MacArthur/Spencer Series Number 18

# THE LONG MARCH TO EDUCATIONAL INEQUALITY IN ILLINOIS: Financial Facts for The Committee versus Edgar

G. Alan Hickrod
Ramesh B. Chaudhari
Lawrence E. Frank
David L. Franklin
Robert Arnold
Gwen B. Pruyne
Ben C. Hubbard

With cartographic assistance from George Aspbury and Kevin Carlock

Center for the Study of Educational Finance
College of Education and the Graduate School
Illinois State University
Normal, IL 61761

March 1991

This series of monographs is dedicated to Professor Lucy Jen Huang Hickrod, late of the Sociology Department of Illinois State University. Death has forever taken Professor Huang Hickrod from intellectual labors, but she remains an inspiration to her husband, her family and her many friends. *Sic transit Gloria Mundi.*

**THE LONG MARCH TO EDUCATIONAL INEQUALITY IN ILLINOIS:**
**Financial Facts for The Committee versus Edgar**

*The passage (to learning) was kept by two sturdy porters named Riches and Poverty, and the latter obstinately refused to give entrance to any who had not first gained the favour of the former; so that I observed many who came even to the very gate, were obliged to travel back again as ignorant as they came, for want of this necessary qualification.*

--Benjamin Franklin's criticism of the admission standards of Harvard College in 1722

*Upon the subject of education, and not presuming to dictate any plan or system respecting it, I can only say that I view it as the most important subject which we, as a people, can be engaged in...*

--Abraham Lincoln to the People of Sangamon County, Illinois, March 9, 1832.

*Our purpose is to point out the effect of the growth of these inequalities upon the matter of the proper distribution of the income from school funds and the results of taxation for education. As it is to-day, some communities have come to have a far greater per-capita wealth than have others; some communities are constantly increasing their per-capita wealth, while in other communities there is an actual or a relative decrease; and in many states an increasing impoverishment of certain communities is taking place while other communities are rapidly increasing their percapita wealth.*

--Ellwood P. Cubberley, *School Funds and Their Apportionment*, 1906.

## Introduction

If one lives long enough and if one writes long enough, one thing is probable and one thing is certain. It is probable that one will contradict oneself, and it is certain that one will repeat oneself. John Kenneth Galbraith related an amusing anecdote in this connection. One day, Professor Galbraith was writing and observed that he had said something extremely well: turned the phrase exactly as he had intended, found the precise meaning he wanted to impart, etc. But, shortly before sending the manuscript to the publisher, a little bell rang in his memory. Upon consulting his personal files, he found, unfortunately, that he had written exactly the same thing, in exactly the same way, many years before. Unintended plagarization of oneself is a constant danger for writers over sixty years of age. Since the senior author of this monograph is of that vintage, it must be assumed that both events, contradiction and repetition, have taken place somewhere in this manuscript.

However, while our files may not be as systematic as Professor Galbraith's, they are not totally lacking. The "monitoring series," as studies of this genre came to be called, was first launched sixteen years ago, funded by a grant from the then U.S. Office of Education. The first study was published early in 1975, shortly prior to the establishment of the Center for the Study of Educational Finance at Illinois State University; and "the monitoring studies" quickly came to be an important function of that small research center at ISU. Since 1975, the series has been updated at two-to-three year intervals, until there are now 19 years in the time series represented by the longitudinal study. Just one year short of a full two decades, the series is, by far, the longest running "equity" analysis in the United States.[1] As such, it has been cited in virtually every textbook in school finance written in the last two decades.

The basic rationale for the "equity series" evaluation is simple; and it is doubtful that the statement made in the first evaluation study in 1975 can be improved:

> It is a judgment of history that revolutions carry with them the seeds of their own destruction and that all bright reforms must tarnish and turn ugly. This is so because revolutions and reforms are made by men and men are fallible. While mankind can probably never escape completely this terrible retribution of the Gods, one way to avoid at least the worst consequences of well intentioned, but imperfect, reformers is to try to evaluate these reforms soon after they have occurred. No less a school finance reformer than Charles Benson has warned us: "The major problem in social policy reform is not saving poor people from themselves but from reformers." It cannot be claimed that the record on school finance reform evaluation is particularly good. Perhaps this is understandable though not defensible. For the last three and one-half years much of the available manpower in school finance circles has had to go into either (a) the actual promotion of these reforms, or (b) the straightforward description of what has been done. There has been little time or effort left for an evaluation of what has, or has not, been accomplished.[2]

However, writing in 1991, one can say that school finance reform evaluation is a more widely practiced scholarly activity than in the past. Almost every issue of the Journal of Education Finance contains articles on school finance reform evaluation, and there have even been special issues devoted entirely to this subject.[3] The statistical procedures have become more polished and the conceptual apparatus is a good deal more sophisticated than in the early 1970s. Nevertheless, school finance reform evaluation retains a number of limitations which are certainly present in the manuscript presented here. For example, most evaluations remain "case studies" of individual states, as is this study, a case study of Illinois. That is not all bad since the unit of government having jurisdiction over this area of public policy is the state; therefore, it is understandable that these kinds of evaluations are directed toward state policy-makers. However, there are important public policy questions, and, even more important, national trends that can only be discerned by multiple-state studies. Moreover, these types of research are still in a distinct minority, even at this writing.

Second, the studies remain highly descriptive, rather than analytical, at least in the sense of analyzing "why" these reforms have either failed or succeeded, as the case may be. They document what happened, all right, but they are short on "why" it happened. While this study attempts to rectify that somewhat, the authors remain acutely conscious that this is still a limitation of all school finance evaluation studies, including those done in Illinois.

There is a second major rationale for school finance reform evaluations that is legal in nature. It is not by chance that many of these school finance reform evaluations started appearing in the pages of journals and in monographs in the early 1970s. In 1971, the landmark case of Serrano v. Priest in California created an immediate need for evaluations of all state school finance systems to see if they met the mandates of the state constitutions. Today, that need is still eminently present. In fact, many scholars feel that a second wave of school finance constitutional challenges is already under way and that the number of challenges to school finance systems in the late 1980s and early 1990s may approach that of the initial wave of filings in the mid-1970s. Nowadays, the courts ask many complicated questions about school finance systems. A thorough discussion of those questions has been outlined in two monographs by Professor David

L. Franklin in earlier publications of this special series on studies on school finance, funded by the John D. and Catherine T. MacArthur Foundation and the Lyle Spencer Foundation.[4]

On November 13, 1990, Illinois joined the long list of states with school finance challenges before the state courts.[5] Therefore, the authors have elected to put this particular issue of the "monitoring series" in a format as if the Illinois Court were seeking answers to evidence concerning the "equity" question in the State of Illinois. Thus, this study may read, at least in some places, somewhat like an affidavit or even an oral testimony. The reader should be aware that state courts ask a great many questions concerning the interrelated concepts of "equity," "adequacy" and "efficiency." By no means, does this little monograph come close to answering all the questions that the courts in Illinois might decide to pose. Probably the whole output of the MacArthur/Spencer series comes closer to answering many of those questions, but there will remain some unaddressed questions, even if the whole output of the entire MacArthur/Spencer research program is taken into consideration.[6] The reader should be cautioned that the authors are strong proponents of the public policy goal of equity in school finance. Some of the reasons for that strong advocacy have been discussed in detail in prior publications in the MacArthur/Spencer series.[7] In this study, as in all of the Center's publications, the facts are the facts. Whether or not these facts can be sucessfully contested or controverted remains to be seen. The researchers welcome, in the spirit of scientific inquiry, any attempt to do so. Since the facts never "speak for themselves," in this instance, the interpretation of the facts becomes a task for the three branches of Illinois governance: the executive, the legislative and, increasingly, the judicial. It is toward that audience that most of the MacArthur/Spencer publications, including this one, are directed.

## The Continued Importance of Equity

More has been written about the concept of equity than about any other conceptual construct in the history of school finance. On balance, the other two major competing concepts--adequacy and efficiency, as outlined by the founder of the field, Elwood P. Cubberly--have received less attention.[8] Fundamentally, the empirical studies of equity focus on three operational definitions of the notion: equity of inputs, equity of throughputs, equity of outputs. Often, studies of equity of inputs deal with disparities in funding between school districts or, less frequently, between expenditure differences between buildings or attendance centers. Equity of throughputs may focus on curricula, teacher preparation, buildings, facilities, etc. Equity of outputs usually centers on test scores, but it can occasionally focus on other outputs such as graduation or completion rates, continuations to other levels of education, employment or wage rates.

Many equity studies assume that wide disparities on inputs, throughputs and outputs are not desirable states-of-affairs in a democratic society. However, most of those studies do not assume that absolute equality on inputs, throughputs and outputs is a desirable goal. This usually leaves one with a notion that there is some "permissible variance" concerning inputs, throughputs and outputs, which will be tolerated by the executive, legislative and judicial branches of government. Only occasionally does an investigator establish an absolute variation of some kind--specific cut points on the high side and on the low side--and then state that this is the goal of state policy.[9] More often, the empirical studies assume a mere directional evaluation: becoming more disparate in inputs, throughputs and outputs is moving in the wrong direction; becoming more equal is moving in the right direction.

In these equity studies, there is also a consideration that some of this variation in inputs, throughputs and outputs is acceptable on a number of grounds, or that it is, in some way, "in the nature of things." For example, on the input side, some variation in spending will be traceable to geographic cost-of-living differences which are considered allowable or, at least, a normal state-of-affairs within a state. Thanks largely to the work of Professor Walter McMahon at the University of Illinois, these geographic expenditure variations can be adjusted for in Illinois school finance studies.[10] There is also the notion that some spending differences can be tolerated as a reflection of the differences in willingness to tax at the local district level. In that case, the goal of "local control" is defined as the ability, within some limits, to tax for education at different levels. Individuals and groups may differ widely over whether there is some "floor" for expenditures, or for tax rates; and, especially, whether there should be some "ceiling" on these expenditure and tax-rate distributions. The floor notion often emerges in discussions of the related public-policy goal of "adequacy."

With regard to throughputs, it can be argued that curricular differences are the results of differences in the nature of the economic make-up of school districts--particularly in the vocational education area--and, therefore, reflect the honest attempts of local school boards to provide the kinds of services desired by the local population. Test score differences (output disparities) can sometimes be ascribed to striking differences in the socioeconomic backgrounds of the children who attend various schools in Illinois.[11] Of course, there exists a raging debate over the lack of correlation between inputs and outputs.[12] In any event, there is clearly some "softness" or "sponginess" in the use of equity (operationally defined as simple disparity) as a principal goal in school finance. Why, then, does disparity continue to be an important concept--maybe even THE paramount concept--in evaluating school finance systems? For three reasons: one is legal; one is professional; and the final one is ideological and cultural.

The courts are concerned with disparity in inputs, throughputs and outputs for at least two solid constitutional reasons. In the first place, great discrepancies in inputs, throughputs and outputs may violate the equal protection clause of most state constitutions. Professor Franklin's studies document, in great detail, the strenuous attempts of the plaintiffs to show that this IS the case and the equally rigorous attempts by the defense (the state) to show that this is NOT the case. Nevertheless, equal treatment under the law and equity, as required by both state and federal constitutions, have to be major reasons why equity is considered a major goal of school finance in the United States. Second, almost all states have an education article in their constitutions. In these education articles, there is usually some directive or mandate that the state must provide a "thorough and efficient" system of education; or, at least, a "uniform" system of education; or, in the case of Illinois, "an efficient system of high quality education." Great disparities in inputs, throughputs and outputs are seldom taken to mean that the system is "thorough" or "uniform." Indeed, it may be said that great disparities in inputs, throughputs and outputs, present a <u>prima facie</u> case that the state system is "suspect" under both the equal protection clause and the education article in most states. "Suspect," however, is not "convicted"; and the reader should turn to Professor Franklin's detailed exposition of those states that have been found in violation of their constitutions and, alternately, those that have been acquitted of the charge.

The second reason that great disparities in inputs, throughputs and outputs are poorly tolerated in the United States springs from the professional training of public school teachers and administrators in this country. Most colleges of education which train teachers and administrators stress the equality of educational opportunity of every child, no matter what the neighborhood or family background of that child. There is a clear implication that somehow the teachers and the administrators have "failed" if the

child leaves the K-12 jurisdiction on less than a "level playing field." The great stress on "at risk" children is built directly into many teacher and administrator education programs. It is far beyond the scope of this study to explore the causes of this social orientation in teacher and administrator programs in the United States, but at least one possibility springs immediately to mind. In the past, perhaps less so than in the present, K-12 teaching and K-12 administration was a ladder for upward social mobility for a great many people. Many teachers and administrators were born into very humble circumstances, and they used the public educational bureaucracy as a means to improve their social position. It would be the most natural thing in the world for such a group to continue to hold that public education is the primary mechanism for upward social mobility. Such an explanation would also account for the reluctance of some educational professionals to accept any definition of "excellence" that would, in actuality, limit the use of the educational system as the ladder out of poverty, or the escape mechanism for minorities and women in the social/economical structure.

