ruled that sufficient grounds of discrimination or segregation intent on the part of the state or the 53 suburban districts was not established.[29] Milliken did not rule out inter-district relief, but required the showing of segregative intent on the part of the state or the suburban districts involved. The court has had only limited occasion to apply the test set in Milliken, so its real effect is still a matter of supposition.[30] An interesting opportunity to apply Milliken may be developing in the U.S. District Court, Western District of Michigan, Southern Division, where Judge Fox has ordered the Benton Harbor, Eau Claire, and Coloma school districts to develop a multi-district desegregation plan.

Related Studies

The opening round in the continuing debate over the relationship between school desegregation, especially where court ordered,

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[27] Simpson, op. cit., p. 176.

[28] "Inter-District Busing for Integration," Current Education Law, Vol. 3, No. 8 (November 1973): 226.

[29] U.S. Commission on Civil Rights, op. cit., p. 2.

[30] Ibid., p. 7.

and white flight came with a report by James Coleman in 1975.[31] Coleman stated a concern that:

> At the same time that school desegregation was occurring in many school districts of the country, an opposing trend was occurring in the segregation of white and Black children among school districts.[32]

This trend, he contends, is effectively resegregating schools as well as having a deleterious effect on those cities in which whites are leaving for the suburbs. The question to which Coleman directed his studies, therefore, was "whether this loss of whites from central city schools is accelerated when substantial desegregation takes place."[33]

Coleman's study, by his definition, included the 21 largest school districts in the nation and the 46 next largest. He measured the change in the number of white students in these districts between 1967 and 1973.[34] In a later study Coleman attempted to adjust for outmigration of whites not related to desegregation by projecting what the change in the number of white students would be without desegregation based on experience before desegregation occurred. He then compared this projection with the actual change in the number of white students when desegregation occurred.[35]

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[31]David J. Armor, White Flight Demographic Transition, and The Future of School Desegregation (Santa Monica: The Rand Corp., 1978), p. 1.

[32]James S. Coleman, "Liberty and Equality in School Desegregation," Social Policy, Vol. 6, No. 4 (Jan./Feb. 1976): 9.

[33]Ibid., p. 10.

[34]Armor, op. cit., pp. 3-4.

[35]Coleman, op. cit., p. 12.

Coleman concluded from his studies that desegregation does accelerate the loss of white students, particularly in those districts with a large proportion of black students where suburbs with largely white populations are available. This conclusion may be softened, however, by the possibility that the acceleration of white loss may be of short duration. The loss in the years following desegregation tend to be much smaller than during the actual year of desegregation.[36]

Coleman advocates three policy alternatives to correct the harmful effects of white flight from central cities. First he is concerned that the courts have tended to define all segregation as de jure. Coleman feels that segregation resulting from wholly individual actions, such as living patterns, is clearly de facto. His first policy alternative, therefore, is to correct truly de jure segregation only. He concedes that this would not stabilize central cities but it would end the acceleration of white flight.

The second policy alternative is to require the end of segregation in metropolitan areas by busing. Coleman believes that the nature of a metropolitan area limits the opportunity for whites to conveniently move to a non-affected area. He does indicate that some may still elect to move out of the metropolitan area or transfer their children to private schools.

The third policy alternative is to allow any child to attend any school in the metropolitan area, in his/her school district or

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[36] Ibid.

another, "that did not have a higher proportion of his/her race than the school to which he/she would be assigned." The receiving school could not refuse admittance as long as they did not exceed 20 percent of their enrollment from out of district students.[37]

Reynolds Farley is one of a number of sociologists who have conducted studies to determine if integration has been a major cause of white flight as claimed by James Coleman. In his study Farley included all cities with a population of 100,000 or more in 1970. From this list he deleted those cities where blacks made up 3 percent or less of the public school enrollment. This resulted in a study group of 50 southern and 75 northern cities.[38]

Farley's first step was to measure racial segregation in the schools of each city. A factor was established whereby a city with totally segregated schools was rated 100 while a city with totally desegregated schools was rated 0. The level of segregation was determined in 1967 and 1972.

The percentage of change in white enrollment for each city between 1967 and 1972 was calculated. It was assumed that if desegregation produces white flight, those districts whose segregation scores fell drastically should also have lost many white students. Farley tested to see if changes in white enrollment were related to changes in school segregation by drawing graphs for both the southern and the northern group of schools illustrating the relationship.

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[37]Ibid., p. 13.

[38]Reynolds Farley, "Is Coleman Right?" Social Policy, Vol. 6, No. 4 (Jan./Feb. 1976): 15.

For both areas the points on the graphs were widely scattered indicating no strong relationship between white flight and changes in school segregation.[39]

Since Coleman had stated that large cities were most likely to experience accelerated white flight due to desegregation, Farley looked specifically at the 20 largest cities located both in the North and the South. Once again the points on the graph were widely scattered indicating no significant relationship between white flight and school integration in large cities.

Farley also tested the hypothesis that districts which had a high proportion of black enrollment in 1967 would have a higher loss of whites in anticipation of integration. When looking at these schools there was a positive relationship, indicating that fear of integration in cities with high proportions of black enrollment did lead to white flight. It was pointed out, however, that these same cities may be characterized by high crime rates, unfavorable tax rates, and other problems making them less desirable to those able to leave.

Finally Farley tested a model with two variables, change in school segregation, and proportion of blacks in 1967.

> We speculated that whites would be particularly prone to leave public schools in those cities in which schools were integrated and the proportion of Blacks was high . . . .
>
> In neither South nor North did we find evidence supporting this hypothesis. That is using two

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[39]Ibid., p. 16.

> variables--change in school segregation and the proportion of Black students in 1967--proved no more effective in predicting changes in white enrollment than did using just the change in segregation.[40]

Farley concedes that the number of white students is declining in school districts with a high proportion of black students and that these tend to be central city districts. Many of these districts, however, because of migration patterns, became largely black before the introduction of busing for desegregation.

Farley concludes that desegregation is not a major cause of white flight. He believes that busing for desegregation is one good tool for the short run. In the long run he feels that changing attitudes can make possible residential integration and end the problem.

Christine Rossell is concerned that Coleman's results are due to a fundamental error in his measurement of the phenomenon of white flight.[41] She states that "just looking at the white enrollment before and after school desegregation . . . obscures the fact that while there may be a loss of whites incurred after school desegregation, it is usually no greater than losses incurred in previous years."[42] She is further concerned that Coleman's definition of school desegregation, as any situation where significant numbers of black and white children are in the same school at the

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[40] Ibid., p. 17.

[41] Christine H. Rossell, "School Desegregation and White Flight," Political Science Quarterly, Vol. 90, No. 4 (Winter 1975-76): 676.

[42] Ibid.

same time, obscures the effects of ghetto expansion. When a ghetto begins expansion into a previously white area the resultant school desegregation is "unstable and temporary."[43]

Rossell conducted a study of 86 northern school districts testing the concept that school desegregation contributes significantly to white flight. The school districts involved were, for the most part, medium to large city school districts. She defined school desegregation "as the reassignment of black or white students by a local governmental body or court for the purposes of school integration."[44]

Data was collected on the schools in each of the 86 districts showing the number of black and white students enrolled the first year of desegregation and the preceding year. The difference between the two years was attributed to administrative action if it contributed to increased integration. The percentage of black students reassigned and the percentage of white students reassigned was computed for each district. The two percentages were added together to form an index of desegregation for the district. The effect of school desegregation on white loss was determined by plotting the percentage of white loss for as many years before and after major desegregation as the enrollment data divided by race was available and testing the amount of change in rate for significance.[45]

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[43] Ibid., p. 679.

[44] Ibid.

[45] Ibid., pp. 678-680.

In looking at the results of this study Rossell grouped the 86 districts into five groups; court ordered, high desegregation (over 20 percent), medium desegregation (5-20 percent), low desegregation (under 5 percent), and a control group with no desegregation. She further divided the districts by city size maintaining the five groupings within each of three size classifications. The data obtained led Rossell to conclude that school desegregation does not significantly increase white loss even in large cities as Coleman claims. She does point out that such increase in white loss as is observed, occurs the year before implementation of major desegregation. Rossell advises school administrators to take this factor seriously and "concentrate their efforts on eliminating fear and controversy before the plan is implemented."[46]

In a later study of school desegregation and white flight in Boston, Rossell compared the rate of white loss before desegregation to the rate of white loss during and after desegregation. There was a significant increase in the rate of white loss which could be attributed to school desegregation for the two years following implementation. After two years, however, Rossell claims that the rate of white loss was no greater than before implementation of school desegregation. Indeed she felt that there was evidence that the pattern of white loss was reversing as white students return to Boston public schools from parochial schools.[47]

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[46] Ibid., p. 684.

[47] Christine H. Rossell, "Boston's Desegregation and White Flight," Integrated Education, Vol. 15 (Jan./Feb. 1977): 36-39.

Rossell states that despite claims to the contrary and in the face of "prolonged definance" by city leaders, white enrollment has stabilized in Boston. She says that her study shows that Boston has successfully and dramatically desegregated its schools with only a limited and temporary increase in the rate of white loss.[48]

Robert L. Green and Thomas F. Pettigrew took strong exception to the conclusions expressed by Coleman.[49] It is their contention that the Coleman studies do not show a true relationship between integration and white flight. The data, they say, actually suggests that white flight is a function of a "conditional relationship between desegregation in particular situations related to the percentage of black children in a large central city's public schools."[50]

Green and Pettigrew also dispute Coleman's contention that there is a massive loss of white students in the first year of desegregation. They claim that Coleman's data are unduly skewed by Memphis and Atlanta. Without these two "atypical southern cities," they contend, there is no evidence of the "massive" loss cited.

Green and Pettigrew accuse Coleman of ignoring factors not related to integration which effect white loss data. They point to declining white birth rates in particular along with "non-

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[48]Ibid., p. 39.

[49]Robert L. Green and Thomas F. Pettigrew, "Public School Desegregation and White Flight: A Reply to Professor Coleman," prepared for the United States Civil Rights Commission, Washington, D.C., December 8, 1975 (unpublished report).

[50]Ibid., p. 7.

educational urban problems that drive both white and black families out of the city."[51] They further claim that Coleman assumes that any white loss beyond the expected number was white flight due to integration. This assumption by Coleman, they state, was made without actually asking any white families why they moved.

The integrity of Coleman's research also comes under question by Green and Pettigrew. They point out that the 19 districts used by Coleman in his first study are not the largest 19 urban school districts in the nation. For example they claim that the Miami-Dade, Jacksonville-Duval, and Ft. Lauderdale-Broward districts in Florida are larger than several used by Coleman including the one Florida district Coleman used which was Tampa-Hillsborough. The inclusion of these districts could have changed the results.

In his second analysis Coleman added Denver and San Francisco to raise the number of largest districts to 21. These districts were added because in Coleman's judgment they were two of the few northern cities experiencing extensive desegregation. Green and Pettigrew feel that the addition of Denver and San Francisco while excluding Albuquerque, Nashville-Davidson, and Charlotte-Mecklenburg districts, which fit Coleman's criteria at least as well, had the predictable effect of reinforcing Coleman's earlier conclusions.

To test Coleman's conclusions Green and Pettigrew set up a model including Coleman's 21 largest districts plus Miami, Jacksonville, Ft. Lauderdale, Nashville, Albuquerque, Charlotte, Newark,

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[51] Ibid., p. 11.

Cincinnati, and Seattle. All of these districts exceed 75,000 students which they claim conform to Coleman's criteria.

The amount of desegregation from 1968 to 1973 and the percentage of white loss over these same years was computed for each of the 30 districts. To compare these two variables a graph was developed with four quadrants: "high desegregation and low loss of white students; high desegregation and high loss; low desegregation and low loss; and low desegregation and high loss."[52] To support Coleman's position the districts should fall predominantly in the high desegregation-high loss and the low desegregation-low loss quadrants.

When plotted on the graph there was no pattern. The points were scattered. Green and Pettigrew interpret this to mean no significant relationship exists between the amount of desegregation and white loss. They further point to Memphis, Atlanta, Denver, and San Francisco as districts which do fit Coleman's pattern. These four districts, they claim, had a great deal to do with the positive associations achieved by Coleman. The addition of the nine left out by Coleman eliminated that relationship.

In a second test Green and Pettigrew compared the 1968 black proportion of enrollment with white loss between 1968 and 1973. In this instance a relationship was shown. Those districts with a high proportion of blacks in 1968 experienced a high white loss by 1973. This relationship was not related to district size. These results

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[52]Ibid., p. 30.

are interpreted to show that level of desegregation and district size are not significantly related to white loss but that the proportion of black enrollment is a predictor of white loss.

A third test compared white losses and black gains in enrollment in the 30 districts studied by Green and Pettigrew. A negative correlation was established. As white losses increased, black gains decreased. In other words, black and white enrollments tend to rise and fall together. This would indicate that the same non-desegregation urban problems influence both white and black enrollments.

Green and Pettigrew state that the results of their studies lead to a conclusion that "starkly contrasts" from that of Coleman's. They conclude that when the nation's "truly largest" urban districts are studied in light of a five year trend there is no discernible relationship between desegregation and white loss. They also point out that what happens with black enrollments is also important and must be included in any careful study.

Michael W. Giles studied the stability of racial balance in one desegregated school district, Duval County, Florida.[53] Duval County is a metropolitan district which includes Jacksonville. It is the thirteenth largest school district in the nation with over 120,000 students, of which approximately 30 percent are black.[54]

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[53]Michael W. Giles, "Racial Stability and Urban School Desegregation," Urban Affairs Quarterly, Vol. 12, No. 4 (June 1977): 499-510.

[54]Ibid., p. 501.

The desegregation of Duval County schools took place in several stages. In May 1963 the federal district court ordered Duval to implement a modified freedom of choice plan. Under this plan students were given the right to transfer to any school within the district. By 1967 the court determined that freedom of choice was not working and ordered the school board to develop non-racial attendance patterns. That order was largely ignored and in 1970 the court ordered the school board to implement a desegregation plan. While this plan did have significant effect, over half of the black students were still in nearly all black schools by the end of the 1970-71 school year. The court then ordered a final, massive desegregation plan for the 1972-73 school year, which did eradicate the dual system of education in Duval County.

Giles theorized that whites might leave a desegregating school district at early stages of desegregation or during the years following implementation. To test this he collected data on the racial balances projected for 1972 and those actually observed for 1972. He also collected data on racial balance in 1974.

From his data Giles concluded that there was significant white loss, particularly at the elementary level, in anticipation of desegregation in 1972. Following desegregation, however, racial balance remained relatively stable. Most of the white loss could be accounted for by increases in the private school enrollments. Loss to the private schools tended to be temporary as indications were that students returned from private to public schools as they reached junior and/or senior high level.

Giles does point out that Duval is a geographically large district which does limit the ability of its population to avoid desegregation. He does not speculate further as to the effect this may have had on his study.

