To the Graduate Council:

I am submitting herewith a dissertation written by Gary George Breegle entitled "Socioeconomic Variables Which Discriminate Between Increasing and Decreasing Enrollments Among Tennessee Public School Districts." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Education, with a major in Educational Administration and Supervision.

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SOCIOECONOMIC VARIABLES WHICH DISCRIMINATE BETWEEN INCREASING AND DECREASING ENROLLMENTS AMONG TENNESSEE PUBLIC SCHOOL DISTRICTS

A Dissertation

Presented for the

Doctor of Education

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ABSTRACT

The basic purpose of this investigation was to identify socio-economic variables which discriminated between Tennessee public school districts which experienced enrollment increases or enrollment decreases from 1970 to 1978. An ancilliary purpose of the study was focused on determining the distribution of enrollment growth or decline and the types of districts or regional areas most affected by the enrollment changes.

Public school districts as listed by the Tennessee State Department of Education in 1970 and 1977 were compared and adjustments were made for any discrepancies between the two lists. A total of 146 public school districts were subjected to analysis in the study. Data for each district were obtained by apportioning known county data to any district with missing data within that county.

Enrollment changes were calculated and districts were divided into one of three categories: (1) those districts which experienced enrollment increases, (2) those districts which experienced enrollment decreases, and (3) those districts which experienced no enrollment change. A stepwise discriminant analysis was applied to district data in the first two groups. Sixteen variables were evaluated for their combined discriminatory power; three were selected and formed a function that discriminated between districts with increased or decreased enrollments, placing approximately 73 percent of the districts in the correct group and misclassifying 27 percent of the districts. Variables selected by the analysis to form a discriminant function were: (1) percent of

population change, (2) pupil-teacher ratio, and (3) assessed property valuation. The discriminant function placed in Group 1 those districts with a net emigration, high pupil-teacher ratio, and low assessed property valuation.

Analyses of variances showed that independent districts generally experienced negative percents of enrollment change and lost a greater percent of students than suburban districts lost. All suburban districts surrounding Davidson-Metro experienced enrollment increases, while all districts surrounding Memphis experienced enrollment decreases. Consolidation accounted for extreme percents of enrollment change in rural districts. Enrollment changes in Tennessee from 1970 to 1978 were typical of other states' enrollment trends during that time.

The socioeconomic variables that discriminated between increasing and decreasing enrollments among Tennessee public school districts were frequently mentioned in the literature. However, more research designed to measure and report the discriminatory power of those socioeconomic variables would provide help to educational policy makers as they administer finances to public school districts in states that experience enrollment declines.

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CHAPTER I

INTRODUCTION TO THE STUDY

I. INTRODUCTION

During the 1961 proceedings of the Fourth National School Conference, Robert Wyatt, then executive secretary of the Indiana State Teachers' Association, stated that there would be an acute need for classrooms in public schools--90,000 the following year and 118,000 by 1965.[1] In 1967 Folger and Nam projected that national enrollments in elementary and secondary schools would, by 1980, exceed 38,000,000 and 16,000,000 respectively.[2]

From 1950 to 1970 elementary school enrollments in the United States grew from 22,000,000 to 37,000,000 while secondary school enrollments more than doubled from 6,500,000 to nearly 15,000,000.[3] With student enrollments in primary and secondary schools increasing rapidly, the total number of instructional staff in the nation's schools also increased from 960,000 in 1950 to over 2,000,000 in 1970; post-secondary education programs expanded to meet the demand for trained teachers.[4]

At the state level, elementary school enrollments in Tennessee expanded from 549,000 to 645,000 during the period between 1950 and 1970; enrollments in Tennessee's secondary schools rose from 126,000 to 257,000.[5] Prior to the 1970's, the possibility of declining enrollments did not seem threatening to Tennessee or other states. Enrollment projections were exceeded by such large numbers that facilities and personnel were inadequate to meet growing demands. Folger and Nam's

projections were realized within three years after their predictions, ten years prematurely.

In the Spring of 1978, Abramowitz and Rosenfeld published projected 1980 enrollments of 29,000,000 for elementary schools and 140,000,000 for high schools. Their projects were based on children already born, and therefore were relatively certain;[6] enrollments had apparently peaked in the early 1970's and were declining. Abramowitz and Rosenfeld's projections for 1980 fell short of the most conservative estimates of Folger and Nam in 1967.

During 1976, state agencies in Iowa and Illinois, aware of decreasing enrollments since the early 1970's, completed descriptive studies of the phenomenon of declining enrollments.[7] In December, 1976, the Education Commission of the States published a study of the fiscal effects of declining enrollment in four states--Michigan, Missouri, South Dakota and Washington.[8] These and other studies were prompted by projections that elementary school enrollments will continue their present decline until 1982.[9]

Today, declining enrollments test the effectiveness of sound funding procedures for public schools. Odden states that declining enrollments create fiscal, budgeting and managerial problems at both state and local levels. Decreases in state aid because of declining enrollments often occur before local costs can be reduced. The result is an unplanned fiscal squeeze for the local school district.[10]

Another impact on school districts is the erosion of affirmative action practices. "Teacher seniority laws require last-hired to

be first-fired;"[11] often this practice moves minorities and females out of upper-level staff positions.

> Declining enrollments also have a detrimental effect on many large cities. When the number of students decrease, these districts which are thought to be wealthy in terms of assessed valuation per pupil, appear wealthier. Coupled with this inequity is the fact that high-cost special education needs and a stagnant or declining tax base often disadvantage these cities.[12]

State and local administrators of public school monies have been trained to deal with higher costs and increasing enrollments, not higher costs and declining enrollments. Lippert and Routh suggested that states develop new policies to cope with declining enrollments, especially when most state aid formulae distributed aid on the basis of the number of pupils in a school district; state aid decreased as the number of students declined.[13]

Generally, this policy has been used by Tennessee. In 1976, legislators in Tennessee passed legislation for funding school districts that replaced their teacher unit formula with an average daily attendance (ADA) weighted pupil formula. The funds were allocated to local school districts on the basis of total weighted ADA and the district teacher training and experience factor.[14]

Abramowitz and Rosenfeld believed that elements of cost differentials caused by declining enrollments should be identified in the states: "Levels of extra aid, based on objective criteria, could then be allocated to alleviate school districts of higher costs per pupil forced on them because of a loss of students."[15]

II. STATEMENT OF THE PROBLEM

Declining enrollments in public schools have initiated abatements in state aid to school districts. If enrollments continue to decline as projected, administration of finances for public education will become increasingly more difficult for educational policy makers.

III. PURPOSE OF THE STUDY

The purpose of the study was to identify which of the following socioeconomic variables discriminated most effectively between districts with declining enrollments and districts with rising enrollments among public elementary and secondary schools in Tennessee; (1) assessed property valuation, (2) assessed property valuation per average daily membership, (3) educational tax rate, (4) Title I monies*, (5) ESEA Title I monies*, (6) percent of teachers with a masters degree or above, (7) average teacher salary, (8) number of teaching positions, (9) number of teachers, (10) resident live births, (11) teacher-teacher position ratio, (12) percent of households with incomes over $15,000, (13) percent of population change (14) pupil-teacher ratio, (15) total population, and (16) number of whites in a given district.

An ancilliary purpose of the study was to answer two questions: (1) What was the distribution of enrollment decline and growth among Tennessee school districts from 1970 to 1978?

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*Highly correlated (.999) variables. Both were reported in the 1977 Annual Statistical Report of the Department of Education.

(2) Where were differences in percents of decline or growth occurring in the state?

IV. DEFINITION OF TERMS

Assessed property valuation per pupil--Assessed property valuation per pupil is the 1977 total dollar amount asssessed to property in a given district divided by the average daily membership for the district in 1977.

Central city district--The school district serving the major city of a standard metropolitan statistical area is a central city district.

Development district--The state of Tennessee is divided into nine geographic regions or districts. Each district, consisting of several counties, is a development district.

Educational tax rate--This tax is set aside for educational purposes by each district. The 1977 tax rate was used in this study.

ESEA Title I monies--Monies appropriated by enactment of the Elementary and Secondary Educational Act and distributed to school districts according to student need are Title I monies.

Independent district--A school district serving a city with a population of 10,000 or more in 1977, but not loacted in a standard metropolitan statistical area, is an independent school district.

Resident live birth--A child born to a resident of a specified district or standard metropolitan statistical area, regardless of the place or occurance, is a resident live birth.

Rural district--Any school district outside of a standard metropolitan statistical area and not an independent district is a rural school district.

Standard metropolitan statistical area--

> A standard metropolitan statistical area (SMSA) includes contiguous counties where the economic and social relationships between central and contiguous counties meet specified criteria of metropolitan character (density, urbanization, growth) and integration (employment, commuting patterns). A SMSA must contain at least one central city of 50,000 inhabitants or more.[16]

Suburban district--Any district in a SMSA except the central city is a suburban district.

V. LIMITATIONS AND DELIMITATIONS OF THE STUDY

Except for SMSA's, data reported in the 1977 Tennessee Statistical Abstract were reported for counties and not for cities. These county data were the best estimators of parallel data for cities within a given county.

The school district serving the major city of a SMSA was assigned to the group of central cities. All other districts in a SMSA, except the central city, were designated as suburban. School districts serving a city with a population of 10,000 or more in 1977, but not located in a SMSA, were designated independent city school districts. All school districts outside of SMSA's, other than the independent districts, were classified as rural.[17] School districts were further categorized by development districts (as assigned by the Tennessee State Planning Commission) and congressional districts.[18] Memphis contained more than one congressional district and data were not available for each; therefore, Memphis was assigned to the ninth congressional district. Any school district with no change in enrollment from 1970 to 1978 was dropped from the study.[19] No adjustments for annexations of school districts were made.

VI. PROCEDURES

After reviewing the literature for appropriate socioeconomic variables and collecting data for the public school districts of Tennessee, a preliminary examination of correlation coefficients between the selected socioeconomic variables, apportionment of data among districts and calculations of enrollment change for each district were performed. The districts were then divided into three groups:

(1) those school districts which showed enrollment increases from 1970 to 1978

(2) those school districts which showed a decline in enrollment from 1970 to 1978

(3) those school districts which showed no change in enrollment from 1970 to 1978.

Those districts in group three were dropped from the study and a stepwise discriminant analysis was applied to the socioeconomic variables suspected of contributing to change in enrollments among the districts. Descriptive statistics were then calculated to determine the distribution patterns of enrollment changes among central city, suburban, independent, and rural districts in Tennessee. Analyses of variances were conducted to identify where percents of decline or growth differed.

VII. ORGANIZATION OF THE STUDY

Chapter I introduces the problem, states the problem and purpose, defines the terms which are used, presents limitations and delimitations and profiles the procedures.

Chapter II presents a review of the related literature.

Chapter III describes the statistical methods used in analyzing the data.

Chapter IV presents the results of the study.

Chapter V contains a general summary, findings, and conclusions drawn from the study.