Finally, it has been argued extensively elsewhere that great and growing disparities in inputs, throughputs and outputs are inconsistent with the basic political ideology of the country and are inconsistent with much of the ideology of Western Civilization, itself.[13] It is contended by many that educational rights now underlie all other civil rights. Although it is true that the first ten amendments to the U.S. Constitution do not mention education, it is believed by some that, in a complex modern society, none of the rights covered by the first ten amendments can be effectuated without an adequate education. Further, this same school of thought holds that no system of limited government, nor any meaningful representative democracy, can long survive without a well-educated citizenry. Such was the message of Aristotle, Jefferson, Mann and Mills. That message remains as vibrant now as it was in ages past. To that message has been added the notions of an open society and upward social mobility and, more recently, the concern for building human resources and human capital so that the U.S. may survive in a highly competitive world economy. Ultimately, the deep suspicion of great disparities, and the even greater fear of widening disparities, rests upon the belief that widening disparities in inputs, throughputs and outputs would eventually destroy the American Republic and, with it, its educational system. They exist forever entwined. Fail the educational system; then eventually fail the Republic. Small wonder that, regardless of its "softness," the evidence of growing disparities in the educational system are regarded with dread by many American educators. Neither liberal nor libertarian views the evidence of growing disparities with any degree of comfort. It is sometimes hard to convey this fear to students from other cultures, who are interested in school finance, but who fail to understand the degree to which the study of the subject is anchored in basic cultural, social, economic and, above all, political values in the United States. Sometimes, there seems to be a notion that one can somehow import the American educational system, or the American economic system, with all the material satisfaction of those systems, and then leave behind the American political system. Very unlikely. Far more likely it is that one either takes it all, or one doesn't take any of it.

## Operational Definitions of Equity

When generalizations as lofty and broad as "equity," "adequacy" and "efficiency" are used, it is essential that they be given hard, firm operational definitions in order to proceed with empirical quantitative research. If the MacArthur/Spencer series is remembered for nothing else, it will be remembered for having illustrated that fundamental point in abundant detail. The operational definition of equity used in the study reported here is based solely upon the input dimension. The input dimension is still used in most state constitutional challenges to date in the United States. However,

Professor Franklin's two monographs make it perfectly clear that, in many of these constitutional challenges, the courts are increasingly moving into the throughput and output dimensions. Based upon this awareness of the need for equity studies which focus upon the throughput and output dimensions, other investigators are urged to move to those dimensions as soon as machine-readable archival data are available to do that in Illinois.

The dollar figure used for this study is described in various ways. It is the general or unrestricted state aid to which has been added the money locally raised, e.g., the tax rate multiplied by the local assessed valuation. In the Illinois constitutional challenge now before the courts, The Committee v. Thompson, this dollar amount is referred to as the "unrestricted" revenue of an Illinois school district. This "unrestricted" label is intended to alert the reader to the fact that this dollar figure contains no state categorical assistance and no federal categorical assistance. Nor, does the dollar figure contain funds for capital expenditures. The historical reason that this figure was selected for the "monitoring series" was that the series was intended to evaluate how well the general state aid system was doing in equalizing the long-known resource differences between school districts in Illinois. The series was never intended to evaluate the "overall" equity situation in Illinois school finance, only the effect of the general state aid. Also, the dollar figure in this series was selected shortly after the court's ruling in Serrano v. Priest that all "targeted" (categorical funds) should be excluded from the calculations prior to the attempt to estimate the equity situation in the State of California. That command has not been executed totally successfully in Illinois since the dollar figure used in these time-series studies does include the funds which come from the state because of the poverty weighting in the Illinois general state aid formula, a matter discussed next.

Total revenues or total expenditures would not be useful in evaluating the equity situation in the state. It is necessary to divide by some standard unit. In the studies in this time-series, the unit was the weighted average daily attendance weighted by the poverty concentration in use at the time the equity index for each year was computed. At the beginning of the time-series, this was referred to as the title one weighted average daily attendance (TWADA) and, later, as the chapter one weighted average daily attendance (CWADA). No part of the Illinois school finance system has produced more misunderstanding than the differences between CWADA and ordinary WADA or ADA. And yet, many investigators would argue that CWADA is the most important, or, at any rate, the most progressive aspect of the entire Illinois school finance system.

The poverty weighting was adopted in 1973, and was rightly considered revolutionary in its time. In fact, even at this late date, only a few of the states in the Union--Minnesota being the most well-known--have adopted the idea that public school districts with heavy concentrations of poverty are deserving of greater state support. In the early and mid 1970s, the rationale for providing greater state aid to districts with heavier poverty concentration was based on the notion that these districts had higher educational costs and that they, therefore, needed greater state assistance. There was never much empirical evidence to support that assertion; nevertheless, it was widely accepted as true. Later, when statewide test scores became available in Illinois, a number of studies documented the fact that the concentration of poverty was the single, most important correlate with regard to test scores. That is, the greater the concentration of poverty, the lower the test scores.[14] That is especially true when the concentration of poverty exceeds 50%; that is, when a majority of students in a school district come from poverty-impacted homes.

The variation in poverty-impaction in Illinois school districts is enormous, running from almost 0 percent to a full 100 percent. Given the enormous variation of this measurement, there is little wonder that it ends up being the variable that predicts the most in any structural or economic equation used in Illinois school finance studies. With this knowledge, the rationale for the use of the poverty weighting in Illinois has moved slightly and the chief defense for its existence now is that greater state funds are needed in the areas where the output variable has shown the need to be the greatest--the low-test-score areas which are also the high-poverty-concentration areas. Defenders of the poverty concentration also point out that the framers of that provision of the state aid system, in 1973, built better than they knew. When a district loses middle-income parents and becomes more poverty impacted (and that is still happening to many districts in the larger metropolitan areas of the state), then the district automatically receives more state aid. In other words, the poverty-impaction factor in Illinois automatically adjusts for migration patterns within the state. It is one of the more dynamic elements in the state general grant-in-aid formula.

The investigators in the "monitoring series" have always taken the position that, since the money for the poverty concentration is not backed out, the pupil count should also include the count of pupils as weighted for poverty. In fact, it can be argued that this does really "back out" the poverty money. The court might want to consider that argument since the controversy over just what money should be counted in equity studies which characterized the California litigation may well be repeated in the Illinois litigation. If one left the poverty-impaction money in, and then divided by ADA or WADA, clearly, the "targeted" funds would not be backed out. But dividing by the CWADA does neutralize leaving in the funds.

Nor can much guidance on this arcane matter be derived from the intent of the Illinois General Assembly. It appears that, when it was first passed, the notion was that the school districts of Illinois had different needs; therefore, it was not directed specifically to the pupils, themselves, who also had different needs, but simply to the district to distribute as it would. It was viewed like a sparsity or a density weighting, as used in other states. Later, however, at least a part of the General Assembly began to view it as a grant intended to go directly to neighborhoods within districts where there were high concentrations of poverty. Thus, it was a student-need element in the general-aid formula. At present, only the Chicago public schools are required to distribute the state-poverty-concentration funds to areas within the district that also have high concentrations of poverty. Clearly, it was never viewed as a special-purpose or categorical grant since so few restrictions, at least in the early days, accompanied the flow of funds under the grant. Vast sums are distributed in terms of the weighted-student count; assuredly they are of major political concern, especially to the large urban districts in Illinois.

It is important to point out that the relative wealth of school districts is also effected by the choice of CWADA or ADA since the wealth of a school district in the general grant-in-aid formula is also a function of CWADA. It is not too much to say that the entire general state-aid distribution system in Illinois is based upon this poverty-weighted pupil notion; therefore, attempts to "back out" the weighting will yield dollar distributions that are "hypothetical" and not too close to the real distribution of state dollars. Just how all this will play out in the future is beyond the scope of this small equity study, but the researchers remain convinced that the selection of the poverty-impacted pupil count was the correct one for the long-time series. This is the count upon which general state aid is distributed in Illinois; e.g., the CWADA, not the ADA nor the WADA.

The dollar figure used in the time-series has not been corrected for geographic cost-of-living in Illinois, using the McMahon index. When this was done in the past, it was found that the long-term trends in the indexes are not changed much by the use of the geographic cost-of-living adjustment. This might have been expected. When one deals with long-term movements over decades, they are often found to be robust in the face of adjustments to the data. Perhaps this should be investigated again. Therefore, upon the completion of a new geographic cost-of-living index by Professor McMahon, some further spot checks on the long-time series will be made in order to make sure that geographic cost-of-living changes do not affect the basic findings.

Statistical Measurements and Their Value Assumptions

It is with some hesitancy that this next section is written. If the report on the monitoring series was primarily advocacy research--that is, simply and only data for support of the plaintiffs in The Committee v. Thompson, then some of these comments probably should not see the light of day. But, no matter how favorable one might be to the plaintiffs' cause, there is always, at least in the academic community, an overriding and greater obligation to the search for objective truth. Therefore, with some apologies to plaintiffs' attorneys, this section will outline not only the nature of the statistical techniques used in the monitoring series, which would be necessary in the report of any research study, but also, the value assumptions behind the statistics. Displayed here, at least in the eyes of some, are the limitations of the entire statistical analysis. Now, it is not true that with statistics "one can prove anything"; but it is true that the choice of statistical tools is not a value-free choice. Each statistical tool has built within the technique, itself, assumptions that may have important consequences for public policy. All this must be understood by the courts if a goal that is just as elusive as abstract truth--that is abstract justice--is ever to be obtained.

Since a great deal has been said about simple disparities, that statistic will be the place to start. Variation in a distribution of numbers can be expressed in many different ways. If one has been consulting the newspapers in Illinois in recent months, particularly around the time of the filing of The Committee v. Thompson, one knows that the most favored technique of the journalists is the simple range; e.g., the difference between the highest and lowest measurements in the distribution. This is striking and dramatic; it quickly catches the reader's attention. Unfortunately, it is also not very precise. The range depends upon only two measures; and, if either one of those measurements is in any way unusual or unique, then some very misleading results can emerge. To guard against this occurring, the range is sometimes specified between two points in the distribution, other than the absolute ends of the distribution. Thus, the range may be quoted between the district at the 95th centile and the one at the 5th centile. This is less dramatic, but probably sounder since it discards measurements in the tails of the distribution which might be deviant for a lot of reason in school finance.

A measure of variation which is preferred by most analysts in the area of public finance is the coefficient of variation. This measurement of variation uses all the numbers in the distribution to describe the variation around the mean of the distribution. It has the disadvantage of being an abstract measure of variation with no immediate intuitive appeal, such as the range or the restricted range. It has some other important advantages. The coefficient of variation is defined as the standard deviation of the distribution divided by the mean, and usually, though not always, multiplied by 100. The standard deviation is also a statistic which describes variation around the mean. Why then divide the standard deviation by the mean of the distribution? One does this in order to standardize the statistic. It could be done in other ways. One could transform the original measurements into standard scores or one could use the logarithms of the

original measurements. (This later technique is used in another equity index which will be described below.) However, dividing by the mean is regarded as sufficient to standardize the measurements over long periods of time. This standardization is necessary in order to offset the affects of cost-of-living through time. If it were not done, the variation at the end of a long period of time would always look larger than the variation at the beginning of that period of time, because the dollar figures, themselves, are larger, showing the effect of inflation. The coefficient of variation automatically corrects for increases in variation which might creep into the data solely through the effects of inflation. This is not to be confused with geographic cost-of-living adjustments which are quite a different matter.

The coefficient assumes that one is interested in all the variance in the distribution, whether that variation arises from low-spending districts or from high-spending districts, and that happens to be a contested assumption. A very old and very respected school of thought in some school finance circles, arising partially from the works of the late Paul Mort of Columbia University, holds that the high-spending districts are of no immediate concern to the state government. This school of thought believes that the only responsibility of state government lies with the low-spending districts. High-spending districts can spend whatever they wish to spend, that is, whatever their local boards think the traffic will allow. In the thinking of this school, to curtail their high spending would be just as wrong as is the negative effect of not spending enough for education. This school of thought defends its position largely on the basis of local control and upon the presumed importance of experimental education carried on in so-called, "lighthouse" districts which usually turned out to be the wealthier districts.