In a broader study covering seven Florida counties, Giles along with Everett Cataldo and Douglas Gatlin, looked at the impact of desegregation on private school enrollments. The seven counties involved were Dade (Miami), Duval (Jacksonville), Esambia (Pensecola), Lee (Ft. Meyers), Leon (Tallahassee), Manatee (Bradenton), and Palm Beach (West Palm Beach). They did find that private school enrollments grew by one third during the period of integration. Inasmuch as all Florida schools are county systems and all were desegregated between 1968 and 1972 there was no place for whites to flee except to private schools.[55]

Giles, et al., found that growth of private schools, while related to desegregation, did not occur uniformly throughout the seven counties. They found that a tipping factor operated. That is, when a public school reached a level of 30 percent black enrollment, the loss of white enrollment accelerated. They found that public schools with 29 percent or less black enrollment lost white students at the average rate of 2.4 percent per year. Schools with over 30 percent black enrollment lost white students at the average rate of 6.3 percent per year. They further concluded that busing or

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[55]Michael W. Giles, Everett F. Cataldo, Douglas S. Gatlin, "Desegregation and the Private School Alternative," Symposium on School Desegregation (August 1975), pp. 21-31.

the distance students were bused did not significantly impact white students leaving as along as the school involved had not reached the "tipping point" of 30 percent black enrollment. A final finding of their study was that white loss was not related to the racial views or upbringing of the families involved but that it is related to the families' ability to afford private school tuition.[56]

Luther Munford in a study done in Mississippi claims that tipping is not a true factor in white loss. He claims that a school population can pass 30 percent black enrollment without long range tipping as long as the population ratio of the community remains stable. White students may leave the school temporarily, but they will return. Munford claims that white loss is due to hostility and that the level of hostility is related to the community population ratio and not to school population.[57]

Charles Clotfelter studied the role of desegregation in the demand for private schools especially in relationship to the existence of a tipping point.[58] In his study Clotfelter viewed desegregation in the light of white and non-white rather than white and black as do most desegregation studies. He states that between 1961 and 1971 non-Catholic private school enrollment grew from 0.7 million

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[56]Ibid., p. 30.

[57]Luther Munford, "Schools that Quit Tipping in Mississippi," Symposium on School Desegregation (August 1975), pp. 33-42.

[58]Charles T. Clotfelter, "School Desegregation, 'Tipping,' and Private School Enrollment," The Journal of Human Resources, Vol. XI, No. 1 (Winter 1976): 28-49.

to 1.4 million with the largest growth coming in the South where the major desegregation efforts of that era took place. Clotfelter points out that metropolitan desegregation plans, which more often occur in the South, sharply restrict the availability of white suburbs for white flight. This leaves the private schools as the only viable route for white families to flee desegregation.

Clotfelter claims that there is no available evidence to support a contention that the rapid growth in private schools will reverse shortly after desegregation is accomplished and be replaced by a sharp decline. He points to Charlotte-Mecklenburg as an example of a school district where private school enrollment grew rapidly after desegregation was implemented and has remained high.[59] While Clotfelter believes that there is a positive relationship between the level of desegregation and private school enrollment, especially where white suburbs are not available, he was unable to establish a precise tipping point. This is due to additional factors identified by Clotfelter which impact upon a family's decision to move to a private school. Those factors include household income, attitude toward school desegregation, attitude toward private schools, and the cost of private schools. Clotfelter says that if all white households had equal incomes and identical preferences, a level of non-white enrollment could be predicted beyond which enrollment would tip and all whites would leave.[60] Due to the lack of uniformity

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[59]Ibid., p. 30.

[60]Ibid., p. 33.

among white households Clotfelter contends that there is no true tipping point. The results of his study led Clotfelter to conclude that the most which can be said is that white flight to private schools is insignificant for schools with an enrollment less than 25 percent non-white and schools that reach between 80 percent to 90 percent non-white enrollment will be abandoned by whites.[61]

Daniel U. Levine and Jeanie Keeny Meyer state that a review of literature established that there is general agreement that white flight, linked to desegregation, is most likely to occur in "large northern districts with a relatively high proportion of minority students surrounded by predominantly white suburban districts."[62]

They point also to a "major lesson" which emerges from current research as reported in the literature. That is the fallacy of lumping together school districts with greatly differing characteristics to try to determine patterns in white flight. Levine and Meyer feel that case studies of enrollment patterns in individual districts would be of value in seeing if the conclusions reached by researchers are confirmed by the "events at the level at which the phenomena in question actually occur." For this reason they chose to study the Kansas City, Missouri School District.[63]

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[61] Ibid., p. 45.

[62] Daniel U. Levine and Jeanie Keeny Meyer, "Level and Rate of Desegregation and White Enrollment Decline in a Big City School District," Social Problems, Vol. 24, No. 4 (April 1977): 451-462.

[63] Ibid., p. 454.

Levine and Meyer collected enrollment data on all 75 elementary schools in Kansas City for the period between 1956 and 1975. All desegregation in Kansas City during this period was natural in that there was no court order involved.[64]

The first question addressed was the relationship between the percentage of black enrollment and the increase in black enrollment. To answer the question the schools were arranged into three groups: (1) 15 to 29 percent black; (2) 30 to 45 percent black; (3) 46 to 60 percent black. The change in percentage of black enrollment was compared over two year periods from 1956-1975. It was found that those schools with a percentage of black enrollment between 15 - 29 "were more likely to remain stable, at least for the following two year period, than were schools with a higher percentage of black enrollment."[65]

Second, Levine and Meyer tested for a relationship between the percentage increase in black enrollment and an increase in black enrollment percentages the following years. The results did show a relationship. Those schools experiencing a 10 percent or more increase in a given two year period were more likely to have a large subsequent increase in percentage of black enrollment than were those schools which desegregated less rapidly.

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[64]Ibid., p. 455. The term "natural" is used by Levine and Meyer to connote an event that evolved without coercion by an external agency such as a court. The term "naturally" is used throughout this dissertation in the same way as Levine and Meyer have used it.

[65]Ibid., p. 455.

results indicated that those schools with a black enrollment percentage of over 30 percent had a much higher rate of white enrollment decline than schools enrolling less than 30 percent black.

Levine and Meyer concluded that their results were consistent with the conclusion that white enrollments decline more rapidly in schools with high percentages of black enrollment and/or where the percentage of black enrollment is increasing rapidly. They suggest that this should alert policy makers to take great care in determining the level and rate of desegregation to be obtained in districts like Kansas City if they wish to avoid accelerated white loss.[66]

Philip Cusick, David Gerbing, and Ernest Russell conducted a study of the causes of white flight from the Pontiac, Michigan School District following court ordered desegregation. The Pontiac schools were desegregated in September 1971, amid "heavy and very hostile opposition." By January 1972, the protests had diminished and the schools were operating on a desegregated basis.[67]

The authors surveyed a total of 406 white families, 193 of whom had moved out of the Pontiac School District between 1971 and 1975 and 213 of whom had remained in the school district.[68] Their

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[66]Ibid., p. 461.

[67]Philip A. Cusick, David W. Gerbing, and Ernest L. Russell, "The Effect of School Desegregation and Other Factors on the Decline of the White Population in an Urban Environment," Educational Administration Quarterly, Vol. 15, No. 2 (Spring 1979): 35-49.

[68]Ernest L. Russell, "A Study of Change and Conflict in Court Ordered Busing as a Means of School Desegregation in an Urban City School District," doctoral dissertation, Michigan State University, 1978, p. 87.

purpose was to determine which of several variables led to a family's decision to move or remain. The variables tested were:

> . . . the attitudes of these families toward (a) busing for desegregation, (b) blacks, (c) urbanism, a category which encompasses living conditions and the quality of public services in Pontiac.[69]

They also included a category entitled personal.

The results of the study indicated that no connection could be made between the attitudes of white families toward busing for desegregation and moving. A dislike of busing was common to both those who moved and those who stayed. Attitudes toward the Pontiac schools showed only a moderate causal relationship to moving. Fear for the safety of their children did not prove to be a factor in the decision to move, although those who did move evidenced a reduction of fear.[70]

The underlying reason shown for white families leaving Pontiac was their displeasure with urban living. There was also an indirect relationship between moving and anti-black attitudes which contributed to the family's unhappiness with urban living.[71]

The authors concluded from their study that "busing should not be regarded as an excuse for white flight." They state that the study actually points to the need to create an "attractive urban environment" and a society free from racism if white flight is to be ended. They concede that this is not a simple goal.[72]

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[69] Ibid.

[70] Cusick, et al., op. cit., p. 47.

[71] Ibid., p. 49.

[72] Ibid.

David J. Armor undertook a study to attempt to resolve some of the questions raised by the debate raging over the Coleman studies on white flight. In his study Armor, like Clotfelter, defines minorities as non-white rather than black. Armor states that if white flight is caused by racial prejudice then mandatory desegregation plans may be the best solution. If, however, white flight is caused not by prejudice but by the reassignment of children away from neighborhood schools, then voluntary plans may be more appropriate.[73]

Armor cites extensively from Coleman's studies as well as answering the studies by Farley and Rossell. He also mentions the study by Green and Pettigrew but feels that it contributes little that is new or of value.

Armor describes the Coleman and Farley studies essentially as they are related earlier in this paper. He does find some fault with these studies by claiming that both Coleman and Farley consider only the amount and not the type of desegregation. Armor does not feel that court ordered and other types of desegregation can be compared. He also feels that neither Coleman nor Farley adequately consider normal white outmigration and the decline in white birth rate. Finally Armor is not satisfied that the long range effects of desegregation on white loss were considered due to the time factor involved in the studies.[74]

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[73]Armor, op. cit., p. 1.

[74]Ibid., pp. 3-6.

Looking at the Rossell study Armor is critical of the fact that Rossell used percent of white enrollment which he feels fails to adequately consider number of whites. He points out that if black enrollments grow and white enrollments are stable, the percent of white declines. He also accuses Rossell of disregarding other factors such as desegregation efforts prior to court ordered desegregation.[75]

In doing his study Armor included only those school districts implementing a court ordered desegregation plan. He further limited his study to districts with over 20,000 students and greater than 10 percent minority enrollment. This yielded him a total of 54 districts. Armor grouped the 54 districts he studied in a number of ways; northern districts, southern districts, districts with suburbs, districts without suburbs, and by percent minority enrollments.[76]

Armor grouped the Florida districts together due to their unique situation. All Florida school districts are county wide and the fact that the state has ordered all districts to desegregate means that there is no place to go for white flight except to leave the state or go to a private school. As a result of this, according to Armor, the Florida group is the only one where most districts continue to show white enrollment gains.[77]

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[75]Ibid., pp. 6-8.

[76]Ibid., p. 10.

[77]Ibid., p. 17.

In order to take into account demographic factors, such as birth rate and outmigration, Armor projected the expected white loss for each district based on pre-desegregation experience. His study showed that actual white loss exceeded the expected white loss following the implementation of desegregation in all groups outside of Florida. The first year after desegregation showed the greatest white loss. In the first year white losses were from two to four times greater than expected in most districts. As long as four years after desegregation white losses continued to range from 1.5 to 2.5 times greater than expected in districts with a minority enrollment of more than 20 percent and where white suburbs were available. Districts with a minority enrollment of less than 20 percent and/or no white suburbs had significant lower white loss after the initial loss of the first year following desegregation. There was not a significant difference between northern and southern school districts.[78]

To study white flight in metropolitan districts which are desegregated outside of Florida, the Louisville-Jefferson County School District was used by Armor. White loss was over 3.5 times greater than projected the first year following desegregation but dropped to 1.5 to 2 times greater the next two years. Most of the white loss could be accounted for by gains in private schools. Armor states that this loss may be temporary as students leave the private schools to return to public schools.[79]

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[78]Ibid., pp. 18-30.

[79]Ibid., p. 39.

Armor concedes that there is a natural decline of white enrollment in central city districts due to decline in white birth rate and white outmigration. He interprets his study to show, however, that white loss is significantly accelerated by mandatory desegregation which includes busing whites to minority schools, especially where the minority enrollment exceeds 20 percent.

In citing studies by himself and others Armor purports to show a receptivity on the part of most whites to desegregation as long as it does not require their children to be transported. He sees resistance to mandatory busing as reflecting a strong white belief in neighborhood schools. Whites also believe, he says, that forced desegregation does not improve educational opportunity for whites or minorities and does not improve racial interaction. Whites also fear that forced desegregation will increase discipline problems and racial tensions. In light of this Armor sees voluntary plans as the only real hope for desegregation without resegregation through accelerated white flight.[80]

Several researchers and, in particular Giles,[81] point out that there are often several stages to desegregation. There is the period when it is rumored, when a court case is in progress, when a court order is pending, etc. In addition a district may desegregate only a portion of their schools at one time such as only the

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[80]Ibid., pp. 46-47.

[81]Giles, op. cit., pp. 501-502.

elementary schools. Armor was critical of several studies for failing to take such factors into consideration.[82]

The pattern of outmigration from central cities to the suburbs is not a new phenomenon. Robert Weaver, writing for the U.S. Commission on Civil Rights, claims that the movement of the more affluent from central cities and the resultant concentration of poor has long characterized urban life. This move to the suburbs was for many years disguised by the fact that cities extended their boundaries far out and the suburbs were built within the city limits.[83] The move to the suburbs does have the flavor of social class according to Weaver. The status image of have "arrived" socially by moving to the suburbs is held by both city and suburban residents. This attitude is essential to the continued dynamism of the suburban process.[84]

Americans, Weaver points out, have never had any great love for the city. The city is associated with vice while home ownership and a small town constitute virtue. The best accommodation to this concept and economic reality is the suburb. This is especially true with the improved transportation facilities and highways available to simplify movement between central cities and suburbs.[85]

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[82]Ibid., pp. 46-47.

[83]Robert C. Weaver, "The Suburbanization of America," School Desegregation: The Courts and Suburban Migration. A Consultation Sponsored by the U.S. Commission on Civil Rights, Washington, D.C., December 8, 1975, p. 6.

[84]Ibid., p. 33.

[85]Ibid., pp. 26-35.

Increased economic prosperity has allowed many additional persons to join the affluent in the fulfillment of their desire to move to the suburbs. Weaver claims that this movement, because of the fact that at the same time there was a movement of readily identifiable minority persons into the central city, was interpreted as white flight and was attributed to racism. He believes, however, that while racism may have speeded suburbanization, more importantly it has obscured the fact that it would have occurred in any event with the same zoning barriers to keep out low income families.[86]

Summary

In summary, the studies reviwed seem to agree that there is white loss from central city school districts and that white loss is greatest in those cities with a large black population. Beyond that the agreement ends. Coleman and Armor connect white loss to school desegregation saying that the availability of largely white suburbs is a factor in increasing white loss from central cities experiencing desegregation. Coleman indicates that white loss may be largely limited to the year of desegregation. Armor disputes this saying that his study shows a reduced but continuing white loss related to desegregation for at least four years following the year of desegregation.

Tipping is another concept related to desegregation by the literature. Giles identifies 30 percent minority enrollment as a tipping point beyond which white loss accelerates rapidly. Levine,

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[86]Ibid., p. 41.

et al., agree with Giles that 30 percent minority enrollment does constitute a tipping point. Clotfelter agrees that a tipping factor might well exist, but he feels that too many factors are involved to allow the identification of a precise tipping point.