CHAPTER II

REVIEW OF RELATED LITERATURE

I. INTRODUCTION

Declining public school enrollment is one of the most serious issues facing state legislators and public school administrators. Only during the past decade has attention moved from the expansion of public school facilities, programs and budgets to meet the growing supply of pupils to the realization that the number of pupils is declining while program demands and budgets continue to climb. The literature contains some studies of public school district enrollment changes, but generally deals with only one or a few socioeconomic variables that affect the financing of public schools and not with any relationships between declining enrollments and socioeconomic variables.

In this chapter the magnitude of the enrollment problem, the effects of population change on enrollment and the relationship between enrollment changes and socioeconomic variables will be reviewed. Special emphasis will be given to studies which describe enrollment change situations for specific states.

II. THE MAGNITUDE OF THE ENROLLMENT PROBLEM

Odden et. al. reported that during the early 1970's the fact of declining public school enrollments was virtually unmentioned, and yet dramatic shifts in national economic and demographic patterns were percolating public school support because of enrollment changes. [20]

However, Reishauer reported that the growth in enrollment during the 1950's and 1960's had ended, evidenced by the fact that the number of children from five to seventeen years old had begun to decline.[21] This observation was later confirmed by Burrup's report that public school enrollments had reached a plateau in 1977 and would decrease slowly by 3.2 million, or 7.1 percent, by 1979 with an approximate decline of 1.7 million in the elementary grades and a 1.5 million decline in the secondary grades.[22]

In 1972, enrollment projections based on Series II projections of the U.S. Bureau of the Census, which represented a future in which the two child family would be the norm, predicted a 1 percent per year decline in K-8 between 1974 and 1990 and a 22.5 percent decline for grades 9-12 for the same period.[23] Goettel and Firestine reported that during the 1970's enrollments in public schools would drop between .5 and 1.1 million pupils each year until 1980.[24] As early as 1971, the National Center for Educational Statistics predicted a decline in enrollments until 1980.[25]

Odden et al. reported a drop in public school enrollments of 4.5 percent between 1972 and 1976.[26] Earlier, they reported an enrollment decline of 1,203,000 students in public schools between the fall of 1970 and the fall of 1975, representing a national average decline of 2.6 percent.[27]

The magnitude of the problem is further emphasized by several studies conducted in selected states. Abromowitz and Rosenfeld found that 14 of 37 states with declining enrollments had no provision for alternative funding reflecting the declines. They also found that

three-fourths of all states lost over 1.2 million students between 1970 and 1975.[28] Rohekohr discovered that of 181 school districts in the state of Colorado, 73 experienced declining enrollments between 1961 and 1970.[29]

Odden and Vincent investigated the problem of enrollment decline in Michigan, Missouri, South Dakota and Washington and found that enrollments dropped an average of 1 percent per year between 1970 and 1975. They projected that between 1976 and 1980 Michigan would loose 9.5 percent of its students, Missouri 7.9 percent, South Dakota 2.7 percent and Washington 5.4 percent.[30] Their data showed that the problem would become worse during the late 1970's and that decline would be felt most in the high schools.

They concluded that the full effect of enrollment declines had not been experienced by the four states at that time.[31] The problem was complicated when they discovered that many school districts experienced declines in excess of 20 percent while others realized increases of more than 20 percent. Whatever the direction of change, Odden and Vincent concluded the change was usually dramatic.[32]

Other studies substantiated that the problem was a national problem. Wilken et al. discovered that between 1972 and 1975 Iowa lost a greater share of its public school enrollment than any other state because of a high out-migration rate and a low birth rate.[33] Later, Hickrod et al. found that Illinois had experienced a decline in public school enrollment like other states. The decline began in 1972 and was projected to continue until 1985.[34]

III. THE EFFECTS OF POPULATION CHANGE

Wolfbein stated that socioeconomic implications of a rapidly changing population had three components:[35]

(1) changes in sheer size

(2) changes in composition

(3) changes in geographic distribution

Muskin believed that population patterns changed public policies and in turn were changed by those policies in three basic areas:[36]

(1) the rate of growth in dependent and productive age groups

(2) the migratory patterns of a population from rural areas to urban areas, from central cities to suburbs and from low-income areas to higher income areas

(3) the fluidity of populations in terms of occupation and income status.

More recently, Beale found four causes of changes in population distribution patterns:[37]

(1) the expansion of rural retirement and recreation areas

(2) the location of more state colleges and universities in rural areas

(3) the availability of transportation and communication in rural areas

(4) the modernization of rural life.

Beale's findings were confirmed by a U.S. Bureau of the Census's report which stated that the number of persons moving from metropolitan areas between 1970 and 1975 was greater than the number of persons moving into

metropolitan areas. The trend represented a migration pattern of five years.[38]

Fuguitt and Ziuches also found that most people favored rural areas, especially when the areas were "peripheral metropolitan rings." They conducted a national survey and found that, despite dissatisfaction with large cities, there was no great movement of the population to medium-sized small towns or rural areas adjacent to non-metropolitan counties.[39]

Primary sampling units of SMSAs and non-metropolitan counties were used in the survey. Almost half of the respondents reported living in cities of 50,000 or more; one-third of the respondents lived within 30 miles of a city with a population of 50,000 or more and 20 percent of the respondents lived in more distant locations.[40] When asked where they would live if they chould choose the area, one-fourth replied in large cities, one-half replied in easy commuting distance to a large metropolitan city, and the remaining in a more distant community. After analyzing the data, Fuguitt and Ziuches concluded that the largest drop would be in cities with 500,000 or more and the largest gain would be in rural areas close to metropolises.[41]

Only 9 percent of all respondents preferred to live in rural areas and another 10 percent preferred to live in small to medium sized towns if they were more than 30 miles from a large city. Fuguitt and Ziuches stated that the respondents clearly wanted to have the best of both types of communities. Respondents gave the following four reasons for choices of more rural locations:[42]

(1) less crime

(2) quality of air

(3) quality of water

(4) generally, a better place to rear children

Only 20 percent chose rural locations because of better jobs or higher wages.[43]

Fuguitt and Ziuches concluded that their research showed that if persons sorted themselves out into the kinds of residential environments they claimed to prefer, there would be no massive exodus to remote areas. They also concluded that this type of attitude was shown because they injected the choice to live in a rural area close to a metropolis into their study.[44]

Sargent interviewed over 100 school districts in 40 states and invited 25 of the larger cities to respond in writing to questions about their enrollment projections. He divided the causes of enrollment changes into two main areas:[45]

(1) population

(2) mobility

After giving a brief history of enrollment trends in the United States since 1950, he reported population trends on a "tree" as they would be in the year 2000 if family size were kept at the level of the 1940's and 1950's. The largest group was 0-4 years of age; the 30-34 age group was larger than the 35-39 age group. His tree illustrated that 50 percent of the population would be under 20 years of age. He further reported that since his tree showed that children 0-9 years old comprised a larger segment of the pouplation than those 20-29 years

old, there would be a potential for population growth when these groups were of child-bearing age.[46]

He contrasted this tree with another that illustrated the population in the year 2015 if it stablized at 300 million with a two-child average for each family. The 2015 population had a smaller percentage of children than the 2000 population. Sargent felt that the realities of either of the populations was supported by the rate at which women ages 15-44 would bear children, or the fertility rate during those years. He also felt that the fertility rate, which he defined as the number of births per 1000 women, ages 15-44, was a more accurate index than the crude birth rate. He contended that the number of births should equal the number of women 15-44 times the fertility rate. If the number of women 15-44 years old and the fertility rate increased, then births increased; but if both decreased, births decreased.[47] Johnston reported a negative shift in the average number of births for women in the past 15 years and suggested that a dramatic shift from three children per family to two children per family was taking place, thus supporting Sargent's 2015 tree.[48]

Sargent stated that the problem with declining enrollments in school districts was that planners realized that the number of women 15-44 years old was increasing, but failed to realize that the fertility rate was declining.[49]

> In spite of there being 900,000 more women of childbearing age in 1972 than in 1970, there were 300,000 fewer births. As of November 1973, the fertility rate had dropped still further to 67.1, just about 55 percent of what it was in 1957.[50]

These figures were very close to data reported by the U.S. Public Health Service in 1973. They calculated a fertility decline from 88 births per 1000 women in 1970 to a seasonally adjusted rate of 68.1 in July of 1973.[51]

Supporting Sargent, Johnston stated that between 1972 and 1980 the U.S. population was projected to increase by about 1.5 million to 224 million. However, he pointed out that if the current rate of child birth continued, the size of the population under 16 years of age would decline by over four million.[52]

Sargent applied mortality rates to the number of females age 0-29 then living and concluded that the number of women ages 15-44 will be 54.7 million in 1985. The year 1985, he concluded, would see a large number in this age group. He also offered the following prediction.[53]

> After 1975, both the elementary and secondary figures will decline together, and the full impact of shrinking enrollments will continue at an accelerated pace through at least 1980. At that time, elementary school enrollments will start turning around.

He further stated that the declines could be reasonably predicted since the children were already born and predicted enrollment decreases between 1973 and 1980 of 2.3 million.[54]

Sargent emphasized that the projected decline did not sound too bad until it was realized that the decline would not be spread evenly across the country or in any one area. He encouraged an examination of mobility patterns of American families and reinforced his concern by pointing out that between 1960 and 1970, 125 million people moved

across county lines. In general, Sargent found that people left the heartlands and moved to the coastal areas, particularly the Pacific coast.[55] He characterized these movers as young, ages 18-34, finishing their education, starting a career, marrying and beginning families. He concluded his research with four reasons that growth or decline was observed.[56]

(1) a rapid decline in fertility

(2) a reduction in the migration from rural to urban areas

(3) a decline in desire to live in the central cities

(4) an uneven distribution of population through inter-metropolitan migration.