If the Mort school of thought is accepted, and it is accepted by a great many, then the coefficient of variation is an inappropriate statistic to use in equity analysis, as is the range, the restricted range, the standard deviation and all other conventional measures of variation. Faced with this situation, Professor Eugene McLoone of the University of Maryland devised another statistical index for measuring the equity situation in any given state. Not surprisingly, it has entered the professional literature as the "McLoone Index." The McLoone Index discards all the measurements in the distribution above the median value. It then requires the computation of the amount of dollars necessary to move all districts to the median of the distribution. The index is formed by adding this value to the amount of revenue actually raised below the median. This sum becomes the denominator of the index. The numerator is the above mentioned amount of dollars necessary to move all districts to the median. Computed thus, the higher the McLoone Index the closer the state is to an "equitable" situation. The McLoone Index is the one value in this study in which higher numbers are to be desired. The rest of the equity indexes are set up in such a fashion that the lower the value, the better the situation. To satisfy both the Mort school of thought and the school of thought that says all variation is important, no matter from what source it may arise, this study reports results in terms of both the coefficient of variation and the McLoone Index.

A second dimension of the equity analysis presented here concerns the so-called "wealth neutrality" indexes. "Fiscal neutrality" or "wealth neutrality" is an important concept in modern school finance which needs a good deal of explaining. This concept arose originally from the constitutional cases of the early and middle 1970s. It figured prominently in the Serrano v. Priest decision in California and is often referred to as the "Serrano dicta" or the "Serrano rule of law." In Serrano and in some of the other 1970-era cases, the courts held that expenditures per pupil, or revenues per pupil if that measurement was being used, should not be a function of local district wealth. In some decisions, expenditures could be a function of the wealth of the state, or even of tax rates in the individual districts, but the level of educational services provided to the child

should not be strongly associated with local wealth. By no means, have all state supreme courts applied the "Serrano dicta," but where plaintiff has won, the Serrano dicta was often found to be a part of the state supreme court's decision.

Notice that, when the Serrano dicta is applied, the court does accept the contention of plaintiff that expenditure levels or revenue levels are satisfactory proxies for the level of educational goods and services delivered to the child. This is often contested by the defense. However, it seems likely that when some districts spend over twice as much per pupil as other districts--a common condition in most of the states with constitutional challenges--there are real and meaningful differences between school districts. A few hundred dollars in differences between districts may not signify a meaningful difference in services provided; however, it may be that some reservations about this assumption are a part of the movement previously noted of the courts' inquiring more and more into disparities in throughputs and outputs. That is, the courts wish to look increasingly at differences in programs and services as well as differences in dollars per pupil and, thus, need not accept the assumption that dollar differences are automatically program and service differences.

The Serrano dicta puts one immediately into the domain of bivariate statistics, because it involves two variables. On the one hand, there is wealth, which can be specified in many forms; on the other hand, there are revenues. Here, again, there are many possible statistical choices and the choices are not without assumptions. One could use the Pearson product moment correlation to describe the association between wealth and revenues. But, while that statistic is useful in describing the strength of a relationship, it does not indicate the degree to which increases in one variable are associated with increases in another variable. The later relationship is better described by slopes of lines expressed as regression coefficients, or standardized regression coefficients referred to as "beta weights." The one great advantage of the slope of the line is that there is a visual or graphical component to the measurement which has proven essential in trying to explain the idea of association to audiences which are not statistically trained, including attorneys and judges. It will still be a considerable effort to explain any of these wealth neutrality indexes to those who lack statistical training. Perhaps there are some things which just must be accepted on the basis of expertise or special training. In that spirit, the reader of this report is asked to accept the fact that the wealth neutrality indexes used in this report really do measure the relationship of wealth of a district to the "unrestricted revenue" of the district in the State of Illinois. For the more statistically trained, the coefficients shown are merely the regression coefficients from simple least squares regressions. However, the variables have first been transformed into their logarithms. Those trained in economics will then recognize that these are "elasticities" and the relationships expressed constitute percentage changes in expenditures compared with percentage changes in wealth. For the general reader, all that needs to be known is that as this coefficient becomes smaller, one approaches a condition of "wealth neutrality"--that is, a situation in which expenditures are not so much a function of school-district wealth. Furthermore, as the coefficient becomes larger, school district wealth becomes a greater determinant of dollars spent.

Those who have faithfully followed these monitoring reports know that, from the first report onward, a special index was used. It is called a Gini coefficient and is associated with a graphical construction called a Lorenz curve. These are tools taken from the field of economics and especially adjusted for use in school finance. The Gini Index reported here is not the typical one used in economics which is a univariate Gini. This is a bivariate Gini in which the wealth of the school district appears in the

calculation.* Again, all the general reader need know is that as the Gini coefficient grows smaller the state approaches the condition of "wealth neutrality"; that is, that expenditures do not depend so much on the wealth of the district. Conversely, as the Gini coefficient grows larger, the state departs more and more from the condition of "wealth neutrality." The Gini coefficient is calculated in such a fashion that, if wealth did not determine expenditures at all, the value of the coefficient would be .000

Of more interest to the general reader is the concept of "wealth neutrality," itself. Clearly, this notion is in some conflict with the idea of an all pervasive market economy. In fact, it is almost the exact opposite of a market economy. Most products and services in the United States are distributed on the basis of supply and demand and consumers with greater resources may purchase, if they chose, more of a product than may consumers with smaller resources. Why, then, would state supreme courts decide that the service known as K-12 education should not be a function of family and district wealth? While it is generally accepted that wealth determines the kind of automobile the family travels in and the kind of house the family lives in, repugnant is the thought that the quality of K-12 services the family receives should be a function of the wealth of that family. The doctrine of wealth neutrality appears closely related to concerns previously discussed in this monograph under the heading of the continued importance of equity. There are some services which are set outside the operations of the market economy. At the present time in the United States, K-12 education is one of those services. That some courts have been willing to come down so hard on the side of "wealth neutrality" must testify to the desire to see that even very poor families are provided their rights under the constitution, even if that means creating an enclave in the market economy which is not governed by the laws of supply and demand.

In the real world, some compromise is usually sought between the strong need of a democratic and representative government for a widespread and open educational system and the desire on the part of many to have most of the economy governed by the private market place. A part of this compromise has been the continued existence of private K-12 schools in the United States. Still another part of the compromise has been the insistence, as in Mort's school of thought, that wealthy districts may have a right to higher levels of K-12 goods and services as long as the state government assures that no children will fall below some minimum, adequate education which is guaranteed by virtue of the simple fact that they are citizens of the state. Still other analysts believe that voucher systems are a way that the state can introduce elements of the market system into education without giving up the control that is necessary to provide a minimum education for the poor. Verily, it is not always easy to reconcile the demands of citizenship with the requirements of a market economy. That is an issue which readers must resolve for themselves; this study must move on to a statement of the findings of the present research concerning equity trends in Illinois.

These value discussions are by no means diversions, they play a very important part in the interpretation of the statistical results. For example, if one believed that the market economy should determine all, then there would be no reason to interpret smaller wealth neutrality indexes as a favorable sign. To the contrary, if one believed that the rich should always and in all cases have more and the poor should always and in all cases have less, then the higher the index the better since this would signify that differences in wealth and differences in educational services were closely correlated. Obviously, the authors of this monograph do not worship in the pews of that particular church.

*Appendix C describes the computation of the Gini coefficient as used in this and all previous monitoring studies. A computer program is available for those who wish to use this specialized index by application to the Center for the Study of Educational Finance, Illinois State University.

## The Importance of Longitudinal Studies to Constitutional Questions

The patient reader, having persisted to this point, deserves a simple statement of findings and a dismissal to more important duties. However, this world holds little justice, and such is not to be. There is one more hurdle to pass before a discussion of the empirical findings. The delay is for an important cause, not merely "dallying o're long at the sherry." An admittedly rather casual survey of the constitutional decisions rendered to date in school finance cases in the United States seems to reveal that the legal mind has not yet fully understood, nor fully appreciated, the importance of trend analysis or longitudinal studies in matters of public finance nor, even more generally, in most matters of public policy. This is understandable. The earnest lawyer and the conscientious judge, and there are many, are caught in the snare of a medieval logic that declares that either something is or that something is not. The facts either show that the situation is constitutional or, conversely, the facts show that it is not constitutional. To those that know the development of the English Common Law, this would make perfectly good sense. Even today, a learned justice in Illinois still labors in the long shadow of Henry II; he or she must feel strongly the obligation to proclaim either a violation of the King's Peace or, conversely, no violation of the King's Peace. However, that logic really does not wash very well in an age reared, not upon a heritage of medieval logic, but upon the heritage of relativistic logic and probabilities; e.g., the ideological heritage of the 18th century. Even the "Lions under the Throne" must change as the world moves on.

Perhaps some argument by analogy to the domain of medicine will help here. For example, it would be a rare ophthalmologist who would declare a finding of glaucoma based upon one and only one reading of the pressure within the eyeball, unless that pressure was truly high. Likewise, it would be a rare endocrinologist who would declare a finding of diabetes based upon one and only one finding that the blood sugar was high on a particular day; nor would a cardiologist jump to a conclusion of coronary heart disease based upon the results of one stress E.K.G. In all of these medical situations, and in many more, the modern physician relies upon a series of measurements which show that something either is getting worse, or it is not getting better. A baseline is struck, and measurements are taken from that baseline. While norms are available for large populations, and they are widely used in modern medicine, more reliance is increasingly placed upon the time series of measurements for an individual patient. It is expensive; it is time consuming; it is also far more accurate than the crude biometric methods of the past.

Such is also the case with disparities in inputs, throughputs and outputs in public education. A baseline must be struck, and a series of measurements must be taken to determine whether the state is moving either toward "equity" or it is moving away from "equity." Admittedly, the judgment call cannot be delayed forever. Eventually, at some time and somewhere, some judge must say, "Enough." Without that judicial call, the legislative body is not apt to attempt any remedy of the situation. This is in keeping with the flexible, but somewhat "fuzzy," notion of a "permissible variance," which has been mentioned earlier in this study. Conceivably, the legislative body could make this call alone and unaided, but the observations of the authors of this monograph lead them toward the conclusion that the legislative body is essentially reactive, not proactive. Therefore, it usually needs a prod from either the executive or the judicial branch to galvanize it into action. The legislative body is good at "treatment"; it responds well to a crisis. Indeed, it is the only body that can ultimately provide a "treatment," but it has never been overly strong on "diagnosis."

This is not to find fault with studies of equity based upon facts displayed at one point in time. To be sure, that is exactly what most original complaints are in these constitutional challenges. The well-written, original complaint in The Committee v. Thompson, for example, sets forth in clear and lucid detail the wide variance in provision per pupil in Illinois; it does so in several different dimensions. Further, due to the outstanding coverage of this disparity matter by the popular press, there is hardly an informed citizen anywhere in the whole state who does not now understand that wide disparity between school districts. Well-informed citizens may strongly differ over the consequences and over the importance of that disparity. It is not the intention of this study to rehearse, once again, the magnitude of existing differences in educational provision in Illinois; therefore, probably to the readers' considerable relief, it moves on to the statement of trends in educational equity in Illinois.

## Equity Trends in Illinois Over the Last Nineteen Years

The interpretation of tables and graphs one through seven (See Appendix A) is relatively straightforward, if one simply remembers that, except for the McLoone Index, the lower the value of the equity index the better the situation and the higher the value of the index the worse the situation. In Illinois, the investigation is complicated due to the existence of three types of school districts: K-12 (unit) districts, separate K-8 (elementary) districts, and 9-12 (high school) districts. No completely satisfactory way has ever been found to merge the financial data, although some experimentation has taken place with "pseudo-unit" districts.[15] A further complication emerges in that the analysis needs to be carried on in its regression phase in terms of "weighted" versus "unweighted" regression. In the first instance, the data are weighted by size of school district; in the second instance they are not so weighted. The general reader can largely ignore these technical questions, however, since they do not appear to make a great deal of difference in the long-term trends reported herein.

If the Illinois courts heed the admonitions of the preceding section, the crucial policy question then becomes: Is Illinois closer to equity now than it was in the past or is the state moving away from an equitable funding situation? That question can be answered by simply looking at the first and last measurements in the time series. Note that in all of the tables, the base year selected for the various time series was 1972-73. Those who are sufficiently long-in-the-tooth will recognize that year as the one preceding a major reform in the Illinois general purpose grant-in-aid system. That was the year in which the so-called "resource equalizer" formula was adopted. Its selection reflects the fact that this time-series research originated for the primary purpose of evaluating that particular reform. It might also be noted that 1973 was only three years removed from the adoption of the last Illinois Constitution in 1970. Therefore, the equity situation prevailing in 1972-73 can be assumed to be relatively close to the equity situation that prevailed at the time that the last Constitutional Convention met in Illinois. That fact may very well have some important legal consequences.