Farley, Rossell, Green and Pettigrew do not agree that white loss can be related to school desegregation. They feel that their studies, in fact, show no such relationship. They point to other factors such as declining white birthrate, negative perceptions of urban life, and natural outmigration from central cities as the actual causes of white loss. Green and Pettigrew also point to a movement of black families out of central city districts claiming that it is unlikely that their movement is designed to escape school desegregation.[87]

Gary Orfield, writing in Social Policy, reinforces Green and Pettigrew's final point.[88] He states that "minority groups themselves are beginning to flee very rapidly where they are able to buy suburban housing." He feels that this is not an effort to flee contacts with blacks but a response to the problems of city life and the attractions of the suburbs.

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[87]Green and Pettigrew, op. cit., p. 11.

[88]Gary Orfield, (No Title), Social Policy, Vol. 6, No. 4 (Jan./Feb. 1976): 24-29.

CHAPTER III

METHODS AND PROCEDURES

Population

The population of the study consists of the total elementary (K-6) enrollment of the Lansing School District from the 1967-68 school year through the 1978-79 school year.

Procedures

The data for this study have been enrollment statistics for the years of the study. The Lansing School District maintains two major enrollment records which were used as the source of the enrollment data, the Fourth Friday Enrollment Report and the Ethnic Count Report.

The Fourth Friday Enrollment Report is a state required report of the enrollment of the school district on the fourth Friday following Labor Day. This report is the basis for determining the amount of state aid that a district is to receive. Because of its importance the Fourth Friday Enrollment Report is audited yearly by the State Department of Education. The Fourth Friday Enrollment Report is, therefore, the most accurate enrollment report available in the school district. Whenever practicable, enrollments from year to year are compared on the basis of the Fourth Friday Enrollment

Report. In this way one is dealing with carefully maximized enrollment data taken at the same point in the school year each year.

The Ethnic Count Report is produced a minimum of two times a year, once at Fourth Friday and once at the beginning of the second semester in January. It is also produced at other times on a needs basis. This report shows the number and percent of students in each school in the district by race. Using the fourth Friday Ethnic Count Report, the number of white and non-white elementary students was determined for each year of the study (see Table 1).

Using the same data source the number and percent of change for both white and non-white enrollments was plotted for each year of the study (see Table 2).

In order to examine the effect of clustering on enrollments the six clusters[1] were divided into three groups based on the year they were implemented. Group one was implemented in September 1972 and includes clusters one and two; group two in September 1973 and includes cluster three only; and group three was implemented in September 1976 and includes clusters four, five, and six. A fourth group was developed which included all of those elementary schools which were never included in a cluster. Two schools, Barnes from cluster one and High from cluster three, were dropped from their clusters in September 1976 but for purposes of this study they were treated as continuing members of their clusters. One school, Kendon,

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[1]See Appendices A, B, and C for a listing of the Clusters and maps showing the location of the schools in each cluster and the non-cluster schools.

Table 1.--Fourth Friday Elementary Ethnic Count.*

Year	RACE	
	White	Non-White
1967-68	15766	2878
1968-69	15730	3213
1969-70	15538	3466
1970-71	15036	3869
1971-72	14516	4186
1972-73	13619	4456
1973-74	12743	4577
1974-75	12080	4819
1975-76	11905	4892
1976-77	11412	4923
1977-78	10620	5056
1978-79	9927	5065

*Taken from the Fourth Friday Ethnic Count reports of the Lansing School District, 1967-78.

was added to cluster two in September 1976 but for purposes of this study Kendon's enrollment was not included in any of the four groups. Using the fourth Friday Ethnic Count Report the white and non-white enrollment of each group was charted for the years of the study (Tables 3 through 6).

To determine the presence of a tipping factor in the Lansing elementary schools, the percent of non-white students was listed

Table 2.--Number and Percent of White and Non-White Enrollment Change.*

Year	White	Change	Percent Change	Non-White	Change	Percent Change
1967-68	15766			2878		
1968-69	15730	- 36	0	3213	+335	11.6
1969-70	15538	-192	1.2	3466	+253	7.9
1970-71	15036	-502	3.3	3869	+403	11.6
1971-72	14516	-520	3.5	4186	+317	8.2
1972-73	13619	-897	6.2	4456	+270	6.5
1973-74	12743	-876	6.4	4577	+121	2.7
1974-75	12080	-663	5.2	4819	+242	5.3
1975-76	11905	-175	1.4	4892	+ 73	1.5
1976-77	11412	-493	4.1	4923	+ 31	0.6
1977-78	10620	-792	6.9	5056	+133	2.7
1978-79	9927	-693	6.5	5065	+ 9	0.1

*Taken from the Fourth Friday Ethnic Count reports of the Lansing School District, 1967-78.

Table 3.--Group 1, Clusters I and II Implemented September 1972.*

Year	RACE	
	White	Non-White
1967-68	2550	666
1968-69	2506	674
1969-70	2435	777
1970-71	2389	767
1971-72	2242	755
1972-73	1986	742
1973-74	1786	709
1974-75	1704	705
1975-76	1665	735
1976-77	1528	839
1977-78	1456	846
1978-79	1321	815

*Taken from the Fourth Friday Ethnic Count reports of the Lansing School District, 1967-78.

Table 4.--Group 2, Cluster III Implemented September 1973.*

Year	RACE	
	White	Non-White
1967-68	1330	401
1968-69	1330	398
1969-70	1292	442
1970-71	1228	461
1971-72	1198	470
1972-73	1081	508
1973-74	1069	485
1974-75	955	505
1975-76	933	513
1976-77	875	497
1977-78	788	524
1978-79	828	512

*Taken from the Fourth Friday Ethnic Count reports of the Lansing School District, 1967-78.

Table 5.--Group 3, Clusters IV, V, and VI Implemented September 1976.*

Year	RACE	
	White	Non-White
1967-68	2997	606
1968-69	2947	712
1969-70	2887	782
1970-71	2678	826
1971-72	2513	873
1972-73	2380	863
1973-74	2228	850
1974-75	2041	868
1975-76	2019	822
1976-77	1905	884
1977-78	1672	886
1978-79	1598	854

*Taken from the Fourth Friday Ethnic Count reports of the Lansing School District, 1967-78.

Table 6.--Group 4, Non Clusters.*

Year	RACE	
	White	Non-White
1967-68	8390	780
1968-69	8491	1202
1969-70	8470	1331
1970-71	8409	1775
1971-72	8260	2048
1972-73	7845	2303
1973-74	7352	2498
1974-75	7064	2700
1975-76	6985	2783
1976-77	6801	2673
1977-78	6449	2768
1978-79	5979	2855

*Taken from the Fourth Friday Ethnic Count reports of the Lansing School District, 1967-78.

for each school as of the fourth Friday in September 1976. This was the first fourth Friday Ethnic Count Report following the completion of the desegregation program in the Lansing elementary schools. The percent of non-white enrollment for each school was also recorded for January 1979. This was the last Ethnic Count Report completed during the period of the study. A school's membership or non-membership in a cluster was not considered. The change in percent of non-white enrollment for each school was computed (Table 7).

Design and Methodology of the Study

The experimental design used in this study was a regression-discontinuity analysis as described by Campbell and Stanley.[2] The key to this design is the imposition of an event at a specific point in time which is suspected to produce a discontinuity in a regression line. In the case of this study that event was the implementation of desegregation and the effect that it had on enrollment change. Campbell and Stanley state:

> Perhaps the most efficient test would be a covariance analysis, in which the award-decision score would be the covariate of later achievement, and award and no-award would be the treatment.[3]

In this study covariance analysis was used with time the covariate of enrollment change and desegregation the treatment.

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[2]Donald T. Campbell and Julian C. Stanley, Experimental and Quasi-Experimental Designs for Research (Chicago: Rand McNally College Publishing Company, 1963), p. 62.

[3]Ibid.

Table 7.--Change in the Percent of Non-White Enrollment from September 1976 to January 1979.*

Schools	Percent Non-White Sept. 1976	Percent Non-White Jan. 1979	Percent Change
District	30	34	4
Allen	30	32	2
Attwood	21	21	0
Averill	23	24	1
Barnes	21	20	-1
Bingham	31	39	8
Cavanaugh	30	37	7
Cumberland	34	37	3
Elmhurst	23	28	5
Everett	36	44	8
Fairview	22	27	5
Forest View	22	22	0
Foster	17	22	5
Franks	39	41	2
Genesee	31	40	9
Gier Park	35	38	3
Grand River	39	33	-6
Gunnisonville	27	30	3
High	43	52	9
Holmes	43	44	1
Horsebrook	31	41	10
Kendon	28	32	4
Lewton	30	35	5
Lyons	6	12	6
Main	38	52	14
Maple Grove	21	26	5
Maple Hill	33	37	4
Maplewood	24	30	6
Moores Park	39	44	5
Mount Hope	30	32	2
North	14	16	2
Northwestern	32	44	12
Oak Park	33	35	2
Pleasant Grove	24	23	-1
Pleasant View	40	44	4
Post Oak	28	33	5

Table 7.--Continued.

Schools	Percent Non-White Sept. 1976	Percent Non-White Jan. 1979	Percent Change
Reo	30	36	6
Riddle	45	40	-5
Sheridan Rd.	22	25	3
Valley Farms	31	32	1
Verlinden	38	43	5
Wainwright	38	46	8
Walnut	50	47	-3
Wexford	31	43	12
Willow	36	40	4
Woodcreek	29	44	15

The study was designed to answer three major questions:

1. What has been the effect of desegregation on elementary enrollment in the Lansing School District?

This question involved the study of three factors: (a) was there a significant amount of white enrollment loss which could be attributed to desegregation?; (b) did the non-white enrollment fluctuate in the same way or in a different way as the white enrollment over the period of the study?; (c) was there a difference in enrollment change during the first three years of desegregation and the following years for either or both white and non-white enrollments?

The time period of the study was divided into two major divisions. The first division covered the school years from 1967-68 through 1971-72. This was the period prior to the beginning of major desegregation and was designated as the control period. The second division covered the school years from 1972-73 through

1978-79 and was designated as the desegregation period. The desegregation period was further divided between the first three years following desegregation and the balance of the period.

There has been continued loss of students from the Lansing School District due to outmigration during the period of the study. The pattern of loss due to outmigration was reflected during the control period, and differences between the rate of enrollment change during the desegregation years as compared to the control years was considered to be due to desegregation. Enrollment decline over the period of the study was also directly affected by the declining birth rate. According to statistics compiled and published by the Michigan Department of Public Health, the number of live births per year peaked in 1957 and have shown a declining trend until 1977. During this period while white births have tended to decline, non-white births have tended to increase. In 1957 non-white births made up 11.3 percent of the live births in Michigan. By 1977 the percent of live births in Michigan which were non-white had risen to 17.6 percent. Michigan Department of Public Health statistics are not available for the Lansing School District or the City of Lansing, but they are available for Ingham County beginning with the year 1970. Inasmuch as the Lansing School District does comprise approximately one-half of the school enrollments of Ingham County, the live birth data for Ingham County bear more directly on Lansing enrollments than the over-all state data. It should be pointed out that the Lansing School District does extend beyond Ingham County into small portions of Eaton and Clinton Counties, but nearly all

of the non-white students of the school district reside in Ingham County. As can be seen in tables 8 and 9, non-white births in Ingham County in 1970 totaled 506, or 9.4 percent of the total live births. In 1977 non-white births had declined slighted to 492 but represented 11.3 percent of the total live births in the county. During this same period white births declined from 4,890 or 90.6 percent in 1970 to 3,865 or 88.7 percent of the total live births in Ingham County. The effect of this changing birth pattern was felt in the elementary schools by 1967, the beginning of the control period. To control for these factors a regression-discontinuity technique was used to identify changes in rate due to desegregation.

Using the Statistical Package for the Social Sciences (SPSS)[4] to obtain an analysis of covariance, the differences between the rate of white enrollment change during the desegregation years and the control years were measured. Differences between the rate of non-white enrollment change during the desegregation years and the control years were measured in the same way. Significance was set at the .05 level.

The rate of both white and non-white enrollment change was further measured to see if the rate of change for either group varied significantly during the first three years of desegregation as compared to the control years or the later desegregation years. Significance was set at the .05 level.

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[4]Norman H. Nie et al., Statistical Package for the Social Sciences (Second Edition; New York: McGraw-Hill Book Company, 1975), pp. 398-433.

Table 8.--Frequency of Total Live Births in Ingham County by Age and Ethnic/Racial Characteristics of the Mother, 1970-1977.

Age Cohorts	YEAR															
	1970		1971		1972		1973		1974		1975		1976		1977	
	W	NW*	W	NW	W	NW	W	NW	W	NW	W	NW	W	NW	W	NW
All Ages	4890	506	4561	507	4043	538	3748	430	3640	459	3495	456	3656	458	3865	492
Under 15	8	1	6	2	4	11	6	5	9	2	14	5	7	4	8	6
15 - 19	768	141	706	134	676	131	637	107	594	133	516	109	520	109	522	108
20 - 24	2070	193	1897	195	1549	197	1427	157	1321	138	1253	169	1306	155	1419	167
25 - 29	1395	109	1361	110	1240	117	1172	102	1237	116	1202	108	1295	127	1317	131
30 - 34	476	36	434	48	412	61	389	41	382	52	390	49	428	48	487	57
35 - 39	134	20	119	12	131	16	99	15	78	13	104	12	91	13	94	19
40 - 44	37	5	37	3	27	5	17	3	17	4	15	4	9	2	14	4
Over 45	1	1	1	2	4	0	0	0	2	0	1	0	0	0	3	0
Not Stated	1	0	0	1	0	0	1	0	0	1	0	0	0	0	1	0

*Michian Department of Public Health Statistics identify race characteristics as "White," "Black," "American Indian," and "All Others." Non-White, in this instance, refers to all categories other than white.

This table is adapted from Table 26 BP, "Live Births by County: Selected Characteristics by Age of Mother, Michigan Residents, 1970-1977." Lansing, Michigan: Office of Vital and Health Statistics, Michigan Department of Public Health P04705-01, 1977 (for the County of Ingham), p. 33.

Table 9.--Percentage of Total Live Births in Ingham County by Age and Ethnic/Racial Characteristics of the Mother, 1970-1977.

Age Cohorts	YEAR															
	1970		1971		1972		1973		1974		1975		1976		1977	
	W	NW*	W	NW	W	NW	W	NW	W	NW	W	NW	W	NW	W	NW
All Ages	90.6	9.4	90.0	10.0	88.3	11.7	89.7	10.3	88.8	11.2	88.5	11.5	88.9	11.1	88.7	11.3
Under 15	0.1	0	0.1	0	0.1	0.2	0.1	0.1	0.2	0	0.4	0.1	0.2	0.1	0.2	0.1
15 - 19	14.2	2.6	13.9	2.6	14.8	2.9	15.2	2.6	14.5	3.2	13.1	2.8	12.6	2.6	12.0	2.5
20 - 24	38.4	3.6	37.4	3.8	33.8	4.3	34.2	3.8	32.2	3.4	31.7	4.3	31.7	3.8	32.6	3.8
25 - 29	25.9	2.0	26.9	2.2	27.1	2.6	28.1	2.4	30.2	2.8	30.4	2.7	31.5	3.1	30.2	3.0
30 - 34	8.8	0.7	8.6	0.9	9.0	1.3	9.3	1.0	9.3	1.3	9.9	1.2	10.4	1.2	11.2	1.3
35 - 39	2.5	0.4	2.3	0.2	2.9	0.3	2.4	0.4	1.9	0.3	2.6	0.3	2.2	0.3	2.2	0.4
40 - 44	0.7	0.1	0.7	0.1	0.6	0.1	0.4	0.1	0.4	0.1	0.4	0.1	0.2	0	0.3	0.1
Over 45	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0.1	0
Not Stated	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*Michigan Department of Public Health Statistics identify race characteristics as "White," "Black," "American Indian," and "All Others," Non-White, in this instance, refers to all categories other than White.