Abramowitz and Rosenfeld felt that the decline in the fertility rate was associated with the fact that women were postponing marriage during the 1960's and further stated that if future employment for women was available, fertility rates would continue to be depressed.[57] Sklar and Berkov supported this conclusion by noting that in 1960 single women aged 20-24 comprised 28.3 percent of the total population, but by 1972 comprised 38.3 percent of the population.[58] However, they held the view that the number of births was rising, and believed this pattern to be trend, not just a fluxuation, lending some support to Sargent's predictions. If large numbers of women who postponed childbearing suddenly would bear children, the decline in the fertility rate would reverse.[59]

IV. ENROLLMENT CHANGES AND SOCIOECONOMIC VARIABLES

In 1976, Odden and Vincent reported the results of a study of declining enrollments in the states of Michigan, Missouri, South Dakota

and Washington. They found that the loss of students was not uniform among school districts. The changes were widely distributed among school districts with Michigan experiencing declines in 40 percent of its districts, Missouri 50 percent, South Dakota over 75 percent and Washington around 50 percent.[60] They also reported an enrollment decline of 3.9 percent in Tennessee public schools between 1970 and 1975.[61]

Hickrod et al. similarly reported that from 1970 to 1975 only 25 percent of Illinois' school unit districts, or K-12 units, experienced growth while 33 percent of the K-8 units in the study experienced declines greater than 15 percent over the five year period.[62] Rodekohr found that greater than 40 percent of Colorado's public schools had experienced enrollment declines since the early 1960's.[63]

Wilken and Callahan reported that public school enrollment in Iowa dropped by 8 percent between 1970 and 1975. They predicted that between 1976 and 1981 it would probably decline at an average rate of 3 percent each year and that by the late 1980's Iowa would have lost 25 percent of its 1970 enrollment.[64]

Odden and Vincent categorized school districts in the four states they studied by student size to determine whether large, medium or small districts were affected most by declining enrollments, and also by the type of district to determine if differences in enrollment changes were present among central cities, suburbs or rural districts. Smaller districts were located mainly in rural or non-metropolitan areas and larger districts were in the metropolitan areas or central cities and suburbs.[65]

Odden and Vincent noted that declining enrollments were distributed across all sizes of districts with both large and small districts

losing a large number of pupils. In Michigan, for example, they reported that districts with more than 10,000 students lost the most pupils--an average of 4.3 percent. Eighteen of 22 central cities experienced a decline in enrollments.[66]

Districts with 500 or less pupils also experienced a sharp decline, but had a high standard deviation of change that indicated that both high growth and high decline had been experienced by this size of district. The results for Missouri, South Dakota and Washington were similar.[67]

The types of areas which experienced the most decline were the metropolitan areas in each state. Maximum increases were noted in non-metropolitan areas and the researchers felt that these increases might have developed because of consolidation of several smaller districts or migration because of natural resource developments.[68]

Hickrod et al. reached similar conclusions when they observed that the largest negative percentage of enrollment change in Illinois was in the central cities; stable suburbs showed a low percent of student loss. Rural areas clearly showed the lowest percent of student loss. They concluded that enrollment decline in Illinois was more an urban problem than a rural problem.[69] This was also the conclusion of Brown et.al. in their Report of the Illinois Task Force on Declining Enrollments in the Public Schools.[70]

> Generally enrollments are decreasing in central cities, older suburbs and small town/rural areas, but at varying rates. With the exception of a few down-state counties, enrollments are continuing to increase in only those suburban counties in northeast Illinois adjacent to or near Cook County.

Rodekohr, however, found that the typical declining district in Colorado was smaller and more rural than the typical declining district in Illinois.[71] Wilken and Callahan expressed similar conclusions about enrollment changes in Iowa's public schools.

> There is a relationship between school district size and degree of enrollment loss but not a strong linear one. Generally speaking, small districts have lost the greatest proportion of their enrollment, moderate size districts have lost the least, and large districts have fallen in between.[72]

They predicted that enrollment losses would remain high in Iowa's smallest school districts until 1980. They specifically associated five socioeconomic variables with enrollment changes in Iowa's public schools.

(1) special educational needs of students

(2) assessed property values and tax rates

(3) percent of minorities in a district

(4) student-teacher ratios

(5) teacher salaries

Benson claimed that in some large cities many children were attending private schools, chiefly parochial. He also noted that these cities attracted families with children needing special programs because of physical or mental handicaps or bilingual needs.[73]

Odden and Vincent reported that both wealthy and poor, high and low tax rate school districts had experienced enrollment declines and increases. Two patterns emerged from their data. First, the average property wealth per pupil in the first decile was above the state average. Although, on the average, these districts had a wealth advantage, many were poor in property wealth. Second, average tax rates among the districts most affected by enrollment declines were equal to

or above state averages. Even with an average or above property wealth, lower tax rates were not experienced by these districts.[74] For example, Detroit, Michigan, which had a below average property wealth, also had property tax rates well above the state average. These data for Detroit were representative of most central cities in the four states. High declining enrollment districts tended to have both above average property tax rates and property values per pupil.[75] Grant stated that Detroit was not property poor, with assessed value for each student in 1975-1976 close to the state average. Unlike Odden and Vincent, Grant emphasized Detroit's greatest problem was one of lower than average local property tax rates for schools coupled with higher than average costs.[76]

Hickrod et al. concluded from their study that wealth was the best discriminant variable to classify districts as declining or increasing areas. A percentage of 69.2 of the districts in their study were correctly classified by the analysis.[77] Reischauer found that the highest values of property per pupil were in industrialized cities and the few exclusive suburbs of metropolitan areas while central cities had property values per pupil above the state average. He also found that income per pupil was high in suburbs, but was higher per pupil in the central cities due to the fact that a smaller portion of a central city's population was enrolled in school.[78]

Binns and Townsel gave the following description of central city schools.[79]

> Per capita taxes were 30 percent higher in the central city than in the suburbs in 1970. The differentials were higher in the Southern and Mid-Western regions. Higher central city taxes serve to reinforce the other factors pushing upper-income families and business firms out of the central city into suburbs.

Rodekohr reported that declining districts in Colorado had a relatively lower mill levy and relatively higher assessed value per pupil, producing higher revenues. These districts also had higher costs and lower indicators of wealth.[80]

Wilken and Callahan noted that Iowa's most severe enrollments drops tended to concentrate in high-wealth districts. The districts that ranked in the top 10 percent of enrollment growth had a per-pupil income 6 percent less than the state average; per-pupil assessed valuation was 14 percent less than the state average. Districts most severely affected were also those with high expenditures per pupil.[81]

Enrollment trends also seemed to be influenced by concentrations of minority students in school districts studied by Odden and Vincent. In Michigan and Missouri the districts with the largest concentration of minority students was affected most by declining enrollments. Within the two deciles of districts with the greatest decreases in enrollments, an average of 36 percent of the students were minorities.[82]

Likewise, in a recent study of Illinois schools, it was found that districts with declining enrollments had a high concentration of minority and Title I eligible pupils.[83] This study also pointed out that white, middle and upper-income flight from the urban areas could be linked with enrollment declines.[84] Grant supported these findings as he reported that school enrollment was 82 percent black in Detroit, although the city population was about 50 percent black. He recognized, however, that only a few influential black Detroiters, including most of the city's black teachers and principals, enrolled their children in Detroit's public schools.[85] Goettel and Firestine reported that districts with declining enrollments might have a large percentage of students who qualified for Title I funds.[86]

Another socioeconomic variable that researchers connected with declining enrollments was pupil-teacher ratio. Odden and Vincent reported that pupil-teacher ratios were lowest in declining enrollment districts. In Washington, especially, there was a high positive correlation between pupil-teacher ratios and declines: this correlation caused Odden and Vincent to note that enrollment declines would produce a decrease in demand for teachers and unless the number of students enrolled in teacher preparation programs decreased, there would continue to be a surplus of teachers.[87]

Contradicting Odden and Vincent, Grant gave the following account of efforts to lower pupil-teacher ratios in Detroit.[88]

> Detroit did get enough money to spend amounts equal to that being spent in the richest suburbs in four lower east side schools. The money basically brought suburban-sized classes of 25 rather than Detroit-sized classes of nearly 40. Student achievement test scores had begun to show improvement by the end of the three-year period.
>
> When federal funding ended, however, the city school board continued the project on a limited basis for one more year and then dropped it.

Rodekohr, like Odden and Vincent, noticed that the districts with declining enrollments had lower pupil-teacher ratios.[89] Wilken and Callahan's study revealed similar situations in Iowa. Districts that lost several students had a lower pupil-teacher ratio than those districts with smaller losses.[90]

Odden and Vincent also discovered that the average teacher salary in declining enrollment districts was not significantly above the state average. In Washington, the average salary of teachers in districts hardest hit by declines was below the state average. They concluded that a possible bimodal distribution, i.e., the average of

below-average salaries and above-average salaries in small and large districts, existed.[91]

As superintendent of Detroit, Michigan's public schools, Norman Drachler compared teacher slaries in Detroit to rural areas in the state and found that the average salary for teachers in the 129 rural districts was $8,378 while Detroit's teachers received an average salary of $11,475.[92] These findings seem to contradict Odden and Vincent's. Similarly, Reischauer and Hartman stated that teacher salaries in rural and central city districts were generally low in Delaware, Washington, California, Michigan and New York, but that in central cities teachers were usually paid higher salaries.[93]

To understand better the relationships between socioeconomic variables and enrollment changes in public schools and how the changes affected local educational budgets, several statewide studies and a national study were conducted. Generally, researchers concluded that the problem of declining enrollments was neglected during the 1970's and advised that more studies needed to be conducted because of projected declines in public school enrollments. The prevalent variables cited were birth rates, fertility rates, population movements and patterns, school district size, assessed property valuation per pupil, percent of minorities in a district, percent of Title I students in a district, pupil-teacher ratios, teacher salaries, and educational tax rates. Several measures of district wealth were also found to be significantly related to enrollment changes.

Often enrollment patterns were inconsistent within a state or a group of states included in a study. Further, findings and conclusions

sometimes differed significantly from study to study; this situation emphasized the unique relationships between socioeconomic variables and enrollment trends in each research situation. Consequently, relatively few funding formulae have been adjusted to compensate for these negative enrollment trends and relatively few studies have been completed that measured the relationship between these variables and enrollment changes.

CHAPTER III

METHODOLOGY

I. INTRODUCTION

The purpose of this chapter is three-fold: (1) to describe the procedures used in selecting the school districts and collecting and coding the data, (2) to describe the statistical method used to determine which socio-economic variables discriminated best between positive and negative enrollment changes, and (3) to describe the statistical methods used in analyzing the distribution of enrollment changes and where differences in percentages of enrollment changes occurred in the state.

II. SELECTION OF THE SCHOOL DISTRICTS

Public school districts in Tennessee, as listed in both the 1970 and 1977 Annual Statistical Report of the Department of Education, served as the initial population for this study. The two lists of school districts were made consistent with one another by noting and adjusting for any differences. For example, 1970 data for Brownsville, Rockwood and Sparta city school districts were merged with the 1970 data for each city's respective county; 1977 data for the Trenton city school district were merged with 1977 Gibson County data. These mergers altered the initial population of 148 public school districts to 146 districts (Appendix A).

III. COLLECTION AND CODING OF DATA

Assessed property valuation, educational tax rate, Title I monies, ESEA Title I monies, percent of teachers with a masters degree or above, average teacher salary, number of teaching positions, number of teachers, 1970 average daily membership, and 1977 average daily membership were provided by the Tennessee Department of Education in the 1970 and 1977 Annual Statistical Report. The percent of households with incomes over $15,000, percent of population change, number of whites in a given district, total population and the number of resident live births were generated from the 1977 Tennessee Statistical Abstract.

After the available data were identified for each school district, the data were transferred to coding sheets and keypunched on data cards. Variables were assigned abbreviated names (Table 1) to facilitate the use of a computerized statistical analysis package. District data were then divided into central city, suburban, independent, and rural districts (Table A-19 through Table A-22); data were also divided into nine development districts (Table A-2 through Table A-9) and nine congressional districts (Table A-11 through A-18). The fifth congressional district was Davidson-Metro and the ninth congressional district was Memphis.