Looking first at the matter of simple disparities between school districts, it can be seen from Table 1 and Graph 1 that Illinois school districts are more unequal at the present time than they were when the 1970 state constitution was adopted. Put another way, at the present moment, both the courts and the legislature face a less equal situation than did the Constitutional Convention of 1970. It should also be noted that the disparities are much greater in the dual districts (the elementary and secondary districts) than they are in the unit districts. That situation is true for at least a couple of reasons. In the first place, the unit districts in Illinois are geographically larger than the duals and, all other things remaining equal, larger districts will contain less variation between themselves than do smaller districts. Second, the duals are concentrated heavily in the

northern part of the state, but they also have a distribution that trails off into the middle and southern part of Illinois. That makes for a very wide wealth distribution since, again all other things remaining equal, the northern and southern parts of Illinois have a very wide discrepancies in wealth, a very important point which will be discussed later in the cartographic portion of this study.

It will be noted that the trend-line is curvilinear. In all three types of school districts, marked improvement was made in reducing inequalities between the school districts between the base-year and either 1976-77 or 1977-78. This was the period in which the new "resource equalizer" formula was being phased into place and the creators of that formula can, with 20-20 hindsight, congratulate themselves upon the fact that, at least in its early affects, that distribution system did produce a reduction in expenditures and, presumably, service levels between Illinois districts. How much that reduction was due to the formula, itself, versus how much it was due simply to the strong increase in state aid is debatable. During this three or four year time period, state aid was increased by an amount just short of one billion dollars. Never afterward, in the whole history of this time series, was the State of Illinois ever again able to increase the state general purpose grant-in-aid for K-12 education by an amount of that magnitude. This crucial time period, following the introduction of the "resource equalizer" formula, remains very important from a historical perspective. It proves that these equity indexes can be moved in the "right" direction, given sufficiently large amounts of general purpose state aid. It seems relatively clear from the evidence that as the proportion of dollars from the state increases and the proportion of dollars from the local district decreases the equity situation improves. Conversely, when the local property tax is made to shoulder the greater burden and when the proportion of state dollars decrease the equity situation becomes worse. It should also be noted that, in the last two years, there has also been a slight improvement for elementary districts; but, apparently, this has not been true for either high school districts or for unit districts. Further, that slight improvement holds only when wealth is measured as property valuation per pupil and not when wealth is measured in terms of personal income in the district.

It must be remembered that the coefficient of variation uses all the measurements in the distribution. When a somewhat different policy question is asked--How did the lowest spending districts fare during this period?--a different answer is obtained and that answer is more favorable to the defense in The Committee v. Thompson than to the plaintiff. It is, however, about the only thing in this whole body of evidence that is favorable to that side of the litigation. Admittedly, the McLoone Indexes do not move much during this whole 19 years, but they do move in the "right" direction. That is, during this whole time period the lower spending districts in Illinois did make some progress on moving toward the median of the distribution. When the two pieces of evidence are coupled in tables and graphs, an important piece of information emerges. The source of the increasing inequalities in Illinois school districts appears to be in the upper end of the spending distribution; e.g., the higher-spending districts have increased their spending at a much faster rate than the lower-spending districts. Later in the study, this point will be discussed again.

The evidence concerning the notion of "wealth neutrality" is contained in tables and graphs three through seven. The major policy question here is: "Are the expenditure levels of school districts; and, therefore, presumably their educational service levels, more dependent upon the wealth in the local school district than they were in the past?" The answer, with very few exceptions, is a resounding, "Yes!" Presently, what children receive in educational goods and services is determined more by whether they are so fortunate as to have parents who reside in rich districts or whether they are so very unfortunate as to have parents that reside in poor districts. A

sage once observed: "A child should carefully choose his parents." That appears to be especially true in Illinois. That fact appears to be much truer now than when the constitutional convention convened in 1970. Put another way, if the "Serrano dicta" were to be insisted upon by the Illinois courts, as has been the case in other state courts, the General Assembly would find itself very hard put to reverse the school finance trends of a great many years. As in medical situations, the consequences of waiting too long to treat a situation can be very, very serious.

It should also be noted that, as was the case with simple disparities, the greatest problem is in the dual districts rather than in the unit districts. The problem is especially severe in the high school districts. The extremely high recent values on these equity indexes when personal income, rather than property valuation, is used as the measurement of district wealth makes it quite clear that pupils in low-income high school districts are not receiving the educational services that pupils in high-income high school districts receive. It would appear useful to launch a special investigation into the educational conditions in low-income high schools in Illinois, as soon as new personal income data become available from the 1990 federal census of population and housing.

The bottom line of the equity trend analysis is both discouraging and hopeful. It is hopeful in the sense that the historical evidence clearly indicates that something can be done about the situation. Looking, for example, at the values of the Gini Index in Table 3, it is clear that Illinois came very close to absolute "wealth neutrality," at least for unit districts, in the middle 1970's. It is doubtful whether a constitutional challenge could have been launched in the 1970's, because the evidence simply would not have supported such an effort. However, the 1980's changed all that.

The discouraging thing about the historical evidence is that improvements on these equity indexes are clearly dependent upon very sizable increases in general state aid, which, in turn, means sizable increases in state taxes. In all of its publications, now approaching two full decades of research, the Center for the Study of Educational Finance at Illinois State University has repeatedly said that the solution to the equity problem was not to be purchased at some bargain basement price. What is important is that the longer the citizenry waits, the higher becomes the price to solve the problem.

## Preliminary Cartographic Analysis

The statistical analysis just described was intended to answer fiscal policy questions at the state level: "Is the state as a whole becoming more equitable or less equitable?" That is a necessary, but not a sufficient, analysis in school finance. The fact is that the economics and politics of school finance are regional in character. So much so, that some would say that intrastate, regional economics and politics actually dominate what goes on in this field. To explore regional configurations within Illinois, cartography, rather than conventional statistics, was used in this study. The valuable assistance of faculty from the Geography Department at Illinois State University was secured to help with this task. At the outset, it should be noted that this is a "preliminary" usage of cartographic analysis. A large body of educational data are now available and can be subjected to several different kinds of cartographic analysis. What is reported here does not do much more than whet the appetite. The Center hopes to do much more of this type of analysis in the future, subject to securing funds for that research purpose.

A fundamental unit-of-analysis problem confronts one in the cartographic area. Ideally, one would wish to analyze intrastate regional configurations in terms of the special districts that actually govern education in most middle western states. What is

presented in this preliminary analysis is not that; but, rather, an analysis in terms of the counties of Illinois. That was done for several reasons. First, at the time this work was done, no workable, computer-useable, school district map was readily available for all of Illinois. The large number of Illinois districts makes cartography difficult, though not impossible. It should be stressed that the use of the county as the unit of analysis does understate greatly the disparities within many educational variables that exist in the state at the present time. Particularly in some of the larger and more populous counties, such as Cook and St.Clair, a great deal of variation exists on all school variables, including school finance variables. When the county is used as the unit of analysis, all of that disparity is lost. But the county analysis does suffice to show major regional configurations in the state, and that was the initial focus of attention.

Another reason to use the county as the unit of analysis is to give an impression of what the remaining disparities might look like if, in fact, the county was the principal means of school governance, as it is in most southern states. Recently, there has been some talk of a fundamental "restructuring" of school governance in Illinois as a means of solving the school finance equity question. By creating these "hypothetical" county units, one can see something of what the world would be like if the county, and not the school district, was the instrumentality for the governance of the schools. This is rather rough since most proposals for "restructuring" use a combination of county and township, and not county alone, in setting forth what might be a new governance structure for education in Illinois. Nor can any of the sophistication of these new restructuring proposals be presented, such as dividing the administrative structure and using the county as only the funding mechanism, while preserving the district as the personnel unit in a new administrative system. Such "restructuring" thinking is stimulating, and should surely be encouraged, but it lies far outside the scope of this monograph.

The analysis presented in the Maps A, B, C and D is of a "hypothetical" world in which the existing school district has been assigned to a county on the basis of the address of the administrative office. Obviously, this does some violence to situations in which school districts are in more than one county. Also, assessed valuation, state aid, local revenues (assessed valuation multiplied by operating tax rate) and average daily attendance of all districts in a county were aggregated to compute the corresponding variables for the county. In order to avoid double counting, only the assessed valuations in unit districts and high schools districts were used to determine the county wealth. The total revenues used are the "unrestricted" revenues used elsewhere in this study; that is, the revenues locally raised plus the general state aid. No categorical grant funding, state or local, plays a role in this or in any other analysis in the "monitoring series." That is in keeping with the assumption that the focus of attention is on the support of the "normal" or "average" student, and not upon the support of any targeted, "special needs" student.

The analysis varies in two other aspects from the usual type of analysis presented in the equity studies published by the Center. Since the county is the unit of analysis, there is no display of disparity among the three separate types of special district government (K-12, K-8, and 9-12) that exist in Illinois. For analytical purposes, at a single stroke, the state was made into all unit districts. Doubtless, there are some who would wish that a wave of a magic wand would do that for the actual world as well as the "hypothetical" world. Also, this analysis, unlike the rest of the analysis carried on elsewhere in the monitoring series, is not in terms of a weighted pupil, but simply in terms of average daily attendance. With these conceptual and procedural matters out of the way, one may now look at each of the four maps.

Turn first to Map A which displays the disparity in unrestricted revenue per ADA for the 1990-91 school year. (See Appendix B.) There are eleven counties in Illinois with unrestricted revenues per ADA under $3,000. They are, with the single exception of Schuyler County which is in western Illinois, located in the southern part of the state. These southern Illinois counties (Clark, Cumberland, Effingham, Clay, and Edwards) tend to cluster in the southeastern part of the state. In the southwest are Macoupin, Jersey, Clinton, and Monroe Counties. In the deeper south is Williamson County. If the assumption holds that expenditure or revenue per pupil is a reasonable indication of the educational goods and services provided school children, in 1991, there were ten southern counties and one western county in Illinois in which an inferior level of educational goods and services were provided, compared to the rest of Illinois. It must be acknowledged that the revenue per student here is not corrected for differences in purchasing power; that would mitigate the differences somewhat. However, application of the McMahon geographic cost-of-living index would not remove the vary striking North/South differences that are obvious from this map. It should also be noted that, with the exception of Effingham which contains one, somewhat large municipal area, these counties are characterized by relatively small, rural towns and villages. Map A, therefore, attests to the poor educational provision that is present in the small towns of southern Illinois.

By contrast, there are seven high-spending counties in the north (Lake, Dupage, Cook, Ogle, and Grundy) and in the central area (Dewitt and Piatt). Higher-spending counties are characterized by either concentrations of high residential property valuations or by the existence of valuable commercial and industrial valuations, often nuclear power generating facilities, as in the case of Byron in Ogle County. The case of Ogle County clearly points out the degree to which the wealth in Byron overwhelms the other districts within the county, such as Mt. Morris. Ogle County, by property valuation standards, is a rich county. Mt. Morris, as the complaint in The Committee v. Thompson (Edgar) makes abundantly clear, does not share in that wealth. From the showing of Map A, one would expect that school districts in southern Illinois, especially those in the small towns, would be interested in any attempt to "level up" educational expenditures, be that attempt either legislative or litigious in nature.

The similarity of Map A with Map B is expected since the expenditure per pupil is highly correlated with the property valuation per pupil that is present in a given district. The "fit" would be much better if the unit of analysis were the district rather than the county. In Map B, the role of commercial and industrial valuations, especially the existence of power plants, is very striking. The five counties with over $100,000 per child (Ogle, Grundy, Putnam, Dewitt, and Piatt) are all affected by high non-residential valuations. All are in the north or middle part of the state. South of the southern border of Sangamon County, however, the world changes, and it changes fast. Here, the property valuations start declining and that decline accelerates as one approaches the Ohio River. There are ten Illinois counties with especially weak local-property tax bases, with which their citizens have been expected for years to try to support K-12 education. Three of these are in the south central part of the state: Macoupin, Cumberland and Lawrence. The remaining seven are in the deep south: Williamson, Union, Johnson, Pope, Hardin, Alexander and Pulaski. Without strong state assistance, it is very doubtful that K-12 education can ever be supported at an adequate level in these ten property-tax-poor southern counties. For these, the almost forgotten counties in Illinois, the effects of the Civil War are not over. Indeed, in these counties much of everyday life has not greatly changed since the great conflict of the nineteenth century. The light, noise, and glamour of high-tech development of the northeastern part of Illinois does not penetrate very well into the hushed quiet of the Shawnee National Forest. Life near the Ohio River continues its slow and measured pace, similar to the movement of that mighty body of water, itself.