This table is adapted from Table 26 BP, "Live Births by County: Selected Characteristics by Age of Mother, Michigan Residents, 1970-1977," Lansing, Michigan: Office of Vital and Health Statistics, Michigan Department of Public Health PO 4705-01, 1977 (for the county of Ingham), p. 33.

2. Does membership in a cluster have a significant effect on enrollment change in Lansing elementary schools?

The Lansing elementary schools were divided into four groups, (a) schools never placed in a cluster since they were naturally desegregated by the make up of the neighborhood they served, (b) schools placed in a cluster beginning with the 1972-73 school year, (c) schools placed in a cluster beginning with the 1973-74 school year, and (d) schools placed in a cluster beginning with the 1976-77 school year. One school was omitted as it was added to an existing cluster in the 1976-77 school year.

Utilizing the SPSS, a two by two analysis of covariance was used to compare the difference in both white and non-white enrollment changes between the years prior to clustering and the years after clustering for each group of cluster schools. The experience of each group of cluster schools was compared to the non-cluster or control schools for the same time spans. In this case two independent variables were involved, desegregation and membership in a cluster. Enrollment change remained the dependent variable and time the covariate. The analysis was used to test the significance of the interaction between the effects of desegregation and membership in a cluster. Significance was set at the .05 level.

3. Has tipping been a factor in the Lansing elementary schools since implementation of the final desegregation plan? Have those schools with 30 percent or more non-white enrollment in September 1976 experienced a more rapid increase in percent of non-white enrollment than those schools with 29 percent or less non-white enrollment in September 1976?

The Lansing elementary schools were placed into two groups, those with 30 percent or more non-white enrollment in September 1976, the time of the implementation of the final desegregation plan, and those schools with 29 percent or less non-white enrollment in September 1976. The change in the percent of non-white enrollment between September 1976 and January 1979, the latest usable data available, was computed for each school.

Utilizing SPSS the least squares analysis was used to compute a regression line showing the relationship between the change in enrollments with initial enrollment. Analysis of covariance was used to compare schools in the two groups with percent of minority enrollment in 1976 the covariate of the percentage of change in non-white enrollment. The independent variable was whether the enrollment was plus or minus 30 percent minority in 1976. Significance was set at the .05 level.

Hypotheses

Analysis of covariance will be used to test the following hypotheses.

General Hypothesis I

There will be significant change shown in the rate of enrollment change in Lansing elementary schools between the control years and the desegregation years.

Operational HIa: There will be significant difference ($\alpha \leq .05$) between the rate of white enrollment change during the control years and during the desegregation years.

Operational HIb: There will be significant difference ($\alpha \leq .05$) between the rate of non-white enrollment change during the control years and during the desegregation years.

Operational HIc: There will be a significant difference ($\alpha \leq .05$) between the rate of white enrollment change during the first three years of desegregation, the 1972-73 school year through the 1974-75 school year, and the following years.

Operational HId: There will be a significant difference ($\alpha \leq .05$) between the rate of non-white enrollment change during the first three years of desegregation, the 1972-73 school year through the 1974-75 school year, and the following years.

Two by two analysis of covariance will be used to test the following hypotheses.

General Hypothesis II

Membership in a cluster will be shown to have a significant effect on enrollment change in Lansing elementary schools.

Operational HIIa: There will be a significant difference ($\alpha \leq .05$) in the rate of white enrollment change between schools made members of a cluster and schools not in a cluster.

Operational HIIb: There will be a significant difference ($\alpha \leq .05$) in the rate of non-white enrollment change between schools made members of a cluster and schools not in a cluster.

Analysis of covariance will be used to test the following hypothesis.

General Hypothesis III

Tipping will be shown to be a factor in enrollment change in Lansing elementary schools since desegregation.

Operational HIIIa: There will be a significant difference ($\alpha \leq .05$) between the rate of increase in percent of non-white enrollment in schools with 30 percent or more non-white enrollment and schools with 29 percent or less non-white enrollment in September 1976 between September 1976 and January 1979.

Summary

Enrollment data from the Lansing elementary schools was gathered for the period beginning with the 1967-68 school year through the 1978-79 school year. The enrollments were separated into white and non-white. The time period was separated into two parts, pre-desegregation and post-desegregation. The enrollment data was analyzed to see if the desegregation activities for the Lansing School District had an impact on the rate of enrollment change in the elementary schools of the district.

Analysis of covariance was used in accordance with the quasi-experimental design of regression-discontinuity described by Campbell and Stanley.[5] The purpose of this design was to determine if the implementation of desegregation at a specific point in time had the effect of producing a discontinuity in a regression line of enrollment change at that point in time.

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[5]Campbell and Stanley, loc. cit.

CHAPTER IV

FINDINGS

The findings in this chapter are presented in keeping with the procedures outlined in Chapter III. The data used to test the hypotheses outlined in Chapters I and III will be presented in this chapter as well as other related findings.

The hypotheses were stated to find out whether (1) desegregation efforts in the Lansing School District had a significant effect on the rate of enrollment change in the elementary schools; (2) membership in a cluster made a significant difference in the rate of enrollment change; (3) there is a tipping point which functions in the elementary schools in the Lansing School District. The hypotheses were further stated to determine if any effects on enrollment change identified were different for white and non-white students.

Hypothesis I

General hypothesis I dealt with enrollment change in the Lansing elementary schools as that enrollment change related to the desegregation efforts of the district.

Operational Hypothesis Ia

In operational hypothesis Ia the rate of white enrollment change for the pre-desegregation or control years was compared to the rate of white enrollment change for the post-desegregation years. The operational hypothesis states:

> There will be significant difference ($\alpha \leq .05$) between the rate of white enrollment change during the control years and during the desegregation years.

The data confirm operational hypothesis Ia and show that the rate of enrollment decline was significantly higher after desegregation than before desegregation.

Discussion.--The white enrollment for each year of the study was used to plot a multiple regression line for the control and desegregation years. As illustrated in Figure 1, discontinuity in the regression line was shown at the point of treatment, implementation of desegregation. Analysis of covariance confirmed the fact that the increase in the rate of white loss following the implementation of desegregation was significant at the .05 level. That is, the rate of white loss after the implementation of desegregation was significantly greater than it had been during the years preceding desegregation indicating that there was a relationship between the implementation of desegregation and an increase in the rate of white loss.

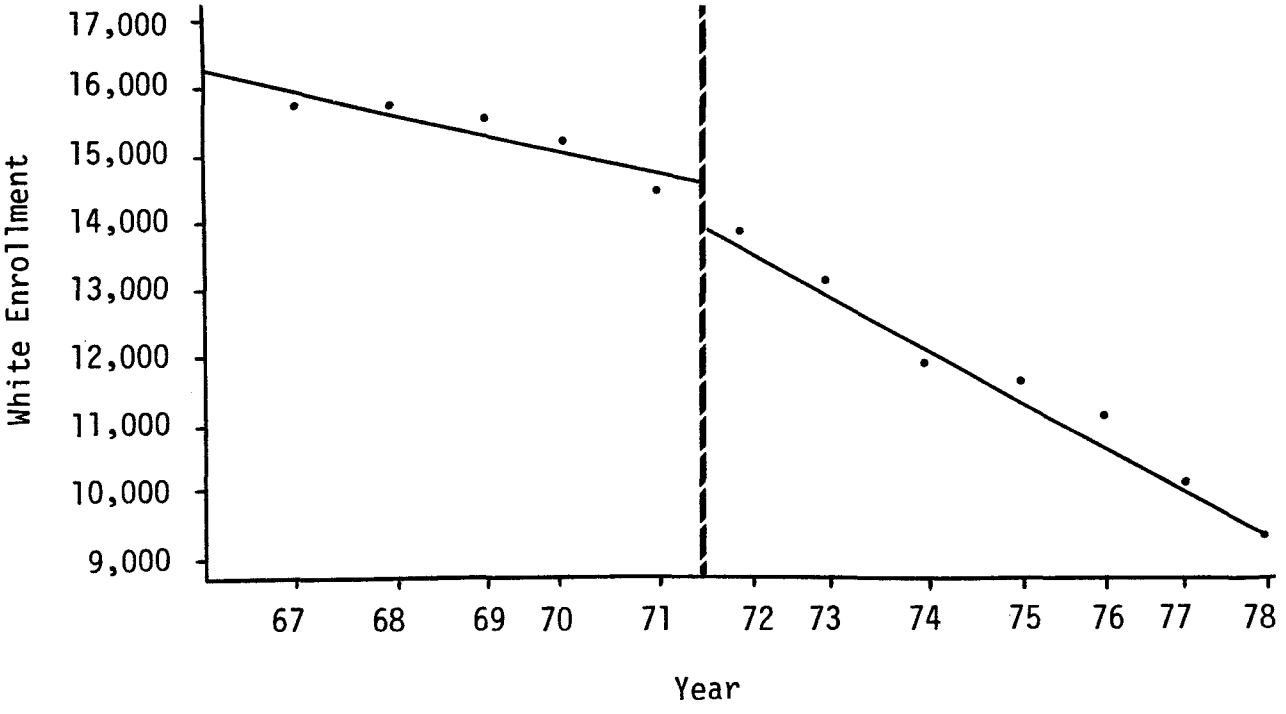

Figure 1.--Multiple Regression Line for White Enrollment 1967-68.*

*Enrollment = -319.4 (year) + 622.2429 (Deseg) + (-251.6714) (Deseg x year) + 16275.4. For value of year, 67 = 1, 68 = 2, etc. For value of deseg, pre deseg = 0, post deseg = 1.

Table 10.--Analysis of Covariance Table for Operational Hypothesis Ia.

Source	Sum of Squares	df	Mean Square	f	Sig. of f
Covariate: Year[1]	46,415,287.5	1	46,415,287.5	1174.09	$\alpha < .05$
Main Effect: Desegregation[2]	217,638.3	1	217,638.3	5.51	$\alpha < .05$
Interaction: Year x Deseg[3]	466,571.1	1	466,571.1	11.8	$\alpha < .05$
Error	316,263.1	8	39,532.9	--	--
Total	47,415,760	11	4,310,523	--	--

[1]Sum of squares for year were not adjusted for the main effect.

[2]Sum of squares for desegregation were adjusted for the covariate contribution to total variance.

[3]Sum of squares for the interaction were adjusted for the contributions of the main effect and covariate.

Operational Hypothesis Ic

Operational hypothesis Ic looks at the rate of white enrollment change over the period of the study as does operational hypothesis Ia. In Ic, however, the question is narrowed to see if the rate of white enrollment change differs during the first three years of desegregation from the control years and the total desegregation years. Operational hypothesis Ic states:

> There will be a significant difference ($\alpha \leq .05$) between the rate of white enrollment change during the first three years of desegregation, the 1972-73 school year through the 1974-75 school year, and the following years.

Analysis of covariance did confirm this hypothesis. The rate of enrollment loss was significantly higher during the three years immediately following desegregation.

Discussion.--In order to look at rate of change, the percent that white enrollment changed between each of the years in the study was compared. The purpose was to determine if there was a higher rate of white enrollment loss during the three years immediately following the implementation of desegregation than there was in the years preceding desegregation or in the over all period following desegregation. Therefore, the percent of white change for the three years at issue, from 1971-72 to 1972-73 (71-72), from 1972-73 to 1973-74 (72-73), from 1973-74 to 1974-75 (73-74), were compared to the other years of the study both before and after the implementation of desegregation. The comparison involved a regression line based on data for all years of the study with a 95 percent confidence

interval, (±.0375). The percent of change in white enrollment remained within the confidence interval for all years of the study (Figure 2). Analysis of covariance, however, showed that the rate of change in white enrollment during the three years following desegregation was significantly greater than during other years of the study (Table 11).

Operational Hypothesis Ib

Operational hypothesis Ib is essentially the same as Ia except that it concerns change in non-white enrollment. In Ib the rate of non-white enrollment change for the pre-desegregation or control years was compared to the rate of non-white enrollment change for the post-desegregation years. The operational hypothesis states:

> There will be a significant difference ($\alpha \leq .05$) between the rate of non-white enrollment change during the control years and during the desegregation years.

The data confirm operational hypothesis Ib and show that the rate of non-white enrollment change during the desegregation years was significantly different than the rate of non-white enrollment change during the control years. Rather than an increase over the rate of growth non-whites had shown during the control years, however, the significant change in non-white enrollment change was a decline in the rate of growth. In other words, non-white enrollment continued to grow after the implementation of desegregation but at a significantly slower rate.

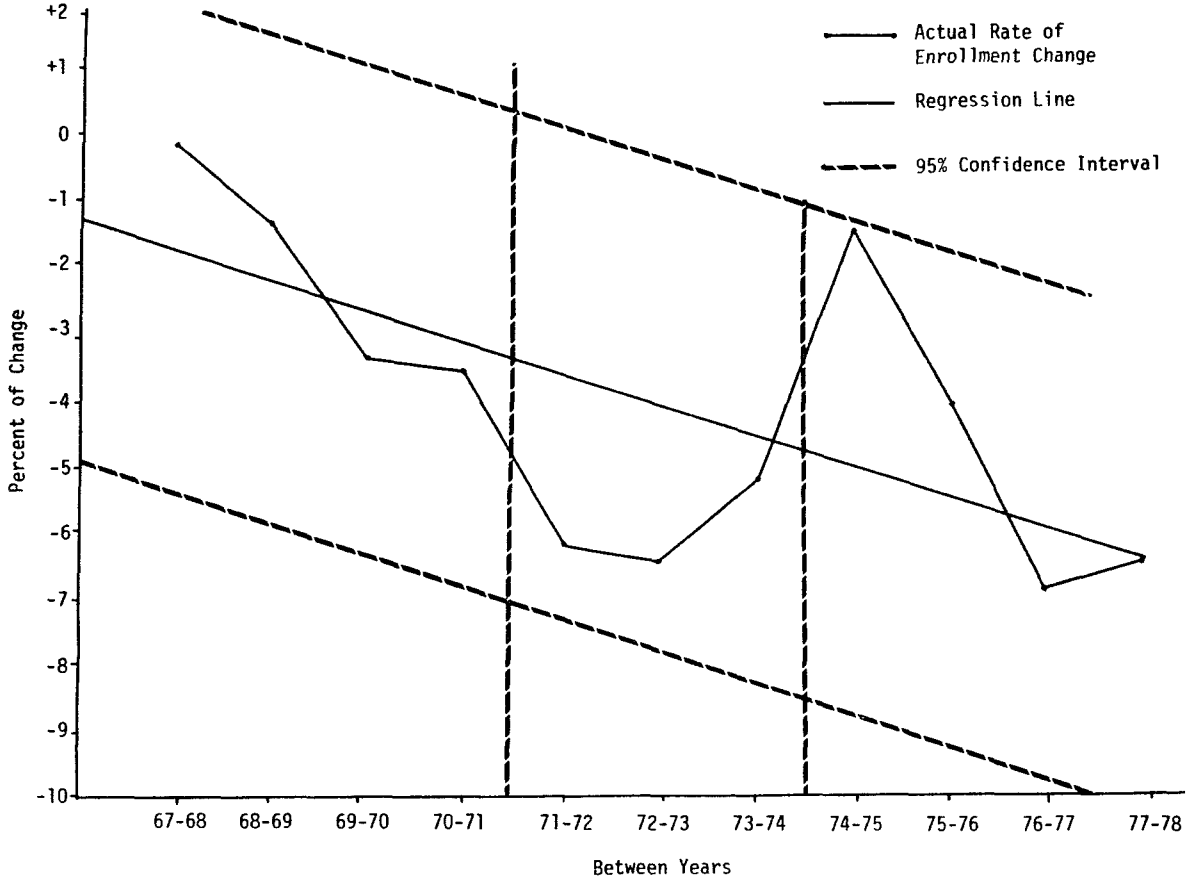

Figure 2.--Rate of Change of White Enrollment Between Each Year 1967-68.*

*Percent change = (-.00477) (year) + (-.00723). For value of year 1967=68 = 2, 1968-69 = 3, etc.