Several data were available only for county or SMSA districts. The Statistical Package for the Social Sciences (SPSS) was used to generate Pearson product moment correlation coefficients for all possible variable combinations. These coefficients were examined to determine which variables could be used to compute best estimates of missing data for several school districts.

TABLE 1

VARIABLE DESCRIPTION AND NAME

Description of Variable	Variable Name
Assessed property valuation for a district	VAL
Assessed property valuation per average daily membership	VALPUP
Educational tax rate	TAX
Title I monies	T89110
Percent of teachers with a master degree or above	MS
ESEA Title I monies	ESEA
Average teacher salary	SAL
Number of teaching positions	POS
Number of teachers	TEACH
Resident live births	BIRTH
Average daily membership (1970)	ADM70
Average daily membership (1977)	ADM77
Percent of households with incomes over $15,000	INC
Percent of population change	CHANGE
Pupil-teacher ratio	PTR
Number of white population in a district	WHITE
Total population in a district	TOTPOP

Once these variables were identified, county data were apportioned among their corresponding districts which had missing data. Data cards were revised and missing data were added. Watertown data remained incomplete because variables such as Title I monies and ESEA Title I monies were not reported for the district; the district had not received such funds.

IV. METHOD OF DETERMINING THE BEST SOCIOECONOMIC DISCRIMINANT VARIABLES

Enrollment changes were calculated by subtracting a district's 1970 average daily membership from its 1977 average daily membership. Assessed property valuation per pupil was calculated for a given district by dividing that district's property valuation by its 1977 average daily membership. Pupil-teacher ratios were calculated by dividing the 1977 average daily membership for a district by that district's number of teachers (Table 1, p. 28). Teacher-teacher position ratios were calculated by dividing the number of positions by the number of teachers. Districts were then divided into three groups:

(1) those districts which showed enrollment increases from 1970 to 1978

(2) those districts which showed enrollment decreases from 1970 to 1978

(3) those districts which showed no enrollment change from 1970 to 1978.

Any district in group three was dropped from the study.

Districts with enrollment increases were coded using a "1" and districts with enrollment decreases were coded using a "2."

Before conducting the analysis, probabilities of group membership were subjected to a Bayesian adjustment according to the prior distribution of the districts. These prior probabilities summed to 1.0.

> A Bayesian adjustment of this probability is often desirable when the costs of misclassification into certain groups are very high, when the groups are of grossly different sizes, or when one desires to take advantage of a priori knowledge of group membership probabilities.[94]

A stepwise discriminant analysis was then applied to the entire set of socioeconomic variables suspected of reflecting enrollment change among the districts. Rather than discriminating among the groups with a full set of independent variables which may have contained excess information about the group differences, the stepwise selection method was used. It standardized the values of each variable and produced a discriminant function that contained the "best set" of discriminant variables, or a set of optimal variables. Standardized and unstandardized function coefficients were also calculated. The order in which the variables were introduced into the stepwise procedure was not necessarily indicative of the relative importance of the variables to the discriminant function.

The Wilk's method for selecting variables was used. This method introduced the variable that maximized the F ratio and minimized Wilk's lambda. A tolerance level of .001 was set in order to ensure that the program would have no difficulty inverting any covariance matrix which would include that variable being evaluated for entrance into the analysis. Discriminant scores were calculated for each district and the districts were placed in either Group 1 or Group 2. Comparisons

of districts' actual group memberships with predicted group memberships were made and the percentage of correct "hits" was calculated.

V. METHOD OF ANALYZING DISTRIBUTION OF ENROLLMENT CHANGES

A frequency tabulation of crude enrollment changes and descriptive statistics for those changes were generated for central city, suburban, independent and rural districts.

> Normally, the first task of data analysis is to determine the basic distribution characteristics of each of the variables to be used in the subsequent distribution, variability, and central tendencies of the variables provides the researcher with necessary information required for selection of subsequent statistical techniques and often constitutes a basic computer reference document for the entire file.[95]

The crude enrollment changes were then converted to percents of change by dividing the amount of positive or negative change for a district by that district's 1970 ADM. Frequency tabulations and descriptive statistics were generated for these percents of change among central city, suburban, independent, and rural districts.

VI. METHOD FOR ANALYZING WHERE CHANGES OCCURRED

Three one-way analyses of variances (ANOVA) were conducted to investigate where in Tennessee differences in percents of enrollment change occurred. Three hypotheses were made:

(1) There was no difference in percents of enrollment change among four types of districts (central city, suburban, independent, and rural).

(2) There was no difference in percents of enrollment change among the nine development districts.

(3) There was no difference in percents of enrollment change among the nine congressional districts.

Descriptive statistics were calculated for each analysis of variance. If the analysis generated a significant F value, a Scheffe post-hoc test was applied to the data to determine where differences among the groups existed.

CHAPTER IV

RESULTS OF THE STUDY

I. INTRODUCTION

The major purpose of this study was to identify socioeconomic variables which discriminated most effectively between districts which experienced enrollment growth and districts which experienced enrollment decline. Ancilliary to this purpose was the determination of the distribution of enrollment changes among Tennessee's public schools and where different percentages of change occurred.

In order to successfully conduct the study it was necessary to apportion some county data among various school districts within a county. It was also necessary to figure a crude enrollment change for each school district so that districts could be categorized for the discriminant analysis.

To analyze the distribution of enrollment change, percents of enrollment change were calaculated for each public school district in Tennessee; these percents of enrollment change data were subjected to three one-way analyses of variances to determine where in Tennessee differences in percents of enrollment change existed. The results of these analyses are presented in this chapter.

II. DISCRIMINANT ANALYSIS OF DISTRICT DATA

Apportionment of Missing Data

Several data were available by county, but were not available by individual school districts within a county. These data were:

(1) assessed property valuation, (2) percent of households with incomes of $15,000 or above, (3) percent of population change, (4) number of whites in the population, (5) total population, and (6) number of resident live births. In order to apportion these county data among their individual school districts, Pearson product moment correlations for all possible pairs of variables were generated by investigating the relationships between assessed property valuation, educational tax rate, Title I monies, teacher salary, number of teachers, number of teaching positions, 1970 ADM, 1977 ADM, and the missing variables. The variable pairs that generated the highest correlation coefficients with significance levels of .01 or greater were used to determine which variables would be the predictor variables. The variables selected as a result of this analysis are given in Table 2. Data were then apportioned among all school districts with missing data.

Crude Enrollment Change

To determine which districts had lost or gained enrollment, each of the 147 district's 1970 ADM was subtracted from is 1977 ADM. Sixty-five districts, or 44.5 percent of all districts, experienced enrollment decreases as shown in Table 3. Eighty districts, or 54.8 percent of all districts,experienced enrollment increases as shown in Table 4. One district (Dyersburg) had no change in enrollment; Dyersburg's data were removed from the study.

Stepwise Procedure

The discriminant analysis provided by SPSS processed 146 districts. Three districts were excluded from the procedure. One district (Dyersburg) had missing or out-of-range group codes and two districts (Clinton

TABLE 2

PEARSON CORRELATION COEFFICIENTS

Missing Variable	Predictor Variable	Correlation Coefficient	Significance Level
VAL	TOTPOP	.9848	.001
INC	ADM70	.6353	.001
CHANGE	ADM77	.9683	.001
WHITE	ADM70	.9245	.001
TOTPOP	TEACH	.6998	.001
BIRTH	TEACH	.6587	.001

TABLE 3

DISTRICTS WITH DECLINING ENROLLMENTS FROM 1970-1978

District	1970 ADM	1977 ADM	Change	% of Change
2	776	693	-83	-11
3	6839	5373	-1466	-21
4	5462	5123	-339	-6
6	1726	1687	-39	-2
8	1589	1285	-304	-19
14	521	383	-138	-26
19	432	416	-16	-3
20	573	476	-97	-16
21	6637	6567	-70	-1
26	1563	1422	-141	-9
27	5097	5003	-94	-1
28	841	726	-115	-13
31	4005	3383	-622	-15
32	896	355	-541	-60
33	807	717	-90	-11
34	719	573	-146	-20
36	327	308	-19	-5
40	89868	69653	-20215	-22
41	1954	1892	-62	-3
46	6379	5336	-1043	-16
48	6040	5791	-249	-4
49	5330	4687	-643	-12
50	2933	2564	-369	-12
51	2357	2246	-111	-4
53	4473	4434	-39	0
56	3101	2741	-360	-11
60	28518	18978	-9540	-33
62	1561	1333	-228	-14
63	5508	5201	-307	-5
67	5325	4457	-868	-16
71	1475	1145	-330	-22
75	1676	1664	-12	0
79	35155	28602	-6553	-18
80	2040	1631	-409	-20
81	5159	5112	-47	0
84	4412	4300	-112	-2
85	1144	997	-147	-12
86	3466	3443	-23	0
87	1892	1830	-62	-3
89	1825	1692	-133	-7

TABLE 3 (Continued)

District	1970 ADM	1977 ADM	Change	% of Change
90	500	420	-80	-15
93	6993	6788	-205	-2
94	7793	6431	-1362	-17
95	5060	4756	-304	-6
97	3626	3446	-1180	-32
98	10316	9647	-669	-6
101	1205	1166	-39	-3
104	3402	3316	-86	-2
106	2007	1915	-92	-4
109	809	727	-82	-10
110	2678	2650	-28	-1
115	4357	2280	-2077	-47
118	3636	2644	-992	-27
123	35350	19656	-15694	-44
124	129138	107701	-22067	-17
125	2674	2614	-60	-2
127	17682	17524	-158	0
129	6790	5764	-1026	-15
131	6390	6153	-237	-3
132	1132	875	-257	-22
133	1135	1037	-98	-8
134	3405	3080	-325	-9
136	881	846	-35	-3
139	6419	6271	-148	-2
146	2830	2602	-228	-8

TABLE 4

DISTRICTS WITH INCREASING ENROLLMENTS FROM 1970-1978

District	1970 ADM	1977 ADM	Change	% of Change
1	7473	7693	220	2
5	2521	2712	191	7
7	9590	9921	331	3
9	2188	2648	460	21
10	7595	9060	1465	19
11	3486	3676	190	5
12	6248	7059	811	12
13	1739	1834	95	5
15	403	433	20	7
16	787	903	116	14
17	1347	1516	169	12
18	1327	1386	59	4
22	2568	2587	19	0
23	3286	4486	1200	36
24	2107	2235	128	6
25	4189	5116	927	22
29	2956	3094	138	4
30	1194	1243	49	4
35	302	323	21	6
37	307	515	208	67
38	408	529	121	29
39	5061	5545	484	9
42	2213	2351	138	6
43	4985	6016	1031	20
44	3491	3508	17	0
47	2460	2584	124	5
54	2818	3156	338	11
55	6575	7127	552	8
57	2518	2525	7	0
58	3493	4265	772	22
59	5057	5225	168	3
61	25943	27086	1143	4
64	4062	4102	40	0
65	6924	7136	212	3
66	569	572	3	0
68	3089	3146	57	1
69	782	792	10	1
70	3531	3704	173	4
72	2498	2722	224	8
73	1267	1248	81	6
74	3107	3283	176	5
76	5169	5664	495	9
77	2336	2527	191	8