Maps A and B portray a part of the educational world of Illinois today. Maps C and D speak to how the present scene became that way. The "becoming" is important here, because educational opportunities are often a matter of marginal dollars, not the overall existing level of support at a given point-in-time. It is from the change in revenue that the new programs come, if they come at all. In southeastern Illinois, especially in Jasper County, there cannot have been much educational change in the last decade. Since revenue per ADA increased less than 5% per year over the last decade, whatever level of educational goods and services Jasper County school children had in 1981, they barely have now, in 1991. The schools in southern Illinois may have kept up with the cost-of-living changes through time, but there could have been nothing left for new courses, new computers, new facilities, or new anything else. By contrast, the central and northern parts of the state have fared much better.

Map C deals with PER PUPIL measurements. Thus, when the number of pupils declines, either through low birth rates or through migration of school-age children from certain parts of the state, then both support levels per child and wealth per child can rise. In many of the higher-percentage-change areas portrayed in Map C, one is dealing not so much with an increase in dollars as with a decline in the number of students through a whole decade. The overall patterns are clear. The North had the dollars to fuel educational change. The South did not. Part of this, to be sure, may be explained in "willingness" to tax. In this preliminary analysis, the cartography of tax rates is not explored, even though they would be quite revealing. It may be of little consequence to school children in Southern Illinois to learn that they were educationally disadvantaged by the failure of their parents and their parents' neighbors to tax. The dollars were not there and the educational programs, equipment, and personnel that those dollars buy were not there, either. At a first estimate, it seems that if Article Ten of the Illinois Constitution of 1970 (the Education Article) has been violated anywhere, it has been violated in the small, rural towns of the southeastern part of the state.

Map D indicates the change in assessed valuation per ADA over the decade 1981-91. In many respects, this is the most important of the four maps. As long as the quality of K-12 education depends as strongly as it does upon the property wealth of a district, then the fortunes or the misfortunes of the region in which the school district is located will color all aspects of K-12 education in that region. Map D is a striking portrayal of unequal economic development in Illinois. With the exception of Dewitt County in central Illinois, strong economic development has been limited to the northeastern part of the state. In fact, an entire double tier of counties along the Wisconsin border has been moving forward at a brisk pace relative to property valuations during the decade of the 1980s. The rest of the state has clearly been left behind. There are some spots in the south where the property valuation per pupil has increased, but this may be due more to loss of pupils, than to increase in the valuations themselves. It is a striking fact that, while a number of Illinois counties have increased over 100% in property valuation per pupil, six Illinois counties have actually declined in assessed valuation per pupil. Three of these are located in the central part of the state: Woodford, Ford and Iroquois. Three are located in the south central part of the state: Shelby, Washington and Lawrence. Without a doubt, a part of this actual decline is due to a change in the manner in which farmland assessments were calculated during this decade. Illinois essentially moved from an ad valorem method of evaluation to a method that includes the income yield from the land in determining the taxable valuation of the farm. Since farm income has been weak during much of this decade, the weakness is shown in the assessed valuations. However, from the point of view of a school child in Lawrence County, it may not matter what the source of economic weakness is, the resources simply were not there in the 1980s and neither were the educational opportunities.

Map D tells a forlorn and relatively isolated parents and taxpayers that to be in Lawrence County, Illinois, in 1991, is to have been left behind over the last decade. It tells them that they are losing the race for the good life, not only for themselves, but also for their children, and they are losing that race very badly. As the high-tech industrial and commercial corridor develops in the collar counties outside of Chicago, the industrial and commercial valuations are pushed ever higher each year. Speculation in residential values proceeds over the entire Wisconsin border area inflates the coffers of northern school districts. In these very fortunate school districts, the property tax extensions continue to inflate even though the tax rate remains constant. With the exception of an occasional beneficial location of a power plant, there is no similar economic development going on downstate. "Build Illinois" built Illinois all right, but the building was almost entirely restricted to the northern part of the state. The location of a single, new Japanese manufacturer downstate did not, by any stretch of the imagination, change the fundamental economic forces at work within Illinois.

As this monograph was going to press, Governor James Edgar revealed his program for limitation of the property tax extensions. Given this recent development, Map D becomes even more important. The map tells one immediately which regions of the state would be affected by the Governor's proposal. Districts in the prosperous northern tier of counties would be held back in their educational expenditures and this limitation, if maintained over a sufficient length of time, would have the affect of reducing the disparity in expenditures per pupil. But such a proposal does nothing for a school child in Lawrence or Edwards or Williamson Counties, or any number of other low-spending counties that have been noted in this section of the study. Governor Edgar's proposal would "hobble the rich," but it would not not lift up the poor. The proposal is tempting to many individuals since it lowers taxes and is a relatively painless way of attacking the equity problem. "Leveling up" by contrast, increases state taxes and is a relatively painful way to solve the same equity problem. In the small towns of Macoupin and Cumberland Counties, an informed citizen will likely want the more painful way to be taken, however. That a child in Lake or Dupage Counties is hobbled will do little to help a child in Cumberland County.

The plain fact is that, until and unless the difficult problem of lack of economic development in southern Illinois is squarely addressed by the Governor and the General Assembly, the overall educational equity problem can never be finally solved. The next "Build Illinois" program needs to develop a decidedly "southern look" to it. While southeastern Illinois might be helped by certain kinds of changes in the general grant-in-aid formula, the needs of this region of the state are far greater than can be addressed by any technical changes in the school finance system. Southeastern Illinois needs a Marshall Plan for rebuilding their economy. If they don't get it, especially from a "downstate" governor, they should raise the "stars and bars" and fire on Springfield. This just might need that martial display given their ever-thinning numbers and their weakness in both houses of the legislature. One thing they can count on: successful prosecution of The Committee v. Edgar would call attention to their plight in a dramatic way. Article Ten is the same for all the children of Illinois. If the courts of Illinois eventually decide that "an efficient system of high quality education" must be provided in a small town in Lawrence County, and it must also be provided in the depressed ghetto areas of Chicago, as well as in affluent suburban school districts in Lake and Dupage Counties, a solution may be possible. Urged on by the courts, the General Assembly may then take appropriate action to see that educational opportunities of school children are not determined by the economics of the region in which the district, and the child, happen to be found. The Civil War was the longest and worst war ever fought. It must not be repeated in Illinois.

## Conclusions, Suggestions for Further Research, and Policy Implications

George Santayana's trenchant observation that, "those who do not know history are condemned to repeat it," is as valid today as when it was first uttered. Thanks to the steadfast and patient work of a small group of scholars at Illinois State University, there is now available a fairly good idea of what happened to variations in educational expenditure between school districts in one state, Illinois, over nearly a quarter of a century. But, there are gaps in the knowledge-base even here, and a part of the scenario presented below must, of necessity, rest upon speculation as well as upon documentation.

Throughout the 1960s, the State of Illinois was in the happy situation of moving toward greater equality of educational opportunity, at least as far as differences between expenditure-per-pupil among public school districts were concerned. When the Illinois Constitutional Convention met in 1968-1970, there was knowledge of and concern for differences in educational provision between school districts, at that one point in time. However, there could have been little concern on the part of the Convention delegates for any increasing inequality of educational opportunity within the state, because there was not yet in existence any evidence of a trend in that direction. To what is owed that happy state of affairs in the 1960s is a matter of speculation. It could have been due to the general value climate of the 1960's which, as one recalls, was the period of the "War on Poverty" in the United States, advanced by the Kennedy and Johnson Administrations. It could also have been a response to the civil rights movements of the time. More likely, at the local school district level, it may have been the result of a rather equal development of economic resources between the geographical regions in Illinois. Put another way, the great regional inequalities, manifested in the previous section of this research, were not as obvious in the 1960s as they are now in the early 1990s. Only a good historical study could sort out all of these causal forces.

The early 1970s saw a huge wave of litigation on the question of the constitutionality of these differences in educational provision between school districts. Scholars who have studied that period in Illinois history have concluded that the pressure from these state supreme court decisions in the other states was one of the major causes of the reform of the general purpose grant-in-aid system known as the "Resource Equalizer" in Illinois.[16] However, a major constitutional challenge to the Illinois school finance system did not emerge from the Illinois courts in the early 1970's. It may well be that this was due primarily to swift and significant action by the General Assembly concerning school finance reform. The initiative for that action came from both the Illinois universities and from the Illinois General Assembly. The situation was also helped by the last man who sat in the Illinois Governor's office who could honestly claim the title of an "education governor," Richard Ogilvie. It should also be noted that many of the school finance initiatives planned in the last days of the Ogilvie administration were actually executed in the earlier years of his successor, Governor Walker. In any event, the record now clearly shows that the equity indexes all moved in the desired direction between 1973, the date of the major school finance reform, and 1976 or 1977. Moreover, it should be noted that it cost the state approximately $900 million in new state dollars for K-12 education to affect this major improvement in educational opportunity in Illinois. Most of this money came from the new state income tax and some of it came from an unexpected "revenue sharing" windfall from the federal government.

As near as one can determine from the data now available, the long march toward educational inequality in Illinois started in the middle 1970's. Here, again, one can only speculate about the forces which caused this movement away from equity in school finance in this state. It is a speculation informed by a study of the available data.

High on the list of causes of inequality must be the greatly unequal economic development that occurred between various regions of Illinois. As shown in the cartographic portion of this study, those forces were well under way in the 1980s, and could have made their appearance before the start of the decade. Also high on the list of contributing causes to this growing inequality was the existence of a grant-in-aid system which, until 1980, rewarded local district fiscal effort. Under the general purpose grant-in-aid system in existence from 1973 through 1980, districts which passed referenda received not only increased local money, but also were rewarded with additional state grant-in-aid dollars, as well. Initially, this type of grant-in-aid system could have helped equity; but, over time, it became apparent that it was the rich districts, not the poor districts, that were passing their referenda and, hence, receiving the additional state dollars.[17] This was one of the reasons the "reward for effort" formula was greatly modified in 1980.

It must also be flatly and unequivocally stated that the General Assembly and the Governor in Illinois either failed to understand the gravity of the increasing educational inequality problem in the 1980s or, if they understood it, they were not able to put together a viable political coalition to solve the problem. The very good record--indeed, the outstanding record--of the General Assembly in the early 1970s contrasts sharply with the very poor record in the 1980s. To do both branches justice, they probably understood the problem; it was the inability to construct a viable political coalition that caused the inaction. Faced with an increasing spread in revenue-per-pupil, the only logical response would have been to greatly increase state aid in the hope of bridging the ever widening expenditure-level gap. The publications of the Center for the Study of Educational Finance at ISU repeatedly sounded this note, but the General Assembly and the Governor could not hear the music. To the contrary, the increases in general state aid became smaller and more erratic in the 1980's; in fact, in one year, the General Assembly and the Governor actually cut the amount of general purpose state aid from the previous year. Obviously, such an action only contributed to the problem. The situation in the 1980s was akin to a person on a treadmill. It was necessary to run faster and faster just to stay in one place. The Governor and the General Assembly did not run faster; to the contrary, they slowed down. Consequently, the state lost more and more ground relative to equal educational opportunity in the state. There can be no doubt at all that the recent appeal of a number of school districts to the courts in The Committee v. Thompson is directly related to this very poor performance of the other two branches of government in the 1980s. Perhaps the notes sounded by the universities were heard, but as gentle chamber music. It will take the trumpet call of the courts to wake up the General Assembly and the Governor.

It is unfair, however, to engage here in too much legislative bashing. The General Assembly, at least toward the end of the 1980s, was also honestly and conscientiously responding to the "no new taxes" sentiment emerging from a part of the Illinois body politic. In the judgment of many, the conflict between these two public policy positions is totally and completely irreconcilable. The educational inequality problem cannot be solved in Illinois without an increase in state taxes. The solution lies in "leveling up" the spending of low-spending districts, and that "leveling up" requires more state aid. Only "leveling down" would require the same amount of aid and that action is not politically possible or useful to the welfare of the Republic. There is a choice in terms of how much of an increase and in what kind of state taxes might be required to do the job.

As has been mentioned, there are a lot of gaps in the record here. First, one needs to look at the longitudinal record in dimensions other than expenditure-per-pupil. One can assume that, if studies of other inputs were available, one would find that inequalities in the things that money can buy in the schools also increased in the 1980s.