Table 11.--Analysis of Covariance Table for Hypothesis Ic.

Source	Sum of Squares	df	Mean Square	F	Sig. of F
Covariate: Year[1]	.003	1	.003	10.819	$\alpha < .05$
Main Effects: Three Post Deseg. Years[2]	.001	1	.001	6.226	$\alpha < .05$
Error	.002	8	.000	--	--
Total	.006	10	.001	--	--

[1]Sum of squares for year were not adjusted for the main effect.

[2]Sum of squares for desegregation were adjusted for the covariate contribution to total variance.

Discussion.--The non-white enrollment for each year of the study was used to plot a multiple regression line for the control and desegregation years. Discontinuity in the regression line was shown at the point of treatment, implementation of desegregation. It can be seen that the slope of the line is less steep after the implementation of desegregation than it was before desegregation (Figure 3). This illustrates the fact that non-white enrollment increased at a slower rate following desegregation than it had prior to desegregation. Analysis of covariance confirmed the fact that the decrease in the rate of non-white growth following the implementation of desegregation was significant at the .05 level.

Operational Hypothesis Id

Operational hypothesis Id looks at the rate of non-white enrollment change over the period of the study as does operational hypothesis Ib. In Id, however, the question is narrowed to see if the rate of non-white enrollment change differs during the first three years of desegregation from the control years and the total desegregation years. Operational hypothesis Id states:

> There will be a significant difference ($\alpha \leq .05$) between the rate of non-white enrollment change during the first three years of desegregation; the 1972-73 school year through the 1974-75 school year, and the following years.

Analysis of covariance did not prove the hypothesis. The overall data show that the rate of increase in minority enrollments declined over the period of the study and the percent of enrollment change was significantly correlated with year, $r = -.91248$. However,

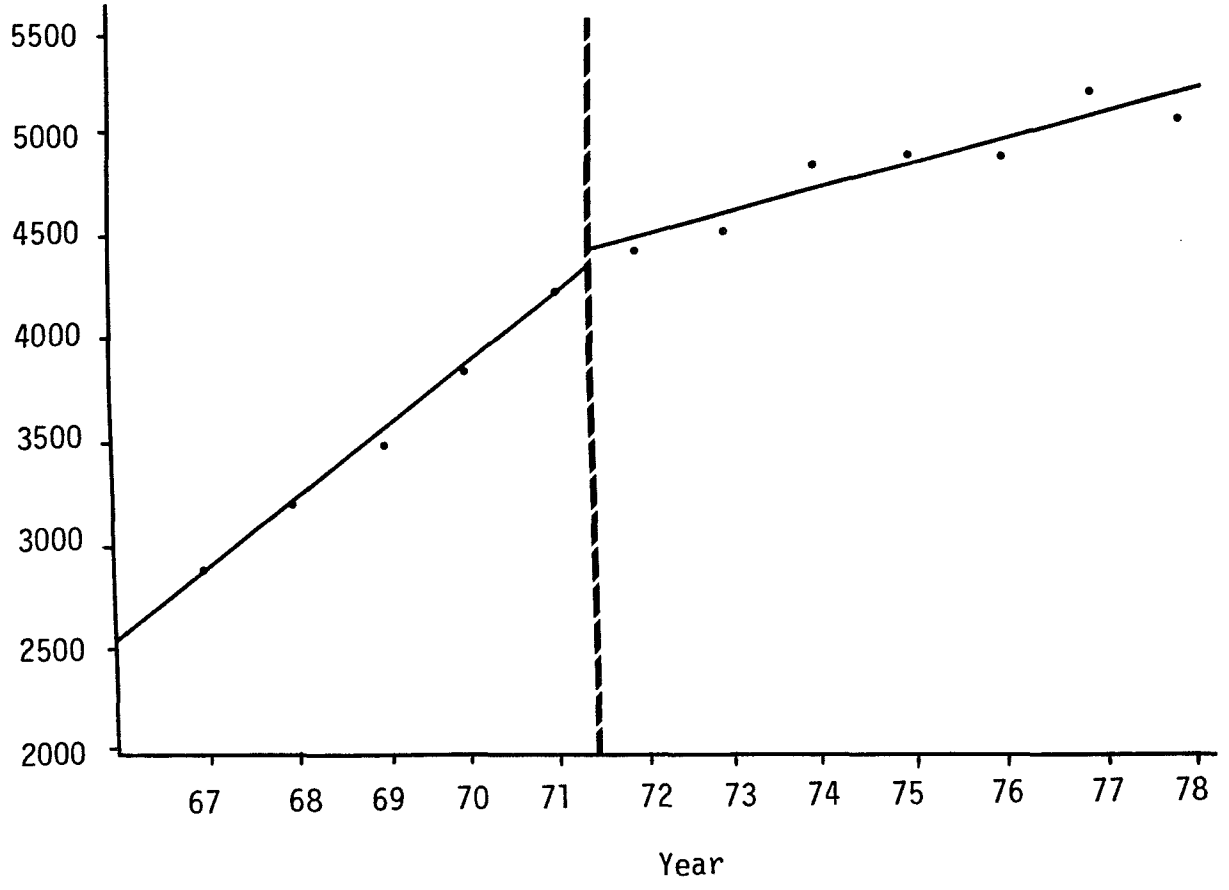

Figure 3.--Multiple Regression Line for Non-White Enrollment 1967-68.*

*Enrollment = 327.2 (year) + 1357.5 (Deseg) + (-224.0) (Deseg x year) + 254.80. For value of year, 67 = 1, 68 = 2, etc. For value of deseg, pre deseg = 0, post deseg = 1.

Table 12.--Analysis of Covariance Table for Operational Hypothesis Ib.

Source	Sum of Squares	df	Mean Square	F	Sig. of F
Covariate: Year[1]	5,876,636.3	1	5,876,636.3	1638.92	$\alpha < .05$
Main Effect: Desegregation[2]	85,293.1	1	85,293.1	23.79	$\alpha < .05$
Interaction: Deseg. x year[3]	369,794.2	1	369,794.2	103.13	$\alpha < .05$
Error	28,685.4	8	3,585.7	--	--
Total	6,360,409.0	11	578,219.0	--	--

[1]Sum of squares for year were not adjusted for the main effect.

[2]Sum of squares for desegregation were adjusted for the covariate contribution to total variance.

[3]Sum of squares for the interaction were adjusted for the contributions of the main effect and covariate.

there was no significant difference between the enrollment changes in the three years immediately following desegregation and the enrollment changes during the pre-desegregation (control) years and the later years of desegregation.

Discussion.--In order to look at rate of change, the percent that non-white enrollment changed between each of the years in the study was compared. The purpose was to determine if there was a higher rate of non-white enrollment change during the three years immediately following the implementation of desegregation than there was in the years preceding desegregation or in the overall period following desegregation. Therefore, the percent of non-white change for the three years at issue, from 1971-72 to 1972-73 (71-72), from 1972-73 to 1973-74 (72-73), from 1973-74 to 1974-75 (73-74), were compared to the other years of the study both before and after the implementation of desegregation. The comparison involved a regression line based on data for all years of the study with a 95 percent confidence interval, (±.0352). Enrollment change for all years of the study fell within the confidence interval. It could appear from Figure 4 that non-white enrollment decreased. This is not the case. While the actual number of non-whites enrolled increased, the percent of change or rate of growth generally declined. Analysis of covariance failed to prove any significant difference in the rate of non-white enrollment change during the three years following desegregation and the other years of the study.

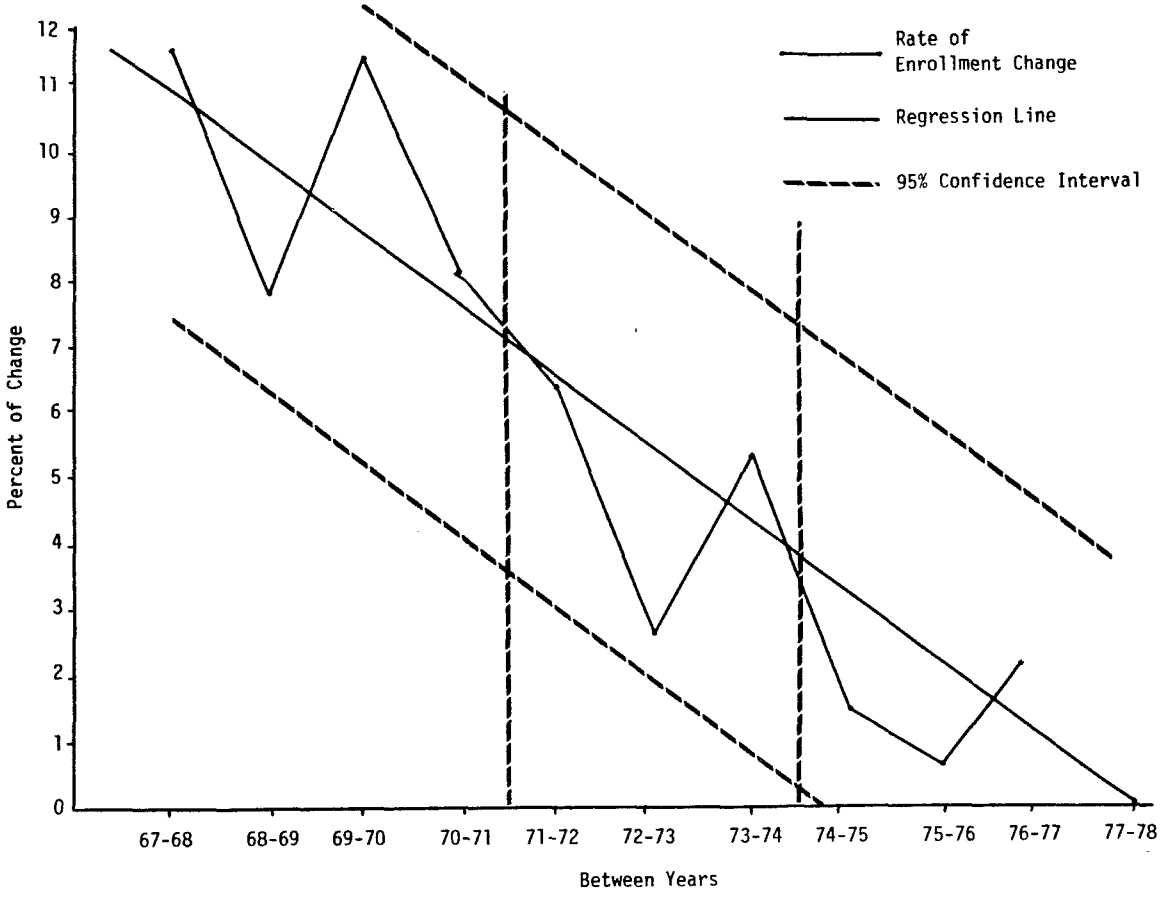

Figure 4.--Rate of Change of Non-White Enrollment Between Each Year 1967-78.*

*Percent change = (-.01145) (year) + .13345. For value of year, 1967-68 = 2, 1968-69 = 3, etc.

Table 13.--Analysis of Covariance Table for Hypothesis Id.

Source	Sum of Squares	df	Mean Square	F	Sig. of F
Covariate: Year[1]	.014	1	.014	41.284	$\alpha < .05$
Main Effects: Three Post Deseg. Years[2]	.000	1	.000	.299	$\alpha > .05$
Error	.003	8	.000	--	--
Total	.017	10	.002	--	--

[1]Sum of squares for year were not adjusted for the main effect.

[2]Sum of squares for desegregation were adjusted for the covariate contribution to total variance.

Hypothesis II

General hypothesis II dealt with the effect that being a cluster or non-cluster school had on the rate of enrollment change experienced as a result of desegregation in the Lansing elementary schools.

Operational Hypothesis IIa

In operational hypothesis IIa the rate of white enrollment change for those schools made members of a cluster was measured for the years prior to their clustering and for the years following their clustering. The results of the two periods were compared to determine any variation in the rate of white enrollment change for the pre-cluster and post-cluster years. In a like manner, the rate of white enrollment change for non-cluster schools, those schools never made part of a cluster, was measured for the years prior to the implementation of each cluster and for the years following the implementation of each cluster. This meant measuring the non-cluster schools on three different time scales so they could be measured against each of the three cluster groups. The three cluster groups are identified based on their year of implementation. Group one was implemented in 1972, group two in 1973, and group three in 1976. Each of the three groups were compared to the control group separately with the break point being the year of implementation for the cluster group being considered. The operational hypothesis states:

> There will be a significant difference ($\alpha \leq .05$) in the rate of white enrollment change between schools made members of a cluster and schools not in a cluster.

The data did not confirm operational hypothesis IIa. There was no significant difference in the rate of white enrollment change between non-cluster schools and cluster schools when a comparison was made of their experience before and after the implementation of desegregation. This was true of all three cluster groups when compared to the non-cluster schools.

Discussion.--Figure 5 illustrates that all three cluster groups experienced a steady decline in their precent of white enrollment over the total period of the study. It can also be seen that the non-cluster group maintained a steady percentage of white enrollment for the first three years of the study before experiencing a steady decline in their percent of white enrollment from 1970 on to the end of the study. Figure 5 further shows that the three cluster groups all had a more rapid decline in their percent of white enrollment over the period of the study than did the non-cluster group. It must be noted, however, that the difference in the loss of white enrollment extends over the entire period of the study and is not related to the implementation of any of the three cluster groups. A two by two analysis of covariance did not show the difference in discontinuity at the point of treatment to be significant at the .05 level. It cannot be said, therefore, that membership in a cluster was the cause of a higher rate of white loss in the Lansing elementary schools.