TABLE 4 (Continued)

District	1970 ADM	1977 ADM	Change	% of Change
78	21623	25736	4120	19
82	6281	6698	417	6
83	1517	1583	66	4
88	5698	6039	341	5
91	3894	4095	201	5
92	2329	2577	248	10
96	144	176	32	22
99	1191	1413	222	18
100	4203	4425	222	5
102	13599	14180	581	4
103	796	823	27	3
105	4417	4645	228	5
107	3223	3339	116	3
108	1009	1081	32	7
111	6989	7409	420	6
112	3217	3734	512	16
113	573	605	32	5
114	4957	6239	1282	25
116	7053	7075	22	0
117	9923	11897	1974	19
119	2517	2655	138	5
120	1391	1441	50	3
121	1448	1732	284	19
122	6276	6719	443	7
126	1547	1593	46	2
128	3915	4146	231	5
130	13296	16669	3373	25
135	1947	2250	303	15
137	6101	6167	66	1
138	8550	8950	400	4
140	2885	2897	12	0
141	5010	5149	139	2
142	3442	3635	192	5
143	6309	7820	1511	23
144	1702	2173	471	27
145	4978	7097	2119	42
147	320	370	50	15

and Watertown) had at least one missing discriminant variable. Of the 143 districts selected for the discriminant analysis, 79 had enrollment increases and were placed in Group 1; 69 had enrollment decreases and were placed in Group 2. Group means for each of the variables in each group were calculated and are given in Table 5.

The stepwise variable selection analysis then applied the Wilk's lambda selection rule. The minimum tolerance level was .001 and the minimum F value to enter a variable was 2.00. Thus, one function containing three variables (CHANGE, PTR, VAL) was derived. The prior probability for Group 1 was .55245 and .44755 for Group 2. Table 6 gives entrance criterion for each variable as the analysis was begun.

Pupil-teacher ratio (PTR) was selected at Step 1 and was included in the analysis. The relatively high Wilk's lambda of .853514 indicated that discriminant power was left in the other variables not selected in this step. At Step 2, the percent of population change (CHANGE) for each district was included in the analysis and lambda was reduced to .772938. Assessed property valuation (VAL) was then included in the analysis at Step 3 with a lambda of .757527 at a .0000 level of significance. At that point, the F level was insufficient for further computation. A summary of the action during the analysis is given in Table 7.

The discriminant function, representing an optimal set of discriminant variables, contained significant classification power. The value of Wilk's lambda was equivalent to a chi-square value of 38.739 with three degrees of freedom which is significant at the .0000 level.[96]

TABLE 5

GROUP MEANS FOR VARIABLES IN THE STUDY

Variable	Group 1 Mean	Group 2 Mean
VAL	55174148.89873	2109826350.14063
TAX	1.98266	1.87500
T89110	225939.11392	400937.42188
ESEA	216570.94937	381663.84375
MS	78.81013	159.60938
SAL	10679.89873	10609.54688
POS	253.68354	401.18750
TEACH	261.62025	463.59375
INC	0.61785	0.61109
CHANGE	6.88481	0.82500
WHITE	18047.49367	28806.56250
TOTPOP	21145.24051	36003.56688
BIRTH	366.11392	661.92185
TIME	97.38419	96.13609
VALPUP	10844.22849	13458.33655
PTR	18.14705	16.44898

TABLE 6

ENTRANCE CRITERION FOR EACH VARIABLE BEFORE ANALYSIS

Variable	Tolerance	Minimum Tolerance	F to Enter	Wilk's Lambda
VAL	1.0000000	1.0000000	2.15520	0.9849450
TAX	1.0000000	1.0000000	0.76885	0.9945767
T89110	1.0000000	1.0000000	1.75310	0.9877193
ESEA	1.0000000	1.0000000	1.82790	0.9872022
MS	1.0000000	1.0000000	2.08380	0.9854364
SAL	1.0000000	1.0000000	0.02274	0.9998387
POS	1.0000000	1.0000000	1.60690	0.9887317
TEACH	1.0000000	1.0000000	2.23890	0.9843695
INC	1.0000000	1.0000000	0.00906	0.9999357
CHANGE	1.0000000	1.0000000	18.25200	0.8853879
WHITE	1.0000000	1.0000000	2.00110	0.9860063
TOTPOP	1.0000000	1.0000000	1.79990	0.9873960
BIRTH	1.0000000	1.0000000	1.99110	0.9860756
TIME	1.0000000	1.0000000	1.63820	0.9885149
VALPUP	1.0000000	1.0000000	3.57490	0.9752727
PTR	1.0000000	1.0000000	24.19900	0.8535143

TABLE 7

SUMMARY TABLE OF DISCRIMINANT ANALYSIS ACTION

Step	Variable Entered	F to Enter	Wilk's Lambda	Significance
1	PTR	24.199	0.853514	0.0000
2	CHANGE	14.594	0.772939	0.0000
3	VAL	2.828	0.757527	0.0000

Classification of Districts

Standardized and unstandardized discriminant function coefficients for the variables were calculated and are given in Table 8. The unstandardized coefficients permit the classification of districts into one of two groups (increasing or decreasing) given the values of: (1) assessed dollar values of property (VAL), (2) percent of change in population (CHANGE), and (3) pupil-teacher ratio (PTR).

The coefficient for VAL was small because VAL was reported in actual dollar amounts. During the calculations, the decimal point in the VAL coefficient was moved eight places to the left of its location as shown in Table 8. Likewise, the decimal was moved one place to the left in the CHANGE coefficient reported in Table 8 before calculations were made. The unstandardized coefficients, when multiplied by their respective variable value for district, produced values that were summed and added to the constant (-5.95759). This discriminant score was used to classify a district into Group 1 or Group 2.

The average discriminant score for Group 1 was 0.50565 and was -0.62416 for Group 2. A "cutting score," which represented the difference between the average discriminant score for Group 1 and the average discriminant score for Group 2, was -0.059255. If the discriminant score for a district was less than the cutting score, the district was assigned to Group 1; otherwise, the district was assigned to Group 2. The discriminant function placed in Group 1 those districts with net emigration, high pupil-teacher ratios, and low assessed property valuations.

TABLE 8

DISCRIMINANT FUNCTION COEFFICIENTS

Variable	Standardized Coefficient	Unstandardized Coefficient
VAL	-0.29875	-0.13496 D-08
CHANGE	0.69194	0.82042 D-01
PTR	0.67556	0.32914
(Constant)		-5.95759

Twenty-two districts below the cutting score were misclassified, while 17 districts above the cutting score were misclassified. Approximately 27 percent of the districts were misclassified, discriminant scores for these districts are given in Table 9.

Figure 1 illustrates a histogram of discriminant scores for the districts. Approximately 73 percent of the predicted group memberships were correct (Table 10). Thirty-nine districts were classified incorrectly. When individual scores for districts that were misclassified were examined, the composition of the misclassified districts approximated the composition of the total set of district data (Table 11). The analysis classified districts with increased enrollments more accurately than districts with decreased enrollments.

III. DISTRIBUTION OF ENROLLMENT CHANGE

All School Districts

The average crude enrollment change among Tennessee's public school districts from 1970 to 1978 was -407 students. The minimum change was -22,067 and the maximum change was 4120. The average percent of enrollment change was .25. The minimum and maximum percents of change were -60.4 and 67.8.

Central City Districts

The mean percent of enrollment change in Tennessee's eight central cities was -7.632. The relatively flat distribution (kurtosis of -2.305, skewness of 0.021, standard deviation of 11.865) was attributed to the small sample size (Table 12); the distribution was also influenced by

TABLE 9

MISCLASSIFIED DISTRICTS' DISCRIMINANT SCORES

District Number	District Name	Actual Group	Predicted Group	Score
1	Anderson County	1	2	-0.8139
4	Bedford County	2	1	0.4192
9	Maryville	1	2	-0.3248
12	Campbell County	1	2	-0.8542
13	Cannon County	1	2	-0.2716
15	Atwood	1	2	-0.4325
19	South Carroll	2	1	0.0570
21	Carter County	2	1	-0.0158
22	Elizabethton	1	2	-0.7011
27	Cocke County	2	1	0.9730
30	Manchester	1	2	-0.5487
33	Alamo	2	1	-0.2370
34	Bells	2	1	0.3047
41	Decatur County	2	1	1.3629
47	Fentress County	1	2	-0.7078
48	Franklin County	2	1	0.4609
51	Milan	2	1	0.4582
53	Giles County	2	1	-0.1693
57	Grundy County	1	2	-0.3630
61	Chattanooga	1	2	-0.9996
63	Hardiman County	2	1	0.2536
84	Lincoln County	2	1	0.0394
87	Lenoir City	2	1	0.2906
93	Madison County	2	1	0.4276
96	Richard City	1	2	-1.5122
98	Maury County	2	1	0.3905
101	Sweetwater	2	1	0.2305
103	Moore County	1	2	-0.5948
119	Scott County	1	2	-0.5733
125	Smith County	2	1	-0.0735
126	Stewart County	1	2	-0.3692
127	Sullivan County	2	1	0.0628
128	Bristol	1	2	-1.3772
131	Tipton County	2	1	-0.1075
133	Trousdale County	2	1	-0.1609
134	Unicoi County	2	1	-0.2046
136	VanBuren County	2	1	0.5588
139	Johnson City	2	1	0.5461
146	Lebanon	2	1	0.5032

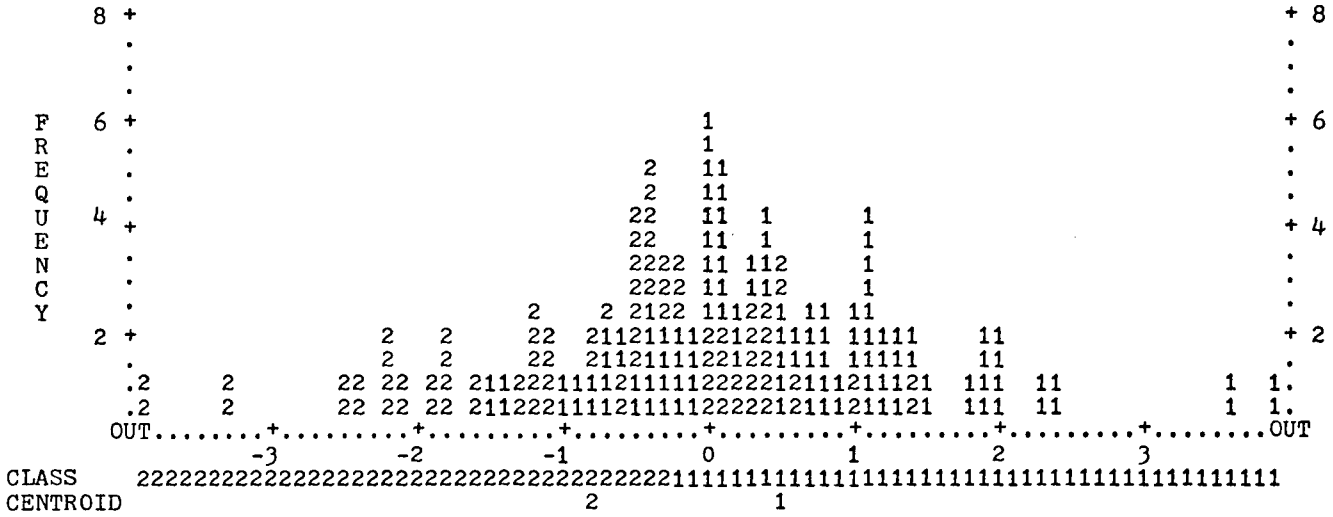

Figure 1. Classification histogram of discriminant scores for districts

TABLE 10

DISCRIMINANT PREDICTION RESULTS

Actual Group	N	Predicted Group	
		Group 1	Group 2
Group 1: Increasing Group	80	65 (81.3%)	15 (18.8%)
Group 2: Decreasing Group	64	24 (37.5%)	40 (62.5%)
Total	144	89	55

NOTE: Percentage of grouped cases correctly classified is 72.92 percent.