But there is no independent confirmation of this fact. It is known that great inequalities exist in course offerings, lab equipment, the conditions of buildings, the preparation of teachers, pupil/teacher ratios and a number of other "process" or "throughput" variables.[18] What is not known is whether those inequalities are also becoming more unlike with the passage of time. If they are dollar-related items, the disparity is very likely increasing, but independent research confirmation is needed. Also, there exists little evidence relative to possible growing inequalities in outputs in Illinois. There is some limited evidence that suggests differences in test scores between school districts might also fluctuate with the passage of time, but no hard and firm trends can be identified, as this study was being reported.[19] Consequently, one must conclude that there is not yet the necessary documentation of the full degree of educational inequalities that occurred in the 1980s. Research in these areas is important, because the growing inequality in educational opportunity is extending now into the 1990s. It is the hope of some that, with the court's assistance, that evil process, dangerous to the life of the Republic, can be slowed; perhaps stopped; and, hopefully, reversed.

If the past is prologue to the future, what can these evaluations of the past contribute to the present policy debate in Illinois? A lot. Numerous reforms have been advanced by different individuals and groups in the recent past and even more are now coming forward.[20] In some respects, the growing number of reform proposals are testimony to the effect that the constitutional challenge has already had on the situation. These proposals would not be emerging if it had not been for the strenuous efforts of the districts making up the Committee for Educational Rights, the group that is seeking redress of grievances in the courts. All of these proposed reforms will have to be evaluated by some criterion, otherwise it cannot be known whether any given proposal is, or is not, worthy of attention by the legislature.

One of the yardsticks against which all new reforms in the general purpose grant-in-aid system should be measured is the time series established in this study. This action requires that all proposed reforms in the general grant-in-aid system be computer simulated. That would be necessary in any event since long gone are the days in which the General Assembly would pass a reform in the general grant-in-aid system without a full computer print-out. The second step would be to compute the equity indexes used in this report (the coefficient of variation, the McLoone Index, and the various least squares regression coefficients). Those values pertinent to each new proposal should then be compared to the time series reported here. In each case, it should be possible to ascertain to what date each proposal would return us. For example, does a given proposal return us to the values of 1985, or 1980, or even to the best showings in the middle 1970s? Clearly this is a "back to the future" situation. Or, if one prefers the medical analogy, to just what state of health will the patient be restored?

Actually, this is a fairly conservative proposal, if one is satisfied with the condition of school finance as it was in the early 1970s. The reason for that posture lies in the presumed resistance of the public to new taxes. Even to regain the status of the middle seventies will require a huge tax effort. Various simulations suggest that something approaching $2 billion in new state aid would be needed to make major improvements in the equity indexes reported here. However, there is no need to speculate in this arena. One simply makes the proposal, simulates it on the computer, computes the indexes, states the year to which it would take us, reports the costs, and estimates the increases in taxes needed to do the job.

There is an obvious need for creativity in how the necessary funds will be raised to afford whatever solution is put forward. If the opposition to raising the funds through increases in the personal income tax is as fierce as it now seems to be, then thought must go into putting the state back into the property tax business. That is exactly how

the State of Illinois first supported its public schools. In the middle of the 19th century, education was supported by a two percent tax on property which went into the state treasury and was then distributed by the state to the local school boards.[21] Another consideration would be to split the property tax rolls and move the industrial and commercial property tax to the state level while keeping the residential and farm property tax at the local level. Some simulations on these lines have already been conducted by Dr. Fred Hess and his associates at the Chicago Panel on Public School Policy and Finance.[22] Another option is to look at the yield from the taxes on legalized gambling in Illinois. But, in any event, there must be dialogue on this subject. An absolute "no new taxes" position will simply produce a constitutional crisis between the courts and the legislature and no one will win from that scenario.

No one is so foolish and naive as to think that the "formula game" as played in Springfield ends simply with computer simulations and calculations of equity indexes. Much to the contrary. That is only the beginning of the "formula game"; albeit, a logical beginning. From that point on, the necessary compromises must be fought-out between the various pressure groups within the state and between the increasingly disparate geographic units within the state. Occasionally, even the two great political parties will take formal positions, although that is very rare. Educational politics in Illinois are largely regional and organizational, rather than party politics. All of that process takes place within the legislative body--the only place it properly can take place. It can be a process assisted by the courts; but, ultimately, it is a responsibility the General Assembly cannot shift to any other shoulders. Logic is all that university-based research can probably contribute to public policy problems. Freud was right; logic alone does not drive men; but that is all this Center--or any other research body--has for sale.

Readers who have faithfully followed these "monitoring studies" from ISU over the snows of 16 winters know that, especially in the "monitoring series," the writings of famous historians have been used to drive home the significant ideas being made. Fans in that connection shall not be disappointed, because Sir Winston Spencer Churchill's History of the English Speaking Peoples seems appropriate here. Churchill wrote of the genius of the American Constitution, a document which he held in high esteem, as do all free people. To explain its development he had gone to the Federalist Papers and quoted this interesting extract which he believed stated an "eternal problem":

> ...the most common and durable source of factions has been the various and unequal distribution of property. Those who hold and those who are without property have even formed distinct interests in the society...The regulation of these various and interfering interests form the principal task of modern legislation, and involves the spirit of party and faction in the necessary and ordinary operations of the Government."[23]

The notion is not new. The same thought can be found in the Fourth Book of Aristotle's Politics which was written over two millennia ago.[24] Sir Winston was right. The careful balancing of the interests of those school districts who "have" with those schools districts who "have not" is, indeed, the "eternal problem" of the Illinois General Assembly. If the cartographic analysis reported herein is correct, this problem has become, in the 1980s, a task of balancing large regions in the state who "have" with other large regions who "have not." No men or women, in their right minds, would not be desirous of being excused from struggling with this terrible responsibility. But it cannot be. For well over ten years, the Illinois General Assembly avoided coming to grips with the problem of growing inequalities in educational opportunity. Now the piper must be paid.

## Notes and References

1. At times, digging through the old archives is rewarding, although tedious. It is rewarding in that so much of the output in school finance is what the late Professor M. M. Chambers used to call "fugitive manuscripts"; e.g., paper-backed monographs that go out-of-print quickly. Unless one looks backward from time-to-time, those research efforts disappear from view forever. Fortunately, some of these, including a number of items noted below, have been recorded for posterity by the ERIC Clearinghouse on Educational Management. Therefore, this rather long, historical footnote may be of help to the very few that might want to trace back to its origins–and then note the development of–a 19-year-old research project in school finance. Surely, there can't be many projects with that much longevity in all the corpus of educational research.

The initial design for this long trend study was outlined in a publication appearing in February 1972, entitled, Definition, Measurement, and Application of the Concept of Equalization in School Finance by G. A. Hickrod, R. B. Chaudhari and T. H. Tcheng. It had been the first chapter in the first volume of a series of studies issued as a part of the Illinois Superintendent's Advisory Committee on School Finance, during the administration of Dr. Michael Bakalis. Clearly, a part of the rationale for the study came from court decisions that had taken place during the five years preceding the publication of the study. Especially noted in this regard were: Hobson v. Hansen, 1967; McInnis v. Ogilvie, 1969; Serrano v. Priest, 1971; Van Dusartz v. Hatfield, 1971; and Rodriguez v. San Antonio, 1971. But the study also drew on a much older body of school finance literature that went back to R. L. Johns and E. L. Morphet: Problems and Issues in Public School Finance, 1952, Teachers College Press, N.Y.

The research design had been initially intended to evaluate the very extensive school finance reforms that had been put into place in 1973, termed in Illinois, the "Resource Equalizer" formula. The design was never intended to evaluate the entire school finance system, only the effects of the reform of the general purpose grant-in-aid system. For that reason, the revenue element used in all of these studies was only revenues locally raised plus general state aid. None of the reports looked at categorical aid, either federal or state, nor at capital expenditure. The first two reports, issued in January 1975 and November 1976 were generally quite upbeat and positive. Clearly, the analysts were pleased by the effects of the 1973 reform. In retrospect, these reports offer a striking contrast to the more negative tones set in later publications in this series. The early reports, especially the one entitled, The 1973 Reform of the Illinois General Purpose Educational Grant-in-Aid: A Description and an Evaluation by G. A. Hickrod, Ben C. Hubbard, and Thomas Wei Chi Yang, are broader in scope and look at more dimensions of equity than do later publications in the series. Investigations of the relation of tax-effort to wealth and the effects of the reform on different categories of districts (central city, suburbs, etc.) are found in the early evaluative reports, but not in the later studies. Later reports were "streamlined" in order to create a more focused approach to public policy, which they probably did, but something was lost in the "streamlining." For example, a 1975 report by Hickrod, Yang, Hubbard and Chaudhari, entitled, Measurable Objectives for School Finance Reform: A Further Evaluation of the Illinois School Finance Reforms of 1973, used an "unfolding" approach to disparity which enabled one to separate out the disparity effects of three different sources: (a) capacity of district, (b) tax rate of district and (c) the effects of the general purpose grant-in-aid. This was very useful, but rarely employed, thereafter.

Collateral studies also appeared which were not a part of the main series of "monitoring" studies, but which were quite interesting in and of themselves. One, thought lost until recently, has been rediscovered at the Center and may yield important historical and legal information. This study by G. A. Hickrod and R. B. Chaudhari, entitled, A Longitudinal Study of Fiscal Equalization in Illinois was apparently done initially for a 1973 annual meeting of the American Educational Research Association, then occurring in New Orleans. The study is important because it contains evidence relating to the disparity in expenditures per pupil, property valuation per pupil and tax rates, BEFORE the Constitutional Convention of 1970. Although the

actual coefficients of variation are not reported, by some error of omission--and are long since lost--it is still perfectly possible to tell by the graphs that disparity in expenditures per pupil between Illinois school districts were actually decreasing even before the school finance reforms of 1973. From 1965 through 1971, school districts in Illinois were becoming more equal in expenditures per pupil. Assuming, therefore, that the framers of the Constitution of 1970 knew these results, it is not difficult to see why expenditure disparities did not play a greater role than it did in their deliberations over what should or should not go into the education article of the state constitution (Article Ten). In the light of much later research, it is also interesting to note that there is very limited evidence of increasing wealth inequalities in school districts in the 1960s. The striking increase in wealth inequalities reported in the present text must, therefore, date from a much more recent period, although among elementary districts alone there is some evidence of increasing wealth inequalities all the way back to the early 1960s.

The first major discordant note was sounded in the Center's 1979 report entitled, simply, Equity Goals in Illinois School Finance: 1973-1979. In that study, Hickrod, Chaudhari, and Hubbard concluded: "It is possible....that school finance reform is, regrettably, like many other kinds of educational reform. That is, the reform may be successful, but only in the short run. The benefits of the reform then fade after a few years." They also noted other studies in other states that had been conducted in the late 1970s, and that these other studies also indicated that the effect of reforms stimulated by Serrano v. Priest and similar litigation might not be lasting in nature. After 1979, the reports of the Center became much more pessimistic. The 1983 report, for example, was entitled, The Decline and Fall of School Finance Reform in Illinois. By this time, Hickrod, Chaudhari and Hubbard had taken a much more philosophical view of the entire process: "Hope, we believe, must lie in seeing school finance reforms as only one manifestation of a much broader movement for social reform which manifests itself through the public schools and which can also be seen to be much stronger at one period than at another." This "wave theory" of school finance reform, cited by Hickrod, Chaudhari, and Hubbard in 1983, may be in the process of being given more credibility by the "new wave" of school finance constitutional challenges at the very end of the decade of the 1980s.

It might also be noted that, while, as the text explains, most equity studies are case studies of single states, the Center did attempt two multi-state studies. One of these was an outgrowth of a doctoral dissertation at ISU by Thomas Wei Chi Yang entitled, Measurement of School Revenue Equity in the States of Illinois, Michigan, and Kansas, in 1975; another was, Equity Measurements in School Finance: Indiana, Iowa, and Illinois, in 1980. No multi-state study was attempted in the 1980s. There were also interesting attempts to expand the notion of "conditional wealth neutrality," which is a measurement attempt to control first for variables other than wealth and then to observe the relationship between wealth and expenditure. Usually, it was the tax rate that was offered as the first control variable. Attempts of this nature were undertaken by David P. Schmink in 1979 and William L. Hinrichs in 1980. The notion of "conditional wealth neutrality," like the "unfolding analysis," appears to be another of Robert Frost's "roads not taken." There are many of these in school finance research.