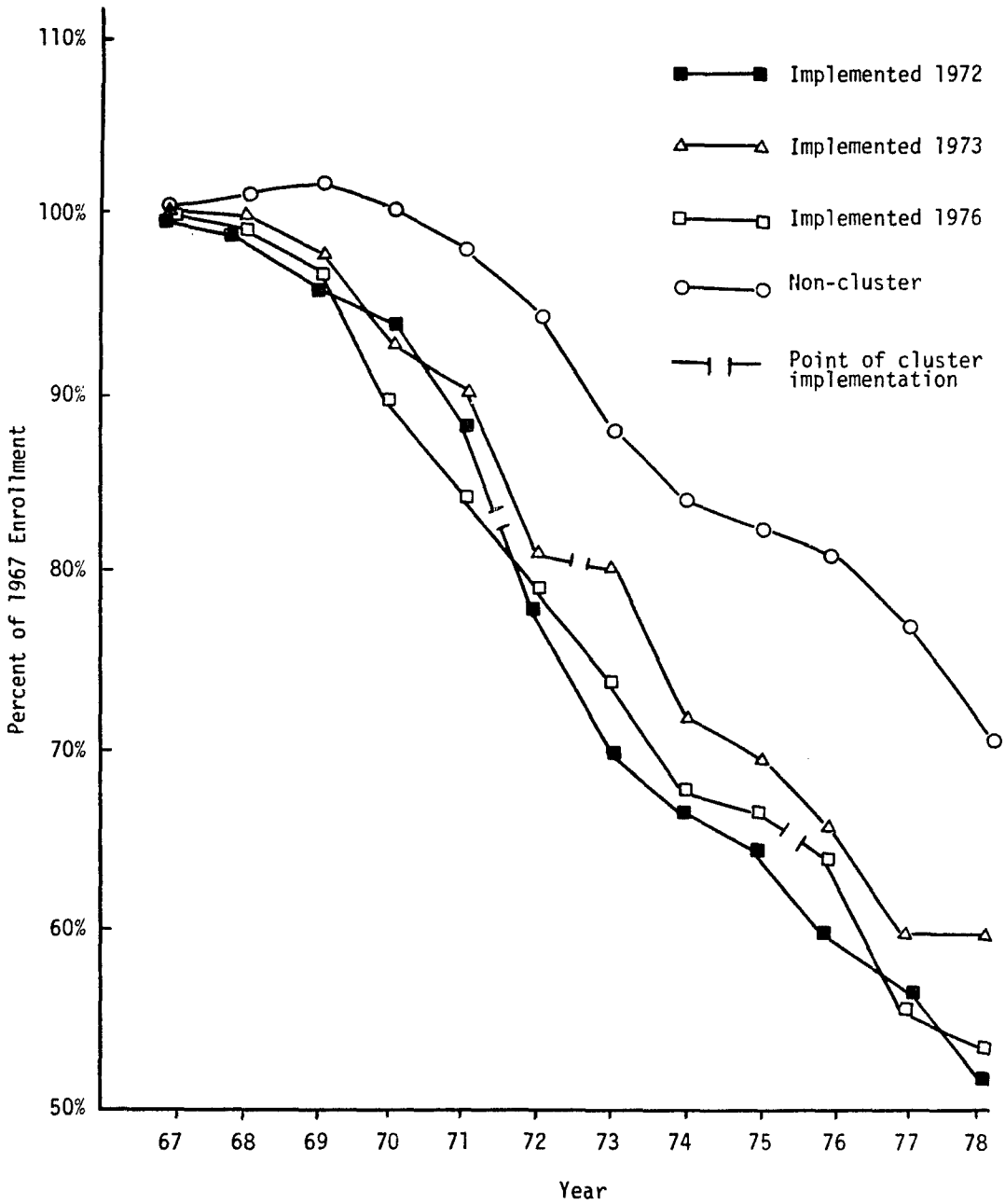

Figure 5.--Rate of White Enrollment Changes, Cluster vs. Non-Cluster.*

*Taken from the Fourth Friday Ethnic Count reports of the Lansing School District 1967-78.

Table 14.--Analysis of Covariance Table for White Enrollment Change. 1972 Clusters vs. Non-Cluster[1]

Source	Sum of Squares	df	Mean Square	F	Sig. of F
Covariate:					
Year[2]	4117.7	1	4117.7	729.1	$\alpha < .05$
Main Effects:					
Cluster[3]	995.9	1	995.9	176.3	$\alpha < .05$
Desegregation[3]	51.3	1	51.3	9.1	$\alpha < .05$
Interactions:					
Cluster by Year[4]	270.6	1	270.6	47.9	$\alpha < .05$
Cluster by deseg[5]	15.3	1	15.3	2.7	$\alpha > .05$
Error	101.7	18	5.6	--	--
Total	5552.4	23	241.4	--	--

[1]Formula for regression line used to compute the analysis: % of 67 enrollment = -2.5 (year) + (-2.6) (deseg) + (-1.5) (cluster) + (-1.2) (cluster x year) + (-6.3) (deseg x cluster) + 107.7. For value of year: 67= 1; 68=2; etc. For value of desegregation: pre-desegregation = 0; post desegregation = 1. For value of cluster: non-cluster = 0; cluster = 1.

[2]Sum of squares for year are not adjusted for main effects or interactions.

[3]Sum of squares for main effects are adjusted for all other main effects and for the effect of the covariate.

[4]Cluster by year adjusted for main effects and the covariate.

[5]Cluster by desegregation adjusted for cluster by year, main effect, and the covariate.

Table 15.--Analysis of Covariance Table for White Enrollment Change. 1973 Clusters vs. Non-Cluster[1]

Source	Sum of Squares	df	Mean Square	F	Sig. of F
Covariate:					
Year[2]	3491.3	1	3491.3	589.1	$\alpha < .05$
Main Effects:					
Cluster[3]	508.8	1	508.8	85.8	$\alpha < .05$
Desegregation[3]	23.5	1	23.5	4.0	$\alpha > .05$
Interactions:					
Cluster by Year[4]	129.2	1	129.2	21.8	$\alpha < .05$
Cluster by Deseg[5]	4.4	1	4.4	0.7	$\alpha > .05$
Error	106.7	18	5.9	--	--
Total	4263.8	23	185.4	--	--

[1]Formula for regression line used to compute the analysis: % of 67 enrollment = -2.1 (year) + (-5.7) (deseg) + 0.6 (cluster) + (-1.8) (cluster x year) + 3.5 (deseg x cluster) + 106.4.

[2]Sum of squares for year are not adjusted for main effects or interactions.

[3]Sum of squares for main effects are adjusted for all other main effects and for the effect of the covariate.

[4]Cluster by year adjusted for main effects and the covariate.

[5]Cluster by desegregation adjusted for cluster by year, main effect, and the covariate.

Table 16.--Analysis of Covariance Table for White Enrollment Change. 1976 Cluster vs. Non-Cluster.[1]

Source	Sum of Squares	df	Mean Square	F	Sig. of F
Covariate:					
Year[2]	3835.1	1	3835.1	657.6	$\alpha < .05$
Main Effects:					
Cluster[3]	925.1	1	925.1	158.6	$\alpha < .05$
Desegregation[3]	0.8	1	0.8	0.0	$\alpha > .05$
Interactions:					
Cluster by Year[4]	201.9	1	201.9	34.6	$\alpha < .05$
Cluster by Deseg[5]	5.7	1	5.7	1.0	$\alpha > .05$
Error	105.0	18	5.8	--	--
Total	5073.5	23	220.6	--	--

[1]Formula for regression line used to compute the analysis: % of 67 enrollment = -2.6 (year) + (-2.4) (deseg) + (-0.3) (cluster) + (-2.0) (cluster x year) + 3.4 (deseg x cluster) + 107.4.

[2]Sum of squares for year are not adjusted for main effects or interactions.

[3]Sum of squares for main effects are adjusted for all other main effects and for the effect of the covariate.

[4]Cluster by year adjusted for main effects and the covariate.

[5]Cluster by desegregation adjusted for cluster by year, main effects, and the covariate.

Operational Hypothesis IIb

Operational hypothesis IIb examined differences in the rate of non-white enrollment change between cluster and non-cluster schools in the same way that white enrollment change was studied in operational hypothesis IIa. The same groupings of schools were used and the same analyses employed. The operational hypothesis states:

> There will be a significant difference ($\alpha \leq .05$) in the rate of non-white enrollment change between schools made members of a cluster and schools not in a cluster.

The data did not confirm the operational hypothesis for the 1972 or 1973 clusters but did confirm the hypothesis for the 1976 cluster. These findings are explained in the discussion below.

Discussion.--As can be seen from Figure 6, all three of the cluster groups had a significantly lower rate of increase for non-white students than did the non-cluster group. As with white enrollments, this difference was evidenced from 1967, several years before the concept of clustering for the Lansing elementary schools was conceived, and continued through the 12 years of the study. While the 1972 cluster group experienced a negative discontinuity in the rate of non-white enrollment gain at the break point (1972), non-white enrollment grew at a slower rate, and the control group had a positive discontinuity at the same point, non-white enrollment grew at a faster rate, analysis of covariance did not show the difference to be significant at the .05 level. The 1973 cluster group and the control group both experienced a negative discontinuity in the rate

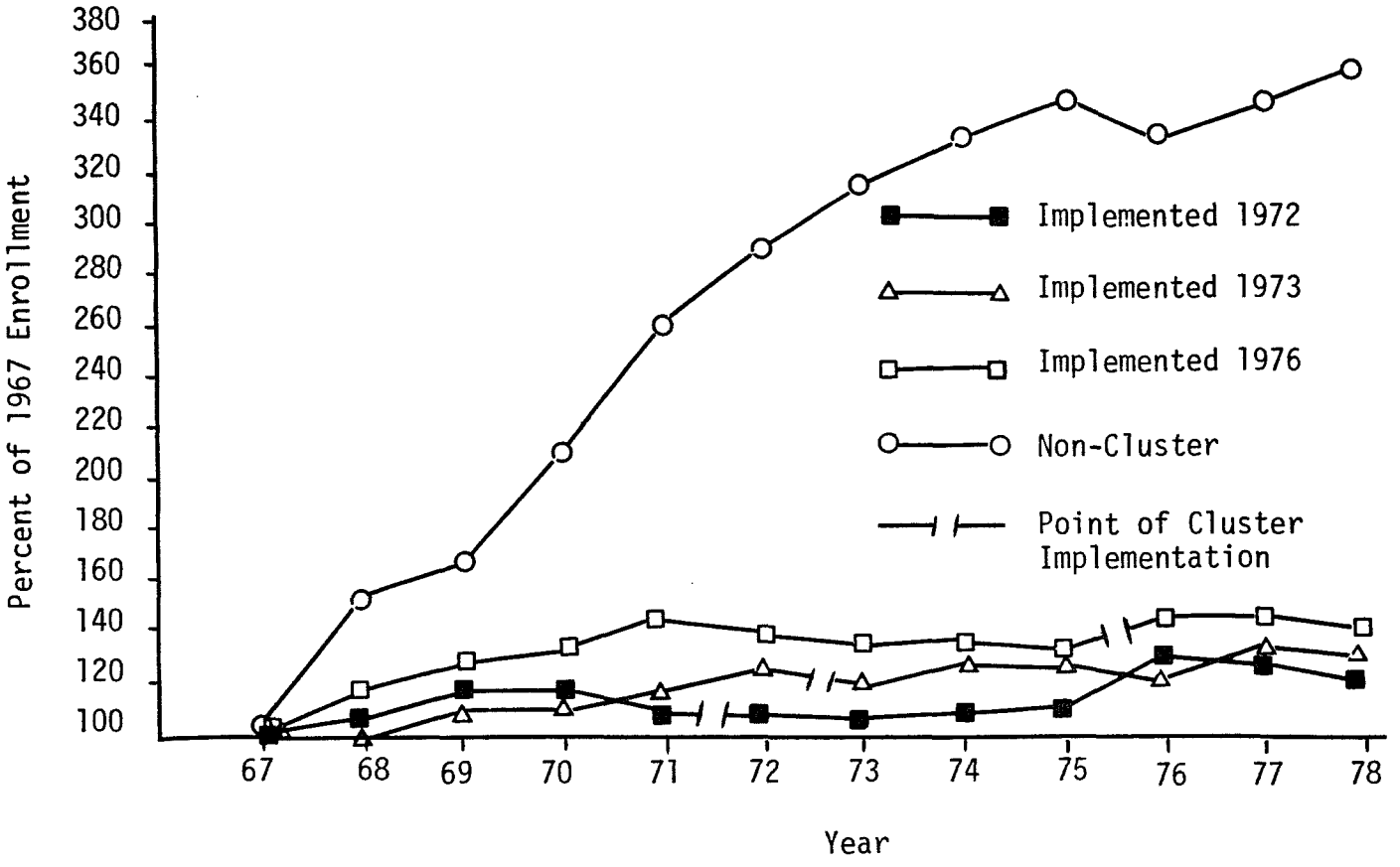

Figure 6.--Rate of Non-White Enrollment Changes Cluster vs. Non-Cluster.*

*Taken from the Fourth Friday Ethnic Count reports of the Lansing School District, 1967-1978.

Table 17.--Analysis of Covariance Table for Non-White Enrollment Change. 1972 Cluster vs. Non-Cluster[1]

Source	Sum of Squares	df	Mean Square	F	Sig. of F
Covariate:					
Year[2]	47248.2	1	47248.2	105.6	$\alpha < .05$
Main Effects:					
Cluster[3]	156978.4	1	156978.4	350.7	$\alpha < .05$
Desegregation[3]	490.4	1	490.4	1.1	$\alpha > .05$
Interactions:					
Cluster by Year[4]	35439.7	1	35439.7	79.2	$\alpha < .05$
Cluster by Deseg[5]	1661.7	1	1661.7	3.7	$\alpha > .05$
Error	8056.0	18	447.6	--	--
Total	249874.4	23	10864.1	--	--

[1]Formula for regression line used to compute the analysis: % of 67 enrollment = 17.8 (year) + 50.5 (deseg) + (-30.9) (cluster) + (014.3) (cluster x year) + (-65.5) (deseg x cluster) + 129.6.

[2]Sum of squares for year are not adjusted for main effects or interactions.

[3]Sum of squares for main effects are adjusted for all other main effects and for the effect of the covariate.

[4]Cluster by year adjusted for main effects and the covariate.

[5]Cluster by desegregation adjusted for cluster by year, main effects, and the covariate.