TABLE 11

COMPOSITION OF TOTAL DATA SET AND MISCLASSIFIED DISTRICTS

Type of District	Percent of Data Set	Percent of Misclassified Data
Central City	5.47	5.12
Suburban	20.54	12.82
Independent	7.53	10.25
Rural	66.43	69.23

TABLE 12

DISTRIBUTION OF ENROLLMENT CHANGE IN CENTRAL CITY DISTRICTS

District Number	District Name	1970 ADM	1977 ADM	Percent of Change
40	Davidson-Metro	89868	69653	-22
79	Knoxville	35155	28602	-18
124	Memphis	129138	107701	-17
129	Kingsport	6790	5764	-15
139	Johnson City	6419	6271	-2
102	Montgomery-Clk.	13599	14180	4
61	Chattanooga	25943	27086	4
128	Bristol	3915	4146	5

several districts located at the tails of the distribution. Three cities (Montgomery-Clarksville, Chattanooga, Bristol) experienced positive percents of enrollment change. Davidson-Metro showed the largest percent of enrollment decrease.

Suburban Districts

The mean percent of enrollment change in suburban districts was 4.232. In Table 13, percents of change are grouped into 5 percent intervals to form a distribution pattern. Table 13 contains positive percents of change for districts surrounding Davidson-Metro (Sumner County, Franklin, Williamson County, Cheatham County and Wilson County) in the 25-45 percent intervals.

Independent Districts

Generally, independent districts experienced enrollment decline (Table 14). The average percent of enrollment change was -9.514. The distribution was skewed -1.822 and showed relatively few positive increases in percents of enrollment among the districts. Two districts (Elizabethton and Dyersburg) experienced no percent of change in enrollment. Harriman experienced the greatest percent of enrollment change (-47) and was located toward the extreme left tail of the distribution.

Rural Districts

Because of the large number of rural districts, percents of enrollment changes are grouped into 5 percent intervals in Table 15. Rural districts experienced a wide range of enrollment change as evidenced by a minimum change of -60.379 percent and a maximum change of

TABLE 13

DISTRIBUTION OF ENROLLMENT CHANGE IN SUBURBAN DISTRICTS

Percent Interval	Number of Districts
Negative	
66-70	
61-65	
51-55	
46-50	
41-45	1
36-40	
31-35	1
26-30	1
21-25	1
16-20	1
11-15	
6-10	3
1- 5	1
0	3
1- 5	4
6-10	
11-15	2
16-20	4
21-25	3
26-30	2
31-35	
36-40	1
41-45	1
46-50	
51-55	
56-60	
61-65	
66-70	
Positive	

TABLE 14

DISTRIBUTION OF ENROLLMENT CHANGE IN INDEPENDENT DISTRICTS

District Number	District Name	1970 ADM	1977 ADM	Percent of Change
115	Harriman	4357	2280	-47
94	Jackson City	7793	6431	-17
31	Tullahoma	4005	3383	-15
50	Humbolt	2933	2564	-12
56	Greeneville	3101	2741	-11
106	Union City	2007	1915	-4
51	Milan	2357	2246	-4
22	Elizabethton	2568	2587	0
45	Dyersburg	3370	3370	0
59	Morristown	5057	5225	3
11	Cleveland	3486	3676	5

TABLE 15

DISTRIBUTION OF ENROLLMENT CHANGE IN RURAL DISTRICTS

Percent Interval	Number of Districts
Negative	
66-70	
61-65	1
56-60	
51-55	
46-50	
41-45	
36-40	
31-35	1
26-30	1
21-25	1
16-20	5
11-15	16
6-10	7
1- 5	16
0	9
1- 5	23
6-10	16
11-15	4
16-20	3
21-25	3
26-30	1
31-35	
36-40	1
41-45	
46-50	
51-55	
56-60	
61-65	
66-70	1
Positive	

67.752 percent. The kurtosis of 7.456 showed that the percents of change tended to stack close to the average (.766) and thin out rapidly toward the tails of the distribution. The kurtosis reflected the extreme changes in Crockett County (-60) and Gadsden (67). It appeared that Gadsden, located in Crockett County, had a high percent of enrollment increase because of student movement within the two districts.

IV. DIFFERENCES IN ENROLLMENT CHANGE

Central City, Suburban, Independent, and Rural

It was hypothesized that no difference in percents of enrollment change existed among central city, suburban, independent or rural districts. A one-way analysis of variance was applied to district data divided into the four types of districts. Table 16 gives the results of the analysis.

The table value for F (.95; 3,142) is 2.67, therefore the F ratio of 2.71 was significant at the .05 level of significance; the hypothesis was rejected. Thus, at least one type of district showed a mean percent of change that was different from the mean percent of change for other types of districts. A Scheffe post-hoc analysis was conducted to reveal where the difference occurred. A difference was found between suburban and independent districts' percents of enrollment change. Independent districts lost a greater percent of students than suburban districts lost. Descriptive statistics are given in Table 17 and selected Scheffe comparisons are given in Table 18.

TABLE 16

SUMMARY TABLE FOR ANALYSIS OF VARIANCE OF MEAN PERCENTS OF ENROLLMENT CHANGE BETWEEN FOUR TYPES OF DISTRICTS

Source	DF	SS	MS	F Ratio
Between Groups	3	2047.2346	682.4114	2.7160
Within Groups	142	35683.9133	251.2951	
Total	145	37731.1445		

TABLE 17

DESCRIPTIVE STATISTICS FOR POST-HOC SCHEFFE ANALYSIS
OF FOUR TYPES OF DISTRICTS

Group	Count	Mean	Standard Deviation	Standard Error
1	8	-7.6325	11.8655	4.1951
2	30	4.2321	21.2068	3.8718
3	11	-9.5136	14.8360	4.4732
4	97	0.7662	14.2358	1.4454
TOTAL	146	0.2437	16.1312	1.3350

TABLE 18

SCHEFFE CONFIDENCE INTERVALS FOR FOUR TYPES OF DISTRICTS

Comparison	Contrast	S	Standard Deviation of the Contrast	Lower Limit	Upper Limit
L_1	M_3-M_2	2.31	5.587	-26.6500	-.8397*
L_2	M_1-M_2	2.31	6.307	-16.4300	2.7050
L_3	M_3-M_4	2.31	5.040	-21.9223	1.3163
L_4	M_1-M_4	2.31	5.830	-21.8661	5.0685
L_5	M_4-M_2	2.31	3.311	-2.6500	12.6460

*Significant difference

Development Districts

It was hypothesized that no difference in percents of enrollment change existed among Tennessee's nine development districts. A one-way analysis of variance was applied to district data categorized into development districts. Table 19 gives the results of the analysis.

The table value of 2.00 for F (.95; 8,137) was compared to the F ratio of 2.24. The F ratio was significant at the .05 level of significance; the hypothesis was rejected. Therefore, at least one type of development district showed a mean percent change that was different from another development district's mean percent of change. A Scheffe post-hoc analysis was conducted to discover where the difference occurred. A difference was found between the fifth development district's percent of enrollment change and the ninth development district's percent of enrollment change. The ninth development district lost a greater percent of students than the fifth development district lost. Descriptive statistics are given in Table 20 and selected Scheffe comparisons are given in Table 21.

Congressional Districts

It was hypothesized that no difference in percents of enrollment change existed among Tennessee's nine congressional districts. A one-way analysis of variance was applied to district data categorized into the nine congressional districts. Table 22 gives the results of the analysis.

The table value for F (.95; 8,136) was 2.00; therefore the F ratio of 1.04 was not significant at the .05 level of significance. There appeared to be no difference in percents of enrollment change among

TABLE 19

SUMMARY TABLE FOR ANALYSIS OF VARIANCE OF MEAN PERCENT OF ENROLLMENT CHANGE BETWEEN DEVELOPMENT DISTRICTS

Source	DF	SS	MS	F Ratio
Between Groups	8	4365.6410	545.7051	2.2410
Within Groups	137	33365.6299	243.5447	
Total	145	37731.2695		

TABLE 20

DESCRIPTIVE STATISTICS FOR POST-HOC SCHEFFE ANALYSIS
OF NINE DEVELOPMENT DISTRICTS

Group	Count	Mean	Standard Deviation	Standard Error
1	14	-1.6889	8.0339	2.1472
2	27	1.8008	16.3394	3.1445
3	16	3.2178	14.7813	3.6953
4	15	1.2330	6.7482	1.7424
5	16	10.7878	19.5244	4.8811
6	16	-2.5922	10.6685	2.6671
7	10	-3.0110	8.1635	2.5815
8	26	-2.1804	22.2962	4.3726
9	6	-17.5262	15.6035	6.3701
TOTAL	146	0.2437	16.1312	1.3350

TABLE 21

SCHEFFE CONFIDENCE INTERVALS FOR DEVELOPMENT DISTRICTS

Comparison	Contrast	S	Standard Deviation of the Contrast	Lower Limit	Upper Limit
L_1	M_9-M_3	3.74	7.4700	-48.6818	7.1938
L_2	M_9-M_5	3.74	7.4700	-56.3427	-.4671*

*Significant difference

TABLE 22

SUMMARY TABLE FOR ANALYSIS OF VARIANCE OF MEAN PERCENTS OF ENROLLMENT CHANGE BETWEEN CONGRESSIONAL DISTRICTS

Source	DF	SS	MS	F Ratio
Between Groups	8	2069.5078	258.6882	1.0450
Within Groups	136	33655.3010	247.4654	
Total	144	35724.8086		

the nine congressional districts. Descriptive statistics are given in Table 23.