2. G. A. Hickrod, Ben C. Hubbard, and Thomas W.C. Yang, The 1973 Reform of the Illinois General Purpose Educational Grant-in-Aid: A Description and an Evaluation, 1975, Center for the Study of Educational Finance, Illinois State University, Normal, IL. Since this was written, a great many evaluations of equity have been carried out in the various states. Initially, most of these studies appeared as individual monographs; later, a number were picked up in the pages of the Journal of Education Finance. This entire equity field owes an immense debt of gratitude to Professors Robert Berne and Leanna Stiefel. At the end of the 1970s, their methodological studies stimulated a great deal of interest in equity evaluation and still constitute a high standard for analysis in this area. See A Methodological Assessment of Education Equality and Wealth Neutrality Measures, Education Common of the States, 1978; also, Odden Allan, Robert Berne and Leanna Stiefel, Equity in School Finance, 1979, Education Commission of the States, Denver, Colorado.

3. See Volume 8, Number 4, and Volume 9, Number I, of the Journal of Education Finance. The editors were Margaret E. Goertz and G. Alan Hickrod.

4. Franklin, David L., et al., MacArthur/Spencer Series #3: The Constitutionality of the K-12 Funding System in Illinois, Volume I, 1987, Center for the Study of Educational Finance, Illinois State University; and Franklin, David L. et al., MacArthur/Spencer Series #15: The Constitutionality of the K-12 Fundings System in Illinois, Volume II, 1990 Supplement, 1990, Center for the Study of Educational Finance, Illinois State University, Normal, IL 61761.

5. The complaint in The Committee for Educational Rights v. Thompson has been printed and distributed in a number of formats within Illinois. Professor Max Pierson released a copy from Western Illinois State University with a short historical preface which is very helpful. The complaint was also distributed to all Illinois school boards in the form of a special issue of the Illinois School Law Quarterly, Vol. 11, No. 2, January 1991.

6. In addition to the "monitoring series," which, prior to the publication of this document, the last issue was: MacArthur/Spencer Series #4: Documenting a Disaster: Equity and Adequacy in Illinois School Finance, 1987, one would want to consult at a minimum: MacArthur/Spencer Series #8: Guilty Governments: The Problem of Inadequate Educational Funding in Illinois and Other States, 1989; also: MacArthur/Spencer Series #16: The Biggest Bang for the Buck: A Further Investigation of Economic Efficiency in the Public Schools of Illinois, 1990, Center for the Study of Educational Finance, Illinois State University, Normal, IL 61761

7. See especially G. Alan Hickrod and James Gordon Ward, Two Essays on the Political and Normative Aspects of American School Finance: An Historical Perspective, MacArthur/Spencer Series #1, 1987, Center for the Study of Educational Finance, Illinois State University, Normal, IL 61761

8. Cubberly, Elwood P., School Funds and Their Apportionment, 1905, Columbia University, New York.

9. For a very thorough and carefully documented study of equity in Illinois school finance which uses a "fixed" approach to expenditure variance, rather than a relative approach to expenditure variance, see Hess, G. Alfred, Jr., James Lewis, Richard D. Laine and Ariana M. Gilbert, The Inequity in Illinois School Finance, The EdEquity Coalition, issued by the Chicago Panel on Public School Policy and Finance, 220 South State Street, Suite 1212, Chicago, IL 60604

10. McMahon, Walter W., Geographic Cost-of-Living Differences: An Update, MacArthur/Spencer Series #7, 1988, Center for the Study of Educational Finance, Illinois State University, Normal, IL; a new version of this study will appear shortly in the MacArthur/Spencer series.

11. The Illinois State Board of Education recently released a study of the state "report card" which relates a large number of educational variables to rich versus poor districts. See Leininger, Robert, and Richard Yong, Performance Profiles: Illinois Schools Report to the Public, 1990, Illinois State Board of Education, Springfield, IL.

12. For argumentation that expenditure level differences are not as important as some of us tend to believe, see: Sander, William, Spending and Student Achievement in Illinois, 1990, The Heartland Institute, 634 South Wabash, 2nd Floor, Chicago, IL 60605; and Crihfield, John B., Education and Economic Development in Illinois, 1990, Institute of Government and Public Affairs, University of Illinois, Urbana, IL. For argumentation that expenditure is important, at least to future wages earned by pupils, see Card, David and Alan Krueger, "Does Quality Matter?", Paper No. 3358, National Bureau of Economic Research, Inc., 1990, Cambridge, MA; also MacPhail-Wilcox, B. and R. A. King, "Resource Allocation Studies: Implications for School Improvement and School Finance Research"; also, by the same authors: "Production Functions Revisited in the Context of Education Reform," Journal of Education Finance, 1986. For argumentation that single equation production function approaches are questionable, at best, as a research design for this question and for an alternative approach to economic efficiency, see Hickrod, G. Alan, et al., MacArthur/Spencer Series #16: The Biggest Bang for the Buck: A Further Investigation of Economic Efficiency in the Public Schools of Illinois, 1990, Center for the Study of Educational Finance, Illinois State University, Normal, IL 61761. For an historical analysis of production approaches to education in the United Kingdom which questions the educational soundness of the production concepts, themselves, see Rapple, Brendan A., Payment by Educational Results: An Idea Whose Time has Gone?, MacArthur/Spencer Series #14, 1990, Center for the Study of Educational Finance, Illinois State University, Normal, IL 61761.

13. See Hickrod and Ward, MacArthur/Spencer Number 1.

14. O'Connell, Patricia. "An Analysis of Selected 1985-1986 School Report Card Variables and Student and District Performance in Illinois Public Schools, unpublished doctoral dissertation, Illinois State University, 1987.

15. Hinrichs, William. "Equity Measurement in Illinois Public School Finance: A Pseudo-Unit Approach, unpublished doctoral dissertation, Illinois State University, 1982.

16. Extensive analysis of the political and legislative processes of the 1973 educational finance reform in Illinois can be found in Gene L. Hoffman, "A Description of the Evolution of the General Distributive Formula in Illinois and an Analysis of the Changes to the Formula Following the Enactment of the State Income Tax in 1969," unpublished doctoral dissertation, Northern Illinois University, 1981. Dr. Hoffman was a key actor in the events of the summer of 1973. For an earlier analysis which concentrates heavily on the politics of that period see Suzanne W. Langston, "Illinois Politics of Education: A Case Study of Symbolism and Bargaining," unpublished doctoral dissertation, University of Chicago, 1979

17. Chaudhari, Ramesh B., "Tax Rate Changes: Before and After the 1973 Illinois School Finance Reform," unpublished doctoral dissertation, 1978, Illinois State University, Normal, Il.

18. For an especially graphic description of educational conditions in poor urban schools in several states, see Kozol, Jonathan, These Young Lives (in press). Chief Justice Wilentz took special note of these deplorable educational conditions in New Jersey: "In an elementary school in Paterson, the children eat lunch in a small area in the boiler room area of the basement; remedial classes are taught in a former bathroom. In one Irvington school, children attend music classes in a storage room and remedial classes in a converted closet. At another school in Irvington a coal bin was converted into a classroom. In one elementary school in East Orange, there is no cafeteria, and the children eat lunch on the steps in shifts. In one school in Jersey City, built in 1900, the library is a converted cloak room; the nurse's office has no bathroom and no waiting room; the lighting is inadequate to treat injuries; the bathrooms have no hot water; there is water damage inside the building because of cracks in the facade, and the heating is inadequate (Abbot v. Burke, Supreme Court of New Jersey, June 5, 1990). Kozol cites similar conditions in Illinois and other states in the older urban areas.

Frank, Lawrence. "New Dimensions of Equity and Efficiency in Illinois School Finance," unpublished doctoral dissertation, Illinois State University, 1990.

See Hess, et al., in footnote #9; see also Weber, Peter S. and G. Alan Hickrod, School Finance Reform: Equity or Adequacy: A Brief Look at Several Widely Circulated Proposals for Reform, MacArthur/Spencer Series Number 17, 1991, Center for the Study of Educational Finance, Illinois State University, Normal, IL 61761. As this publication was on its way to the printers, the Illinois Association of School Administrators, in conjunction with Professor Ward at the University of Illinois, was holding meetings on possible new general purpose grant-in-aid systems and on new sources of revenue for the state's schools. Many of these discussions center on the possibility of reintroducing a state-wide property tax for education.

Actually, it appears to have been 20 cents on the hundred dollar valuation and it was levied in 1855, but this doesn't help one very much since the fraction of assessed valuation to true valuation is not known for that early period.

See Hess, et al., in footnote #9.

Churchill, Sir Winston Spencer, "The Age of Revolution," Vol. III: A History of the English Speaking Peoples, pp.258-259, 1957, Dorset Press, New York

Hickrod and Ward, MacArthur/Spencer #1.

Table 1: PERMISSIBLE VARIANCE CRITERION
COEFFICIENT OF VARIATION, USING DISTRICT UNRESTRICTED REVENUES

| Year | District Type Elementary | High School | Unit |
|---|---|---|---|
| 1972-73 | 29.44 | 28.19 | 14.70 |
| 1973-74 | 26.97 | 25.33 | 13.44 |
| 1974-75 | 28.23 | 24.26 | 13.41 |
| 1975-76 | 28.27 | 21.12 | 13.29 |
| 1976-77 | 26.37 | 18.53 | 12.89 |
| 1977-78 | 28.75 | 17.70 | 13.72 |
| 1978-79 | 30.22 | 18.23 | 15.71 |
| 1979-80 | 29.24 | 20.94 | 13.87 |
| 1980-81 | 33.25 | 24.22 | 16.25 |
| 1981-82 | 35.51 | 24.22 | 14.46 |
| 1982-83 | 35.71 | 25.02 | 16.69 |
| 1983-84 | 34.68 | 26.10 | 16.53 |
| 1984-85 | 34.72 | 26.38 | 15.80 |
| 1985-86 | 34.70 | 24.36 | 13.90 |
| 1986-87 | 37.27 | 24.20 | 14.11 |
| 1987-88 | 42.43 | 27.00 | 16.06 |
| 1988-89 | 40.99 | 31.10 | 17.93 |
| 1989-90 | 35.41 | 30.87 | 17.71 |
| 1990-91 | 34.73 | 32.91 | 19.93 |