Table 18.--Analysis of Covariance Table for Non-White Enrollment Change. 1973 Cluster vs. Non-Cluster[1]

Source	Sum of Squares	df	Mean Square	F	Sig. of F
Covariate:					
Year[2]	50858.2	1	50858.2	92.4	$\alpha < .05$
Main Effects:					
Cluster[3]	145969.3	1	145969.3	265.2	$\alpha < .05$
Desegregation[3]	4.5	1	4.5	0.0	$\alpha > .05$
Interactions:					
Cluster by Year[4]	32438.1	1	32438.1	58.9	$\alpha < .05$
Cluster by Deseg[5]	76.6	1	76.6	0.1	$\alpha > .05$
Error	9907.5	18	550.4	--	--
Total	239254.4	23	10402.4	--	--

[1]Formula for regression line used to compute the analysis: % of 67 enrollment = 22.8 (year) + 9.0 (deseg) + (-22.1) (cluster) + (-19.5) (cluster x year) + (-14.5) (cluster x deseg) + 121.7.

[2]Sum of squares for year are not adjusted for main effects or interactions.

[3]Sum of squares for main effects are adjusted for all other main effects and for the effect of the covariate.

[4]Cluster by year adjusted for main effects and the covariate.

[5]Cluster by desegregation adjusted for cluster by year, main effects, and the covariate.

Table 19.--Analysis of Covariance Table for Non-White Enrollment Change. 1976 Cluster vs. Non-Cluster.[1]

Source	Sum of Squares	df	Mean Square	F	Sig. of F
Covariate:					
Year[2]	51529.8	1	51529.8	287.9	$\alpha < .05$
Main Effects:					
Cluster[3]	116998.9	1	116998.9	653.8	$\alpha < .05$
Desegregation[3]	4669.0	1	4669.0	26.1	$\alpha < .05$
Interactions:					
Cluster by Year[4]	31904.7	1	31904.7	178.3	$\alpha < .05$
Cluster by Deseg[5]	2769.5	1	2769.5	15.5	$\alpha < .05$
Error	3221.3	18	179.0	--	--
Total	211093.6	23	9178.0	--	--

[1]Formula for regression line used to compute the analysis: % of 67 enrollment = 32.2 (year) + (-86.6) (deseg) + 25.1 (cluster) + (-28.23) (cluster x year) + 75.3 (cluster x deseg) + 87.4.

[2]Sum of squares for year are not adjusted for main effects or interactions.

[3]Sum of squares for main effects are adjusted for all other main effects and for the effect of the covariate.

[4]Cluster by year adjusted for main effects and the covariate.

[5]Cluster by desegregation adjusted for cluster by year, main effects, and the covariate.

of non-white enrollment gain at the break point (1973). The reduction in rate of gain was greater for the cluster group than for the control group but once again analysis of covariance did not show the difference to be significant at the .05 level. The 1976 cluster group and the control group also both experienced a negative discontinuity in the rate of non-white enrollment gain at the break point with the non-cluster group having the greater reduction in non-white enrollment gain. In this instance, analysis of covariance did show that the difference was significant. Despite the inconsistency of the experience of the 1976 cluster group, the overall results of the data from testing operational hypothesis IIb would not support a conclusion that membership in a cluster will result in a higher rate of growth for non-white enrollment.

Hypothesis III

Operational Hypothesis IIIa

Operational hypothesis IIIa addresses the question of a tipping point functioning in the Lansing School District. The operational hypothesis states:

> There will be a significant difference ($\alpha \leq .05$) between the rate of increase in percent of non-white enrollment in schools with 30 percent or more non-white enrollment and schools with 29 percent or less non-white enrollment in September 1976 between September 1976 and January 1979.

The hypothesis was not proven. An analysis of covariance found no significant correlation between 1976 minority enrollment levels and the amount of change in minority enrollments between 1976 and 1979. A t-test of significance also failed to prove a significant

difference between the group change scores for the group which started with less than 30 percent minority enrollment and the group which started with or more than 30 percent minority enrollment.

Discussion.--The percent of minority enrollment for each school in September 1976 was compared to that school's change score of percent minority enrollment from September 1976 to January 1979. No significant correlation was found between 1976 minority enrollment levels and the amount of change in minority enrollments between September 1976 and January 1979, $r = -.0547$.

While the absence of significant correlation between the level of minority enrollment in individual schools in 1976 and the amount of change they experience in minority enrollment by 1979 indicated the lack of a tipping point in Lansing there was a concern that the actual factor of tipping had not been directly addressed. It was felt that perhaps a significant difference could be shown between those schools with less than 30 percent minority enrollment and those schools with 30 percent or more minority enrollment in 1976 if they were viewed as two groups rather than individually. Consequently, the amount of change in minority enrollment for the two groups between 1976 and 1979 was compared using a t-test for significance with ($\alpha < .05$) set as the level of significance. This approach also failed to prove the hypothesis as no significant difference was shown between the groups. $t_{(43)} = 0.734$.

Table 20.--Tipping Effect.

	No. of Schools	1976 Enrollments Percent Minority		1979 Enrollments Percent Minority		Change in Percent Minority	
1976 Enrollments		$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD
30% or more	28	35.57	5.34	40.29	5.48	4.71	4.82
Less than 30%	17	21.88	5.61	25.59	7.27	3.71	3.77
Total Group	45	30.40	8.60	34.73	9.46	4.33	4.55

Summary

General hypothesis I dealt with enrollment change in the Lansing elementary schools as that enrollment change related to the desegregation efforts of the district. The general hypothesis was divided into four operational hypotheses for testing. Analysis of covariance was used to test each of the operational hypotheses.

Operational hypothesis Ia was confirmed. The data show that the rate of white enrollment change was significantly different after desegregation than it was before desegregation in the Lansing elementary schools. White enrollment declined over the entire period of the study but declined at a more rapid rate after desegregation than before desegregation.

Operational hypothesis Ib was confirmed. The data show that the rate of non-white enrollment change was significantly different after desegregation than it was before desegregation. Non-white enrollment grew over the total period of the study but grew at a slower rate after desegregation than before desegregation.

Operational hypothesis Ic was confirmed. The data show that the rate of change in white enrollment was significantly greater during the three years immediately following the implementation of desegregation than it was for other periods of the study. White enrollment declined more rapidly during those three years than it did before desegregation or in the later years of desegregation.

Operational hypothesis Id was not confirmed. The data do not show that the rate of change in non-white enrollment was

significantly different in the three years following the implementation of desegregation than for other periods of the study.

General hypothesis II dealt with the effect that being a cluster or non-cluster school had on the rate of enrollment change experienced as a result of desegregation in the Lansing elementary schools. The general hypothesis was divided into two operational hypotheses for testing. Analysis of covariance was used to test each of the operational hypotheses.

Operational hypothesis IIa was not confirmed. There was no significant difference shown between the rate of white enrollment change before and after the implementation of a cluster for schools in the cluster and for schools not becoming members of a cluster.

Operational hypothesis IIb was not confirmed. There was no significant difference shown between the rate of non-white enrollment change before and after the implementation of a cluster for schools in the cluster and for schools not becoming members of a cluster.

Hypothesis III addressed the question of a tipping point functioning in the Lansing elementary schools. Analysis of covariance and a t-test of significance were used to test the hypothesis.

Hypothesis III was not confirmed. Schools with 30 percent or more minority enrollment in 1976, the final implementation of desegregation, had not gained minority enrollment at a significantly higher rate by the end of the study (1979) than those schools with 29 percent or less minority enrollment in 1976.

CHAPTER V

SUMMARY AND CONCLUSIONS

This study was designed to determine what effect desegregation efforts had on the elementary enrollment of one medium sized school district, the Lansing School District, Lansing, Michigan. The study sought to answer three specific questions. (1) Did desegregation efforts in the Lansing School District have a significant effect on the rate of enrollment change in the elementary schools for either white or non-white students? (2) Did membership in a cluster make a significant difference in the rate of enrollment change for either white or non-white students? (3) Is there a tipping point which functions in the elementary schools in the Lansing School District?

Analysis of covariance did confirm a significant difference in the rate of enrollment change related to desegregation. This was true for both white and non-white enrollment with the difference in change for both groups being in the same direction. The rate of enrollment change for white students, which was declining before desegregation, evidenced an increase in the rate of decline with the implementation of desegregation. Non-white enrollments which had

been growing prior to desegregation continued to grow after the implementation of desegregation, but at a significantly lower rate.

In a look at enrollment change during the first three years following the implementation of desegregation, it was shown that the rate of decline in white enrollment was significantly higher during those years than for the other years of the study. The same was not true for non-white enrollment change, however. While non-white enrollments did experience a lower rate of increase in these three years, the rate of change was not significantly different from the other years of the study.

Membership in a cluster was not shown to have a significant impact on enrollment change in Lansing's elementary schools for either white or non-white students. Interestingly, schools which were naturally integrated prior to desegregation and, therefore, never became members of a cluster maintained enrollment better than those schools which were not integrated prior to desegregation and thus were made members of a cluster. The non-cluster schools lost white students at a lower rate and gained non-white students at a higher rate than did cluster schools. This trend started well before the implementation of desegregation and the formation of clusters, however, and analysis of covariance did not show any significant alteration of the trend when clusters were formed. These results led to the conclusion that some factor or factors other than clustering were the cause of the significant difference in the rate of enrollment change between cluster and non-cluster schools.

The presence of a tipping factor in the Lansing School District's elementary schools was not confirmed by this study. Individual schools with more than 30 percent minority enrollments prior to final desegregation (September 1976) were not shown to be more likely to have significantly increased in percent of minority enrollment by the end of the study than were schools with 29 percent minority enrollment or less prior to final desegregation. Even when viewed as a group, schools with more than 30 percent minority enrollment prior to final desegregation showed no significantly greater gain in minority enrollment by the end of the study than the group of schools with less than 30 percent minority enrollment prior to final desegregation.

Discussion

James Coleman has claimed that the act of desegregating schools will result in the loss of white students.[1] This would be especially true, according to Coleman, in districts like Lansing where largely white suburbs are available for white flight. Christine Rossell disagreed with Coleman. She claimed that while there may be a significant loss of white students for the first two years after desegregation that this pattern will then end and may even reverse itself with white students returning.[2] It was Rossell's feeling, based on experience in the Boston desegregation efforts, that white students who had fled to parochial schools would return to the public

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[1]Coleman, op. cit., p. 12.

[2]Rossell, op. cit., pp. 36-39.

schools due to the burden of parochial tuition costs. Green and Pettigrew also disagreed with Coleman and pointed out that their studies indicated that white and non-white enrollments tend to rise or fall together.[3] They interpreted this phenomenon to indicate enrollment change results from other than desegregation. It was their contention that non-whites would be unlikely to leave a school district to avoid desegregation. The results of this study would seem to support, to at least some extent, each of these positions.

As predicted by Coleman, the rate of the decline in white enrollment did accelerate with the implementation of the desegregation of Lansing's elementary schools. While this can lead to the conclusion that desegregation was the cause of the accelerated loss of white students there were other factors which may have contributed to the loss. The implementation of desegregation came at the same time as the onset of a decline in overall enrollments in the Lansing schools. The K-12 enrollment of the Lansing School District reached a peak of 34,000 students in 1971. That enrollment declined steadily from 1971 to the end of the study when the K-12 enrollment was less than 27,000. This decline in enrollment was not unique to Lansing, but was part of a nation-wide trend reflecting the declining birth rate of the 1960s and 1970s. It is difficult to estimate the specific impact that the declining birth rate had on the data derived from this study. An attempt was made to control the variable,

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[3]Green and Pettigrew, op. cit., p. 30.

birth rate, by comparing the desegregation years to the pre-desegregation years but the effectiveness of that control could be questioned.

Another factor to be considered is disenchantment with urban living. The literature is replete with studies claiming that families with the means to do so are leaving urban cities to escape such urban problems as the growing crime rate, pollution and higher taxes. There is no reason to believe that Lansing is immune to this phenomenon. Indeed, the growth of the suburbs surrounding Lansing would indicate the opposite. This study attempted to control for this factor by comparing the post-desegregation years to the pre-desegregation years. In this case there is more reason to believe that the control was effective as there was no major event which occurred at the time of the implementation of desegregation to affect this trend.

In addition to the two specific factors discussed above, one could speculate on the effect of changing housing patterns in Lansing. Prior to 1970 most families in Lansing lived in single-family dwellings. Since that time there has been a phenomenal growth of apartment units in Lansing. Many of these units are of the one and two-bedroom variety which do not lend themselves to occupancy by families with school-age children. Coupled with this has been an unprecedented expansion of the Oldsmobile manufacturing facilities and the development of two major roadways which have removed a large number of single-family dwelling units from the city.

There is also the economic climate of Lansing to be considered. While Oldsmobile, one of the area's major employers, expanded throughout the period of the study, Diamond Reo went out of business, Motor Wheel was cutting back on employment, and the state was building a major complex of offices outside of the city and relocating the work stations of many of its employees. In addition much of Oldsmobile's expansion took place outside of the city, in the suburbs. How much these economic factors had to do with the enrollment trends of the Lansing schools is an unanswered question.

While the accelerated loss of white students extended from the implementation of desegregation to the end of the study, it was significantly higher during the three years immediately following desegregation than it was during other periods of the study. This conformed with the findings of Rossell. There was no real evidence from this study, however, to indicate that the reduction in the rate of white enrollment loss from Lansing after three years of desegregation was accompanied by the return of white students who had left earlier either to parochial schools or to the suburbs. Indeed there is a question as to how many Lansing families did move to suburban or parochial schools and why those who did chose to do so.

The suburban schools around Lansing experienced substantial growth during the early years of the study but in more recent years have joined Lansing in the trend of enrollment decline; a decline which is mainly attributable to the declining birth rate. Four of the major suburban school districts, DeWitt, Grand Ledge, Holt, and

Waverly, may well reflect the movement of Lansing families away from the urban area. Two other major districts, East Lansing and Okemos, more likely reflect the growth of Michigan State University. These districts do represent an avenue of escape from the desegregation of Lansing schools to largely white suburban schools, but it is difficult to say what effect their presence had on the data produced by this study.

The parochial schools within the Lansing School District also provide a largely white refuge for families fleeing desegregation. The parochial school enrollment, however, experienced a decline even more dramatic than the public schools throughout the period of the study. Parochial enrollment stood at 4015 in 1967 but had dropped to 2352 by 1979. Much of this decline was attributed to a sharp increase in the tuition for the Catholic schools. In 1967 Catholic schools enrolled 3629 of the 4015 parochial students with only 386 students enrolled in the non-Catholic parochial schools. By 1979 enrollment in the Catholic schools had declined to 1513 while non-Catholic parochial enrollments had risen to 839.[4] This non-Catholic parochial school growth was primarily due to a growth in the fundamentalist Christian schools. While the growth in Christian schools came at the time of desegregation of the Lansing elementary schools, it is not possible to say that there was any connection between the two events. Certainly these schools provide

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[4]These data taken from the Fourth Friday Enrollment Reports of the Lansing School District.

a largely white route of escape but the Christian schools do require a doctrinal commitment for enrollment which may speak more to a desire for Christian education than to a desire to flee the public schools. All of the parochial schools, both Catholic and non-Catholic, committed themselves to avoid, to the best of their ability, enrolling any students who were seeking only to escape the desegregation of the public schools.