TABLE 23

DESCRIPTIVE STATISTICS FOR POST-HOC SCHEFFE ANALYSIS
OF NINE CONGRESSIONAL DISTRICTS

Group	Count	Mean	Standard Deviation	Standard Error
1	18	-1.2516	8.3410	1.9660
2	12	6.4105	14.8439	4.2851
3	17	3.1325	14.3928	3.4908
4	29	0.9887	15.3375	2.8481
5	1	-22.4941		
6	19	4.0901	18.4761	4.2387
7	23	-0.4986	10.2986	2.1474
8	25	-3.3201	22.0508	4.4102
9	1	-17.0879		
TOTAL	145	.5516	15.7508	1.3080

CHAPTER V

SUMMARY, FINDINGS AND CONCLUSIONS

I. SUMMARY

The basic purpose of this investigation was to identify socio-economic variables which discriminated between Tennessee public school districts which experienced enrollment increases or enrollment decreases. An ancilliary purpose of the study was focused on determining the distribution of enrollment growth and decline and the types of districts or regional areas most affected by the enrollment changes.

Public school districts as listed by the Tennessee State Department of Education in 1970 and in 1977 were compared and the two lists were adjusted for any inconsistencies. One hundred and forty-six public school districts were subjected to analysis in the study. Data for each district were obtained by apportioning known county data to districts in each county.

Enrollment changes were calculated and districts were divided into one of three categories: (1) those which had enrollment increases, (2) those which had enrollment decreases, and (3) those which had no enrollment change. A stepwise discriminant analysis was applied to district data in the first two groups. Sixteen variables were evaluated for their combined discriminatory power; three were selected and formed a function that discriminated between districts with changing enrollments. The analysis correctly classified 72.92 percent of the

districts and misclassified 27.08 percent of the districts. Variables selected by the analysis to form a discriminant function were: (1) percent of population change, (2) pupil-teacher ratio, and (3) assessed property valuation. These variables, when combined with their appropriate discriminant coefficient and a "constant," produced a discriminant score for each district. Districts were classified as increasing or decreasing in percent of enrollment according to their discriminant scores. The discriminant function placed in Group 1 those districts with net immigration, high pupil-teacher ratios, and low assessed property valuations.

Average crude enrollment changes were computed for Tennessee school districts; the crude enrollment changes were then converted to percents of enrollment change. These percents of change were categorized as follows: (1) central city, suburban, independent, and rural, (2) nine development districts, and (3) nine congressional districts. Distribution patterns for each of these categories were calculated and interpreted.

It was hypothesized that no difference in percents of enrollment change existed: (1) among central city, suburban, independent, and rural districts, (2) among the nine development districts, or (3) among the nine congressional districts. This hypothesis was tested for district data divided into each category.

II. FINDINGS

The major findings of this study were:

1. Three variables (CHANGE, PTR, VAL) correctly classified approximately 73 percent of Tennessee's public school districts into

Group 1 (positive percents of enrollment change) or Group 2 (negative percents of enrollment change).

2. A discriminant function, composed of CHANGE, PTR, and VAL, placed in Group 1 those districts with net emigration, high pupil-teacher ratios, and low property valuations.

3. The average percent of enrollment change among Tennessee public school districts from 1970 to 1978 was .25 percent.

4. Most central city districts experienced negative percents of enrollment changes.

5. Generally, suburban districts (especially those surrounding Davidson-Metro) experienced positive percents of enrollment change.

6. The average percent of enrollment change among independent districts was -9.514.

7. Extreme percents of enrollment change among rural districts were caused by student movement within Crockett County.

8. Independent districts lost a greater percent of students than suburban districts lost.

9. The ninth development district experienced a greater percent of enrollment decline than the fifth development district experienced.

10. There appeared to be no difference in percent of enrollment change among Tennessee's nine congressional districts.

III. CONCLUSIONS

The major conclusions of this study were:

1. The percent of population change, pupil-teacher ratio, and assessed property valuation for a public school district in Tennessee are good "measures" of enrollment change in that district.

2. The average percent of enrollment change for public school districts in Tennessee does not reflect the magnitude of enrollment changes in independent and suburban public school districts in Tennessee.

3. Central city districts experienced decreasing enrollments because a large number of students left public schools and enrolled in private schools during the 1970's.

4. "White-flight" may have accounted for some enrollment decreases in the central city districts. Suburban and rural districts had an average of 14 percent non-white population compared to an average of 22 percent non-white population in central city and independent districts.

5. Property in central city and independent districts was largely business or industrial property. Therefore, these districts experienced higher property tax rates and families who could afford to move, relocated in surrounding suburban districts.

6. Central city and independent districts received larger amounts of Title I monies than suburban and rural districts because students in central city and independent districts had special educational needs which required specialized and individualized instruction.

7. If enrollments continue to decrease in central city and independent districts, underutilized educational facilities will place an increased burden on the tax payers; further, some teachers in these districts will be forced to seek employment elsewhere.

8. Many parents who moved into independent districts in the late 1960's are nearing retirement; their retirement may bring younger

parents with children into the district. The trend of decreasing enrollments in independent districts may stablize or reverse during the next decade.

9. Suburban districts will continue to experience growth until businesses and industries locate in the suburbs to escape high property taxes in the central city districts.

10. Some type of funding adjustment may be necessary for independent districts if they experience accelerated enrollment decline.

11. Career opportunities for women and in public school enrollments may be inversely correlated.

12. Enrollment declines in 44.5 percent of Tennessee's public schools from 1970 to 1978 were not atypical. Forty percent of Michigan's public schools experienced enrollment declines from 1970 to 1975. Similar percentages of districts with declining enrollments were reported for Missouri, Washington and Illinois from 1970 to 1975.

13. The discriminant function used in this study is not appropriate for predicting increasing or decreasing group memberships of public school districts in Colorado; rural districts have typically experienced the greatest enrollment declines in Colorado. The function would not be reliable if used with Illinois public school data; researchers have shown that measures of wealth are the best types of variables to classify districts in Illionis. However, the variables may be appropriate if discriminant function coefficients were calculated for other states; Missouri, Michigan and Washington.

14. It is recommended that this study be replicated after new census data are collected in 1980; those data would permit a study of enrollment trends in Tennessee public schools from 1970 to 1981.

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APPENDICES

APPENDIX A

TABLE A-1

PUBLIC SCHOOL DISTRICTS ANALYZED IN THE STUDY

District Number	District Name	District Number	District Name
1	Anderson County	39	Cumberland County
2	Clinton	40	Davidson-Metro
3	Oak Ridge	41	Decatur County
4	Bedford County	42	Dekalb County
5	Benton County	43	Dickson County
6	Bledsoe County	44	Dyer County
7	Blount County	45	Dyersburg
8	Alcoa	46	Fayette County
9	Maryville	47	Fentress County
10	Bradley County	48	Franklin County
11	Cleveland	49	Gibson County
12	Campbell County	50	Humboldt
13	Cannon County	51	Milan
14	Carroll County	53	Giles
15	Atwood	54	Grainger County
16	H Rock-Bruceton	55	Greene County
17	Huntingdon	56	Greeneville
18	McKenzie	57	Grundy County
19	S Carroll	58	Hamblen County
20	Trezevant	59	Morristown
21	Carter County	60	Hamilton County
22	Elizabethton	61	Chattanooga
23	Cheatham County	62	Hancock County
24	Chester County	63	Hardeman County
25	Claiborne County	64	Hardin County
26	Clay County	65	Hawkins County
27	Cocke County	66	Rogersville
28	Newport	67	Haywood County
29	Coffee County	68	Henderson County
30	Manchester	69	Lexington
31	Tullahoma	70	Henry County
32	Crockett County	71	Paris
33	Alamo	72	Hickman County
34	Bells	73	Houston County
35	Crockett Mills	74	Humphreys County
36	Friendship	75	Jackson County
37	Gadsden	76	Jefferson County
38	Maury City	77	Johnson County

TABLE A-1 (Continued)

District Number	District Name	District Number	District Name
78	Knox County	114	Roane County
79	Knoxville	115	Harriman
80	Lake County	116	Robertson County
81	Lauderdale County	117	Rutherford County
82	Lawrence County	118	Murfreesboro
83	Lewis County	119	Scott County
84	Lincoln County	120	Oneida
85	Fayetteville	121	Sequatchie County
86	Loudon County	122	Sevier County
87	Lenoir City	123	Shelby County
88	McMinn County	124	Memphis
89	Athens	135	Smith County
90	Etowah	126	Stewart County
91	McNairy County	127	Sullivan County
92	Macon County	128	Bristol
93	Madison County	129	Kingsport
94	Jackson City	130	Sumner County
95	Marion County	131	Tipton County
96	Richard City	132	Covington
97	Marshall County	133	Trousdale County
98	Maury County	134	Unicoi County
99	Meigs County	135	Union County
100	Monroe County	136	Van Buren County
101	Sweetwater	137	Warren County
102	Montgomery-Clarksville	138	Washington County
103	Moore County	139	Johnson City
104	Morgan County	140	Wayne County
105	Obion County	141	Weakley County
106	Union City	142	White County
107	Overton County	143	Williamson County
108	Perry County	144	Franklin
109	Pickett County	145	Wilson County
110	Polk County	146	Lebanon
111	Putnam County	147	Watertown
112	Rhea County		
113	Dayton		

TABLE A-2

DISTRICTS IN THE FIRST DEVELOPMENT DISTRICT

District Number	District Name	District Number	District Name
21	Carter County	77	Johnson County
22	Elizabethton	127	Sullivan County
55	Greene County	128	Bristol
56	Greeneville	129	Kingsport
62	Hancock County	134	Unicoi County
65	Hawkins County	138	Washington County
66	Rogersville	139	Johnson City

TABLE A-3

DISTRICTS IN THE SECOND DEVELOPMENT DISTRICT

District Number	District Name	District Number	District Name
1	Anderson County	78	Knox County
2	Clinton	79	Knoxville
3	Oak Ridge	86	Loundon County
7	Blount County	88	Lenoir City
8	Alcoa	100	Monroe County
9	Maryville	101	Sweetwater
12	Campbell County	104	Morgan County
27	Cocke County	114	Roane County
28	Newport	115	Harriman
54	Grainger County	119	Scott County
58	Hamblin County	120	Oneida
59	Morristown	122	Sevier County
76	Jefferson County	135	Union County

TABLE A-4

DISTRICTS IN THE THIRD DEVELOPMENT DISTRICT

District Number	District Name	District Number	District Name
6	Bledsoe County	90	Etowah
10	Bradley County	95	Marion County
11	Cleveland	96	Richard City
57	Grundy County	99	Meigs County
60	Hamilton County	110	Polk County
61	Chattanooga	112	Rhea County
88	McMinn County	113	Dayton
89	Athens	121	Sequatchie

TABLE A-5

DISTRICTS IN THE FOURTH DEVELOPMENT DISTRICT

District Number	District Name	District Number	District Name
13	Cannon County	109	Pickett County
26	Clay County	111	Putnam County
39	Cumberland County	125	Smith County
42	Dekalb County	133	Trousdale County
47	Fentress County	136	VanBuren County
75	Jackson County	137	Warren County
92	Macon County	142	White County
107	Overton County		

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TABLE A-6

DISTRICTS IN THE FIFTH DEVELOPMENT DISTRICT

District Number	District Name	District Number	District Name
23	Cheatham County	118	Murfreesboro
40	Davidson-Metro	126	Stewart County
43	Dickson County	130	Sumner County
73	Houston County	143	Williamson County
74	Humphreys County	144	Franklin County
102	Montgomery-Clarksville	145	Wilson County
116	Robertson County	146	Lebanon
117	Rutherford County	147	Watertown

TABLE A-7

DISTRICTS IN THE SIXTH DEVELOPMENT DISTRICT

District Number	District Name	District Number	District Name
4	Bedford County	83	Lewis County
29	Coffee County	84	Lincoln County
30	Manchester	85	Fayetteville
31	Tullahoma	97	Marshall County
48	Franklin County	98	Maury County
53	Giles County	103	Moore County
72	Hickman County	108	Perry County
82	Lawrence County	140	Wayne County

TABLE A-8

DISTRICTS IN THE SEVENTH DEVELOPMENT DISTRICT

District Number	District Name	District Number	District Name
24	Chester County	68	Henderson County
31	Decatur County	69	Lexington
63	Hardiman County	91	McNairy County
64	Hardin County	93	Madison County
67	Haywood County	94	Jackson City

TABLE A-9

DISTRICTS IN THE EIGHTH DEVELOPMENT DISTRICT

District Number	District Name	District Number	District Name
5	Benton County	37	Gadsden
14	Carroll County	38	Maury City
15	Atwood	44	Dyer County
16	H Rock-Bruceton	45	Dyersburg
17	Huntingdon	49	Gibson County
18	McKenzie	50	Humbolt
19	South Carroll	51	Milan
20	Trezevant	70	Henry County
32	Crockett County	71	Paris
33	Alamo	80	Lake County
34	Bells	105	Obion County
35	Crockett Mills	106	Union City
36	Friendship	141	Weakley County

TABLE A-10

DISTRICTS IN THE NINTH DEVELOPMENT DISTRICT

District Number	District Name	District Number	District Name
46	Fayette County	124	Memphis
81	Lauderdale County	131	Tipton County
123	Shelby County	132	Covington

TABLE A-11

DISTRICTS IN THE FIRST CONGRESSIONAL DISTRICT

District Number	District Name	District Number	District Name
21	Carter County	76	Jefferson County
22	Elizabethton	77	Johnson County
27	Cocke County	122	Sevier County
28	Newport	127	Sullivan County
55	Greene County	128	Bristol
56	Greeneville	129	Kingsport
62	Hancock County	134	Unicoi County
65	Hawkins County	138	Washington County
66	Rogersville	139	Johnson City

TABLE A-12

DISTRICTS IN THE SECOND CONGRESSIONAL DISTRICT

District Number	District Name	District Number	District Name
7	Blount County	59	Morristown
8	Alcoa	78	Knox County
9	Maryville	79	Knoxville
25	Claiborne County	86	Loudon County
54	Grainger County	87	Lenoir City
58	Hamblen County	135	Union County

TABLE A-13

DISTRICTS IN THE THIRD CONGRESSIONAL DISTRICT

District Number	District Name	District Number	District Name
6	Bledsoe County	96	Richard City
10	Bradley County	99	Meigs County
11	Cleveland	100	Monroe County
60	Hamilton County	101	Sweetwater
61	Chattanooga	110	Polk County
88	McMinn County	112	Rhea County
89	Athens	113	Dayton
90	Etowah	121	Sequatchie County
95	Marion County		

TABLE A-14

DISTRICTS IN THE FOURTH CONGRESSIONAL DISTRICT

District Number	District Name	District Number	District Name
1	Anderson County	107	Overton County
2	Clinton	109	Pickett County
3	Oak Ridge	111	Putnam County
12	Campbell County	114	Roane County
13	Cannon County	115	Harriman
26	Clay County	119	Scott County
29	Coffee County	120	Oneida
30	Manchester	125	Smith County
31	Tullahoma	136	Van Buren County
39	Cumberland County	137	Warren County
42	Dekalb County	142	White County
47	Fentress County	145	Wilson County
57	Grundy County	146	Lebanon
75	Jackson County	147	Watertown
104	Morgan County		

TABLE A-16

DISTRICTS IN THE SIXTH CONGRESSIONAL DISTRICT

District Number	District Name	District Number	District Name
4	Bedford County	102	Montgomery-Clarksville
23	Cheatham County	103	Moore County
43	Dickson County	116	Robertson County
48	Franklin County	117	Rutherford County
74	Humphreys County	118	Murfreesboro
84	Lincoln County	130	Sumner County
85	Fayetteville	133	Trousdale County
92	Macon County	143	Williamson County
97	Marshall County	144	Franklin
98	Maury County		

TABLE A-17

DISTRICTS IN THE SEVENTH CONGRESSIONAL DISTRICT

District Number	District Name	District Number	District Name
14	Carroll County	64	Hardin County
15	Atwood	68	Henderson County
16	H Rock-Bruceton	69	Lexington
17	Huntingdon	72	Hickman County
18	McKenzie	82	Lawrence County
19	S Carroll	83	Lewis County
20	Trezevant	91	McNairy County
24	Chester County	93	Madison County
41	Decatur County	94	Jackson City
46	Fayette County	108	Perry County
53	Giles County	123	Shelby County
63	Hardeman County	140	Wayne County

TABLE A-18

DISTRICTS IN THE EIGHTH CONGRESSIONAL DISTRICT

District Number	District Name	District Number	District Name
5	Benton County	67	Haywood County
32	Crockett County	70	Henry County
33	Alamo	71	Paris
34	Bells	73	Houston County
35	Crockett Mills	80	Lake County
36	Friendship	81	Lauderdale County
37	Gadsden	105	Obion County
38	Maury City	106	Union County
44	Dyer County	123	Shelby County
45	Dyersburg	126	Stewart County
49	Gibson County	131	Tipton County
50	Humbolt	132	Covington
51	Milan	141	Weakley County

TABLE A-19

CENTRAL CITY DISTRICTS

District Number	District Name	District Number	District Name
40	Davidson-Metro	124	Memphis
61	Chattanooga	128	Bristol
79	Knoxville	129	Kingsport
102	Montgomery-Clarksville	139	Johnson City

TABLE A-20

SUBURBAN DISTRICTS

District Number	District Name	District Number	District Name
1	Anderson County	117	Rutherford County
2	Clinton	118	Murfreesboro
3	Oak Ridge	121	Sequatchie County
7	Blount County	123	Shelby County
8	Alcoa	127	Sullivan County
9	Maryville	130	Sumner County
23	Cheatham County	131	Tipton County
43	Dickson County	132	Covington
60	Hamilton County	135	Union County
65	Hawkins County	138	Washington County
66	Rogersville	143	Williamson County
78	Knox County	144	Franklin
95	Marion County	145	Wilson County
96	Richard City	146	Lebanon
116	Robertson County	147	Watertown

TABLE A-21

INDEPENDENT DISTRICTS

District Number	District Name	District Number	District Name
11	Cleveland	56	Greeneville
22	Elizabethton	59	Morristown
31	Tullahoma	94	Jackson City
45	Dyersburg	106	Union City
50	Humboldt	115	Harriman
51	Milan		

TABLE A-22

RURAL DISTRICTS

District Number	District Name	District Number	District Name
4	Bedford County	58	Hamblen County
5	Benton County	62	Hancock County
6	Bledsoe County	63	Hardeman County
10	Bradley County	64	Hardin County
12	Campbell County	67	Haywood County
13	Cannon County	68	Henderson County
14	Carroll County	69	Lexington
15	Atwood	70	Henry County
16	H Rock-Bruceton	71	Paris
17	Huntingdon	72	Hickman County
18	McKenzie	73	Houston County
19	South Carroll	74	Humphreys County
20	Trezevant	75	Jackson County
21	Carter County	76	Jefferson County
24	Chester County	77	Johnson County
25	Claiborne	80	Lake County
26	Clay County	81	Lauderdale County
27	Cocke County	82	Lawrence County
28	Newport	83	Lewis County
29	Coffee County	84	Lincoln County
30	Manchester	85	Fayetteville
32	Crockett County	86	Loudon County
33	Alamo	87	Lenoir City
34	Bells	88	McMinn County
35	Crockett Mills	89	Athens
36	Friendship	90	Etowah
37	Gadsden	91	McNairy County
38	Maury City	92	Macon County
39	Cumberland County	93	Madison County
41	Decatur County	97	Marshall County
42	DeKalb County	98	Maury County
44	Dyer County	99	Meigs County
46	Fayette County	100	Monroe County
47	Fentress County	101	Sweetwater
48	Franklin County	103	Moore County
49	Gibson County	104	Morgan County
53	Giles County	105	Obion County
54	Grainger County	107	Overton County
55	Greene County	108	Perry County
57	Grundy County	109	Pickett County

TABLE A-22 (Continued)

District Number	District Name	District Number	District Name
110	Polk County	126	Stewart County
111	Putnam County	133	Trousdale County
112	Rhea County	134	Unicoi County
113	Dayton	136	Van Buren County
114	Roane County	137	Warren County
119	Scott County	140	Wayne County
120	Oneida	141	Weakley County
122	Sevier County	142	White County
125	Smith County		

VITA

Gary George Breegle was born on October 29, 1946 in Steubenville, Ohio. He attended public school in Lancaster, Ohio and graduated from Lancaster High School in 1964. He enrolled in David Lipscomb College in the summer of 1964 and received the Bachelor of Arts degree in 1967.

In 1967 he began his teaching career in Franklin County, Tennessee and later taught in Chillocothe, Ohio and Lincoln County, Tennessee. In 1974 he moved to Nashville, Tennessee to teach at David Lipscomb High School. While there, he served as the Head of the Department of Art.

In 1976 he began his graduate studies at The University of Tennessee at Knoxville and received his Master of Science degree in 1977, with a major in educational administration and supervision. In 1977 he entered the doctoral program at The University of Tennessee at Knoxville. He served as a graduate assistant in the Bureau of Educational Research and Service while completing his degree.

In 1978 he moved to Bowling Green, Kentucky to serve as a staff assistant to the Dean of the College of Applied Arts and Health at Western Kentucky University and assume the responsibilities of assistant corrdinator of the Area Health Education System of Kentucky at Western Kentucky University. He graduated in March of 1979 with a major in educational administration and supervision and collateral work in continuing and higher education and statistics.