In perhaps one of the more interesting results of the study it was shown that non-white enrollments, while continuing to grow throughout the study grew at a significantly slower rate following the implementation of desegregation in Lansing. This finding is in conformity with the position of Green and Pettigrew that white and non-white enrollments tend to follow the same pattern. If their contention that a slowing in the rate of non-white growth following desegregation is not an indication of any desire on the part of non-whites to escape desegregation, then it could possibly indicate other factors influencing both white and non-white enrollment trends.

Many of the same factors discussed earlier in relation to white enrollment change may have impacted non-white enrollments as well. While the birth rates for non-white families has remained higher than the white birth rate, it has experienced a decline similar to the white birth rate. This has been especially true for black families. The fact of a declining birth rate may be a major factor in the slowing rate of non-white growth following desegregation in the Lansing elementary schools.

Non-white enrollments have continued to grow, however, in the Lansing elementary schools even if at a reduced rate. If non-white birth rate has declined then the growth in non-white enrollment must mean more non-white families are moving into Lansing. The movement of white families to the suburbs may have created a market of affordable housing for non-white families in Lansing. The growth of apartment units in Lansing has included several hundred federally subsidized low-cost units. This has provided an opportunity for many low-income families both white and non-white to find housing in Lansing. At the same time many formerly all-white neighborhoods in Lansing have been opened to non-white families, further expanding the amount of housing available to non-whites.

David Armor claimed his studies demonstrated that white parents are not opposed to the concept of desegregation as such as long as it does not result in their children being reassigned away from neighborhood schools.[5] The results of this study do little to support Armor's claim. The implementation of clusters in the Lansing elementary schools did result in the reassignment of white students as well as non-white students out of their neighborhood schools and required them to be transported. There was no significant difference, however, in the rate of enrollment change for either white or non-white students for cluster or non-cluster schools which could be attributed to clustering and its accompanying busing. The fact that students in cluster schools were reassigned and bused to schools

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[5]Armor, op. cit., p. 1.

out of their neighborhood while students in non-cluster schools were not, did not seem to be a significant factor affecting the rate of enrollment change.

The significant difference in the rate of enrollment change for cluster and non-cluster schools over the total period of the study raises the question of cause. It might imply that naturally integrated schools have a greater holding power for both white and non-white students than do schools which are segregated either white or non-white. On the other hand it might imply that certain types of neighborhoods based on age, type of housing, etc., have more stability and are more likely to integrate than other types of neighborhoods.

Those elementary schools which were not clustered remained untouched by the court order because they already reflected an appropriate racial balance. The problem which Lansing's desegregation plan had been designed to combat did not exist in these schools. They were naturally desegregated as a result of the racial make-up of the neighborhoods which they serve.

It does seem significant that enrollment in these schools continued in a positive direction distinctly different from the pattern observed in cluster schools. They did not lose white students so rapidly, nor did rate of non-white enrollment slow down. This would suggest for consideration the possibility that neither percentage of minority enrollment, nor transportation of students is as critical a variable in stable enrollment as the integration in neighborhood living patterns.

Michael Giles, et al., in a study of the impact of private schools on white loss in desegregated school districts found that a tipping factor was an important ingredient relating to white loss. They determined that when a school passed 30 percent non-white enrollment the rate of white loss accelerated.[6] In a study of desegregation in the Kansas City Schools, Levine and Meyer also found that those schools with a non-white enrollment of over 30 percent had a much higher rate of white enrollment decline than schools enrolling less than 30 percent non-white.[7]

Thirty percent non-white enrollment was not shown to function as a tipping point in the elementary schools of Lansing. There was no significant relationship shown between a school having more or less than 30 percent non-white enrollment in 1976, the year of final implementation of desegregation, and the amount of gain in non-white enrollment it had by the end of the study in 1979. This result would seem to conform more to the studies of Charles Clotfelter which led him to conclude that the most that can be said is that white flight is insignificant for schools with an enrollment of less than 25 percent non-white and that when schools reach a level between 80 percent to 90 percent non-white enrollment they will be abandoned by whites.[8]

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[6]Giles, et al., op. cit., pp. 21-31.

[7]Levine and Meyer, op. cit., pp. 451-462.

[8]Clotfelter, op. cit., pp. 28-49.

The desegregation of the Lansing elementary schools was accomplished with little overt opposition and no violence. Court ordered desegregation involved about half of the district's elementary schools while the other half were naturally desegregated. Regardless of the source of desegregation there was no evidence that white families deserted schools when they were desegregated. Studies made by the Lansing School District indicated that parents, while not happy with desegregation, were satisfied with what was happening in the schools. This satisfaction with the schools may well have been the key factor in the relative stability in their enrollments.

The staff of the Lansing School District worked diligently to develop a plan of implementation for desegregation. Visitation days for parents and students were held in the spring to acquaint them with the school they would be attending in the fall. When school opened in the fall, volunteer parents and staff were on hand to be sure that students got to the proper place and were appropriately welcomed. Care was taken to coordinate instruction between schools within a cluster to provide continuity. The amount of planning required to accomplish these goals was extensive. It required a high level of cooperation between administrators, teachers, and parents. The pay off, however, was success. Without the planning and cooperative effort the results could have been far different. Desegregation in Lansing could have resulted in the kinds of conflict experienced in other districts, but the fact that such conflict did not occur in Lansing testifies to the value of effective pre-planning and involvement.

Implications for Further Research

This study was limited to the examination of one medium sized school district which has undergone desegregation. While the results should be informative and helpful to other school disticts, they cannot be directly applied except to the setting from which they came, the Lansing School District. This or a similar study should be repeated in a number of school districts of varying sizes and ethnic make up in order to expand the base of knowledge available to school districts involved in desegregation efforts. It would be helpful also to expand the concept of this study to the secondary schools of a district whose secondary schools have undergone desegregation.

There were a number of questions left unanswered by this study which lend themselves to further research. The fact that both white and non-white enrollment responded in the same direction at the time desegregation was implemented in the Lansing elementary schools invites further study into the causes. Dissatisfaction with urban living is a national complaint. Unhappiness with a rising crime rate, poor services, and the perception of inadequate educational possibilities is limited neither to Lansing nor to white citizens. The study done by Cusick, et al., in Pontiac indicates that moving was more related to urban living than to desegregation.[9] It would be interesting to see if a survey of persons leaving Lansing would yield similar results.

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[9]Cusick, et al., op. cit., pp. 35-49.

The effects that changing housing patterns in Lansing have on the decision of families to leave would lend itself to further study. As described earlier in this chapter, the expansion of Oldsmobile, the construction of an Interstate Freeway through the heart of town, and the construction of the Logan Street Corridor across the west side of Lansing uprooted many families and provided them, through the sale of their homes and/or government relocation funds, with an opportunity to seek housing either in or out of the city. The Interstate Freeway alone removed over 600 homes and the Logan Corridor removed another 74.[10] The fact that many of these families were non-white provided a unique opportunity for natural integration of many Lansing and suburban neighborhoods. What evidence we have would lead to the belief that non-white families in general choose to relocate within the city. Why this happened and what impact their relocation had on the natural desegregation of half of Lansing's elementary schools could be a study unto itself.

A reverse pattern might be observed in examining what population is currently moving into the city. It seems almost agreed that affluent whites leave while impoverished minorities move in. One might note, however, that many central city houses and apartment units are now being sought as interesting living possibilities both by professional couples without children and by single people. These groups are lured by the attractions of city living and proximity to their work. They do not, however, provide enrollment for

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[10]Information gained through a telephone conversation with Jack Morgan, Michigan State Highway Department on October 8, 1980.

public schools. A more careful analysis of who actually moves into Lansing and why, might add another dimension to the understanding of "white flight."

Another over-arching consideration is of course, the declining birth rate. There are fewer children being born, and school enrollments in gross numbers are declining everywhere. A detailed comparison of birth rates, for both white and non-white families, and enrollment trends might help to determine the specific effect of those birth rates on the enrollment trends occurring at the time of school desegregation.

It might also be fruitful to consider the employment picture in Lansing as an element in enrollment decline. The automobile industry, a principle employer, has undergone changes. While growing through much of the period of this study, in more recent years the automobile industry has hit upon troubled times. As pointed out earlier, Diamond Reo has closed, Motor Wheel has reduced employment, and in the last two years even Oldsmobile has laid off large numbers of employees. Families losing employment in the local automobile related industries may be leaving Lansing for areas with better economic outlooks.

State government, another major work provider, has begun to decentralize, moving many offices out of downtown Lansing into their Secondary Complex. Families who move to be closer to these offices also move into either the suburban Waverly or Grand Ledge school districts.

In fact, some special consideration should be given to the Waverly School District which, as a largely undeveloped suburb adjacent to Lansing, exists as an alternative in staffing, program and racial composition for families who want to remain close to the urban center, but desire a different educational setting. The availability of the Waverly School District may be extremely significant in the loss of white students from the Lansing School District.

Another aspect which has only been touched upon is enrollment in non-public schools. Data reported earlier show that while enrollment in Catholic schools is declining, enrollment in other non-public schools is rising. Research might very profitably be done on the effect of the whole Christian fundamentalist movement on schooling. It is possible that the growth of Christian schools, to the extent that it reflects a desire on the part of families to achieve a different type of education, may be as critical a factor in the decline in public school enrollment as any desire of affluent whites to avoid busing or integrated schools.

The difference in the rate of enrollment change between non-cluster schools and those schools destined to become members of a cluster poses another interesting question. The major difference between these two groups prior to clustering was the natural integration of the non-cluster schools reflecting the integrated neighborhoods they serve and the segregation, either white or non-white, of the schools destined to become members of a cluster. Do naturally integrated schools have a greater holding power than segregated schools? What role does the nature of the neighborhoods involved

play? The implication of greater holding power for naturally integrated schools which reflect integrated neighborhoods may merit a study of the possible stability to be gained through the promotion of racially integrated neighborhoods.

No single study could hope to answer all of the questions relating to the effect that the desegregation of a district's schools has on the enrollment of that district. This study was limited to an exploration of the specific questions stated. An attempt has been made here, to identify other questions which would seem to be important in understanding the effects of desegregation on enrollment change. The answer to these questions and other related questions could have a significant impact on planning for desegregation.

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APPENDICES

APPENDIX A

CLUSTER GROUPS

APPENDIX A

CLUSTER GROUPS

Cluster Group One (1972)

Cluster One	Cluster Two
Barnes	Cavanaugh
Elmhurst	Everett
Lewton	Maple Hill
Main	Riddle

Cluster Group Two (1973)

Cluster Three

Cedar
Grand River
High
Post Oak

Cluster Group Three (1976)

Cluster Four	Cluster Five	Cluster Six
Genesee	Horsebrook	Allen
Gunnisonville	Valley Farms	Fairview
	Willow	Holmes
		Mt. Hope

Non-Cluster Group

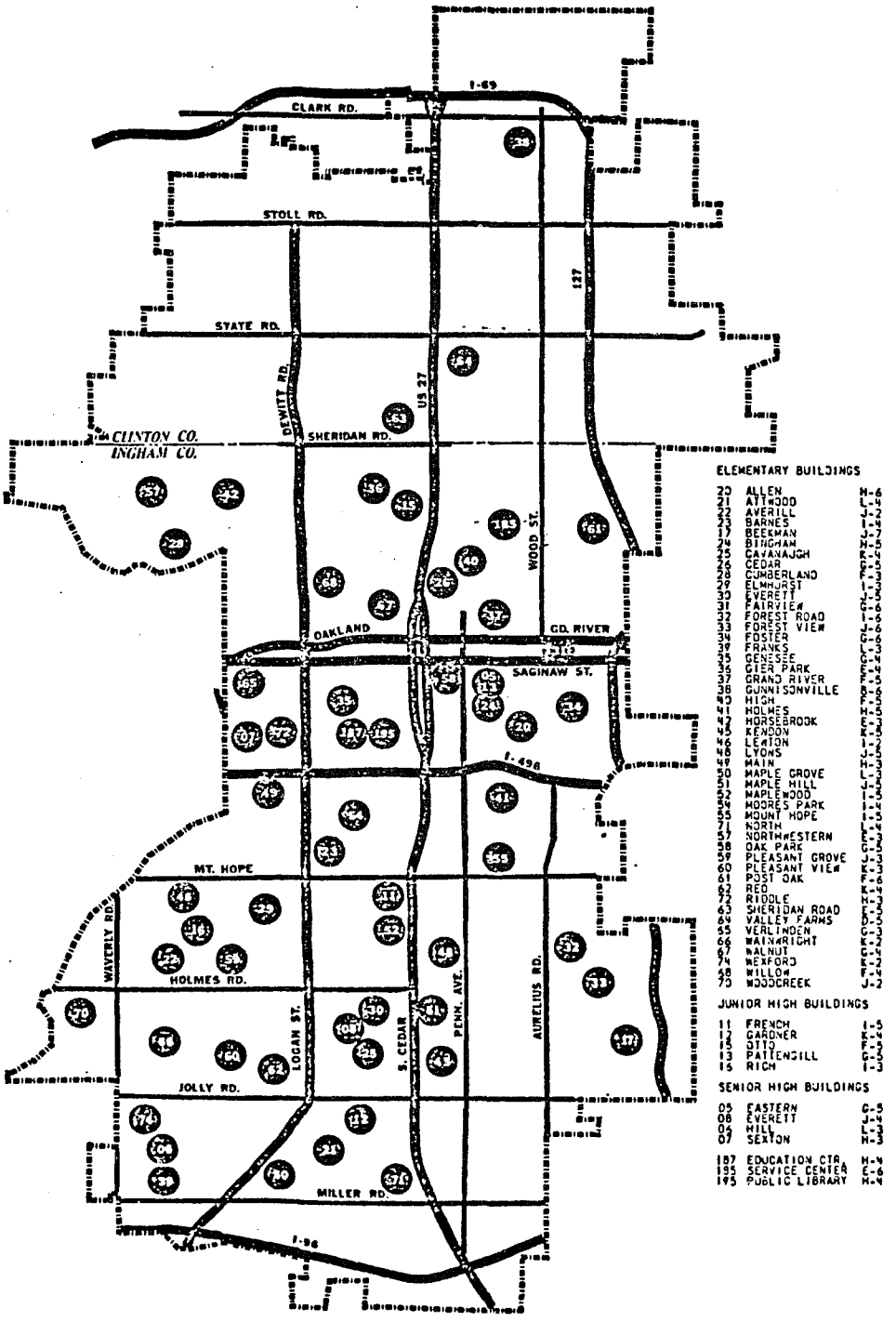
Attwood	Lyons	Reo
Averill	Maple Grove	Sheridan Road
Bingham	Maplewood	Verlinden
Cumberland	Moores Park	Wainwright
Forest View	North	Walnut
Foster	Northwestern	Wexford
Franks	Pleasant Grove	Woodcreek
Gier Park	Pleasant View	

APPENDIX B

MAP OF THE LANSING SCHOOL DISTRICT

APPENDIX B

MAP OF THE LANSING SCHOOL DISTRICT



APPENDIX C

LOCATION OF CLUSTER AND NON-CLUSTER SCHOOLS

APPENDIX C

LOCATION OF CLUSTER AND NON-CLUSTER SCHOOLS

Cluster Schools Shown by Cluster Number, Non-Cluster Schools by X