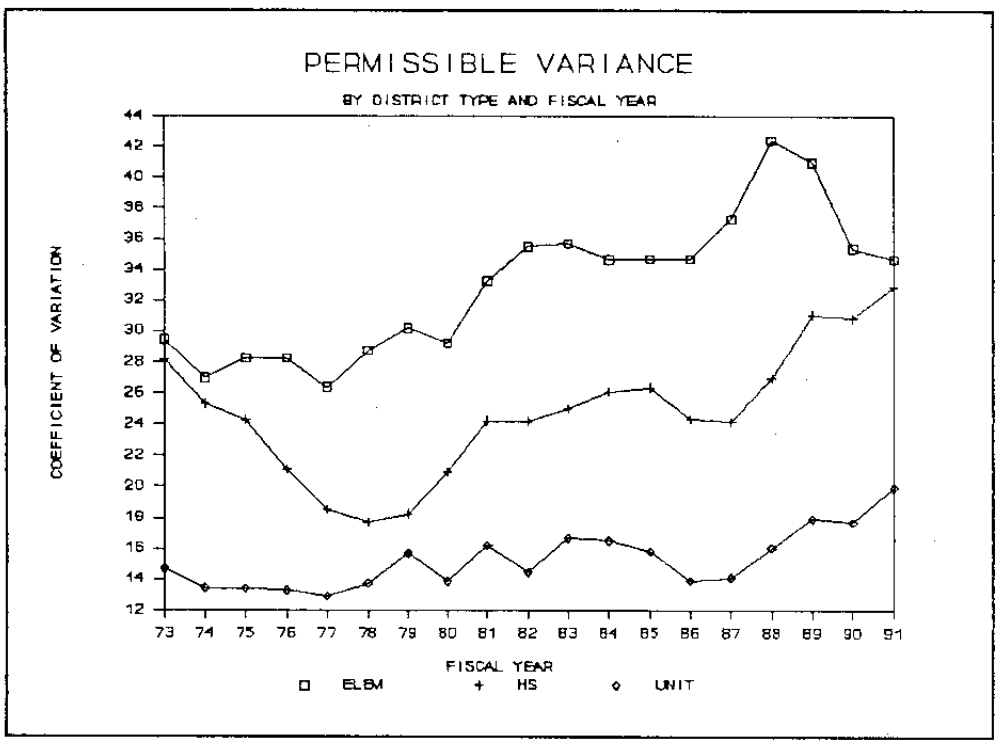


Table 2: PERMISSIBLE VARIANCE CRITERION
McLOONE INDEX, USING DISTRICT UNRESTRICTED REVENUES

| Year | Elementary | | High School | | Unit | |
|---|---|---|---|---|---|---|
| | Index | Median $ | Index | Median $ | Index | Median $ |
| 1972-73 | 0.8915 | 764 | 0.8281 | 928 | 0.9030 | 798 |
| 1973-74 | 0.8767 | 851 | 0.8494 | 996 | 0.9191 | 862 |
| 1974-75 | 0.8469 | 944 | 0.8590 | 1,099 | 0.9216 | 910 |
| 1975-76 | 0.8833 | 1,011 | 0.8703 | 1,159 | 0.9373 | 939 |
| 1976-77 | 0.8862 | 1,117 | 0.9026 | 1,271 | 0.9294 | 1,049 |
| 1977-78 | 0.8853 | 1,208 | 0.9036 | 1,388 | 0.8966 | 1,134 |
| 1978-79 | 0.8832 | 1,329 | 0.9061 | 1,566 | 0.8916 | 1,220 |
| 1979-80 | 0.9186 | 1,423 | 0.8855 | 1,774 | 0.9078 | 1,343 |
| 1980-81 | 0.8905 | 1,643 | 0.8628 | 2,031 | 0.9205 | 1,465 |
| 1981-82 | 0.9272 | 1,684 | 0.8914 | 2,085 | 0.9378 | 1,572 |
| 1982-83 | 0.9146 | 1,755 | 0.8801 | 2,148 | 0.9369 | 1,627 |
| 1983-84 | 0.9238 | 1,865 | 0.8642 | 2,317 | 0.9362 | 1,733 |
| 1984-85 | 0.9211 | 1,977 | 0.8649 | 2,475 | 0.9408 | 1,836 |
| 1985-86 | 0.9268 | 2,096 | 0.8878 | 2,598 | 0.9559 | 2,015 |
| 1986-87 | 0.9493 | 2,150 | 0.8734 | 2,806 | 0.9257 | 2,243 |
| 1987-88 | 0.9167 | 2,269 | 0.8830 | 2,853 | 0.9523 | 2,141 |
| 1988-89 | 0.9118 | 2,418 | 0.8676 | 3,041 | 0.9489 | 2,282 |
| 1989-90 | 0.8957 | 2,795 | 0.8472 | 3,456 | 0.9555 | 2,574 |
| 1990-91 | 0.8931 | 3,015 | 0.8543 | 3,663 | 0.9546 | 2,732 |

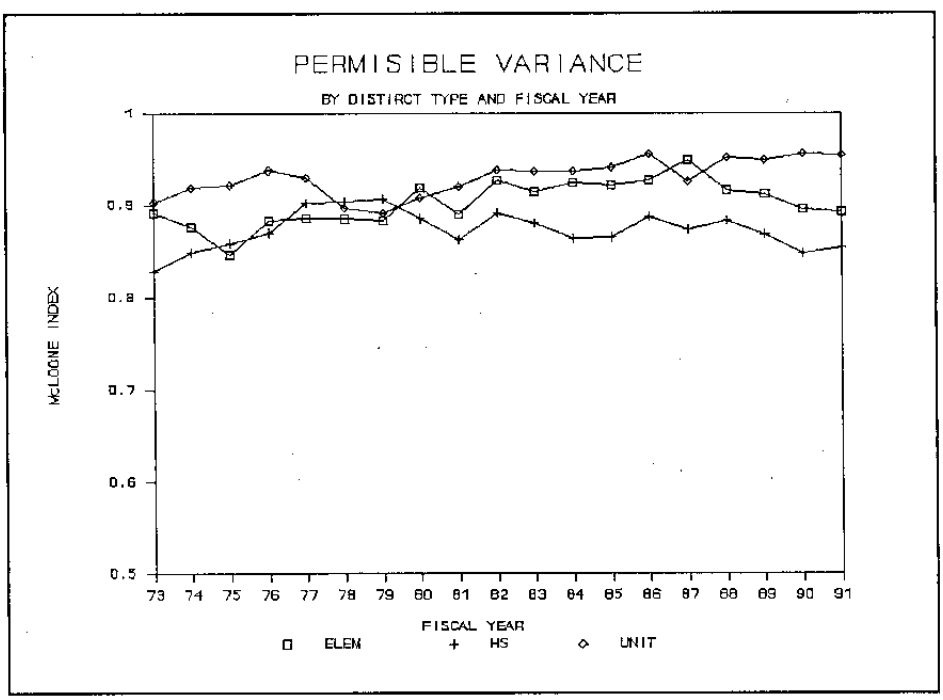


Table 3: WEALTH NEUTRALITY:
GINI INDEX, USING PROPERTY VALUATION PER CWADA

| Year | District Type Elementary | High School | Unit |
|---|---|---|---|
| 1972-73 | 0.0995 | 0.0961 | 0.0345 |
| 1973-74 | 0.0848 | 0.0844 | 0.0265 |
| 1974-75 | 0.0727 | 0.0756 | 0.0143 |
| 1975-76 | 0.0604 | 0.0623 | 0.0018 |
| 1976-77 | 0.0419 | 0.0422 | 0.0055* |
| 1977-78 | 0.0528 | 0.0399 | 0.0020* |
| 1978-79 | 0.0691 | 0.0416 | 0.0015* |
| 1979-80 | 0.0740 | 0.0441 | 0.0066* |
| 1980-81 | 0.0845 | 0.0480 | 0.0123 |
| 1981-82 | 0.0869 | 0.0433 | 0.0133 |
| 1982-83 | 0.1036 | 0.0664 | 0.0164 |
| 1983-84 | 0.1046 | 0.0703 | 0.0182 |
| 1984-85 | 0.1149 | 0.0832 | 0.0094 |
| 1985-86 | 0.1122 | 0.0831 | 0.0185 |
| 1986-87 | 0.1177 | 0.0928 | 0.0249 |
| 1987-88 | 0.1355 | 0.1100 | 0.0299 |
| 1988-89 | 0.1389 | 0.1220 | 0.0348 |
| 1989-90 | 0.1284 | 0.1263 | 0.0378 |
| 1990-91 | 0.1281 | 0.1388 | 0.0409 |

*Lorenz Curve crosses the line. Gini coefficient is not interpretable.

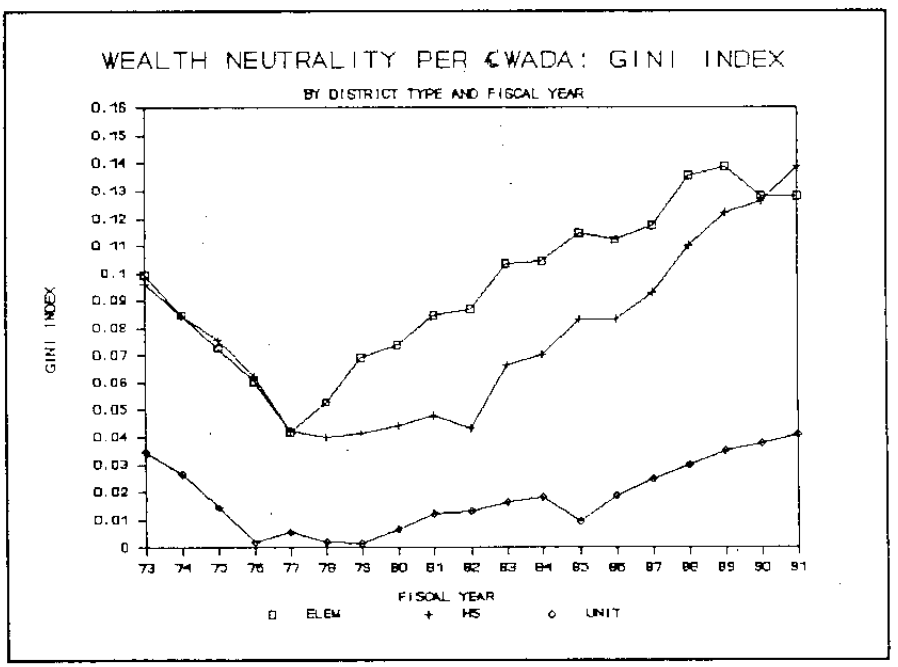


Table 4: WEALTH NEUTRALITY CRITERION:
UNWEIGHTED REGRESSION APPROACH,
USING PROPERTY VALUATION PER CWADA

| Year | District Type Elementary | High School | Unit |
|---|---|---|---|
| 1972-73 | 0.27679 | 0.44843 | 0.21691 |
| 1973-74 | 0.24592 | 0.39949 | 0.17640 |
| 1974-75 | 0.23293 | 0.34834 | 0.13493 |
| 1975-76 | 0.22803 | 0.28896 | 0.10890 |
| 1976-77 | 0.18782 | 0.22161 | 0.03544 |
| 1977-78 | 0.23210 | 0.20868 | 0.07204 |
| 1978-79 | 0.25807 | 0.23793 | 0.11687 |
| 1979-80 | 0.26137 | 0.27476 | 0.12105 |
| 1980-81 | 0.29831 | 0.31092 | 0.15603 |
| 1981-82 | 0.30890 | 0.30534 | 0.14326 |
| 1982-83 | 0.32421 | 0.33405 | 0.17602 |
| 1983-84 | 0.30655 | 0.30349 | 0.15595 |
| 1984-85 | 0.31947 | 0.33519 | 0.15796 |
| 1985-86 | 0.31638 | 0.33369 | 0.15192 |
| 1986-87 | 0.32622 | 0.33324 | 0.15184 |
| 1987-88 | 0.35571 | 0.35957 | 0.16015 |
| 1988-89 | 0.34733 | 0.40521 | 0.15957 |
| 1989-90 | 0.30804 | 0.39928 | 0.15091 |
| 1990-91 | 0.30427 | 0.42852 | 0.18828 |

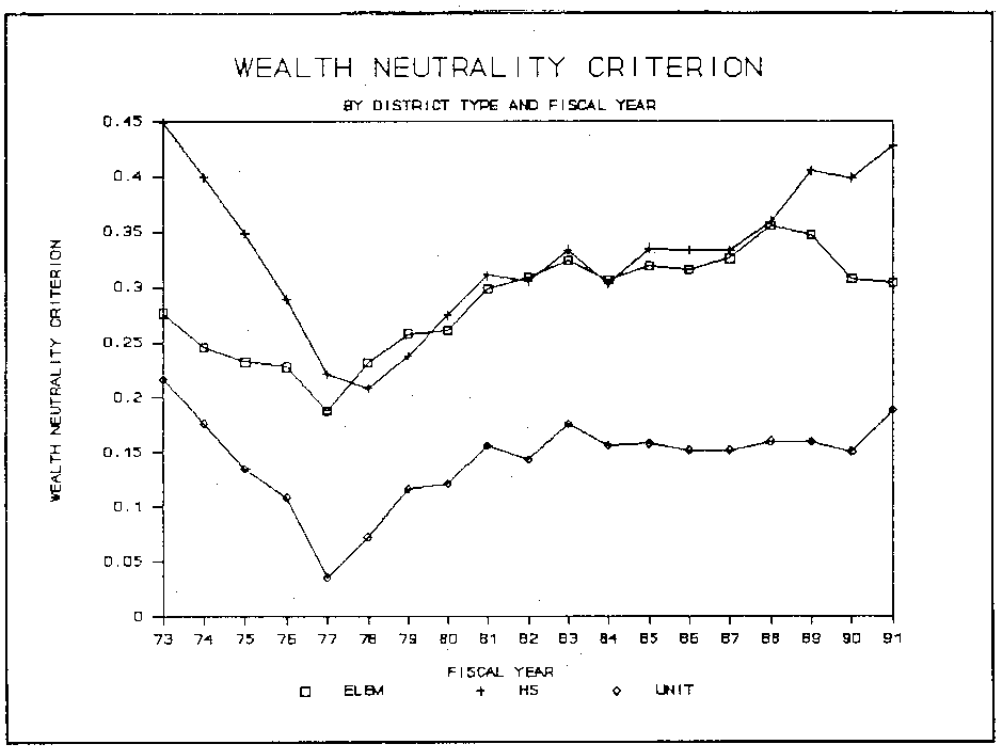


Table 5: WEALTH NEUTRALITY CRITERION
WEIGHTED REGRESSION APPROACH, USING PROPERTY VALUATION PER CWADA

| Year | District Type Elementary | High School | Unit |
|---|---|---|---|
| 1972-73 | 0.2741 | 0.4679 | 0.2502 |
| 1973-74 | 0.2797 | 0.4488 | 0.1988 |
| 1974-75 | 0.2345 | 0.3780 | 0.1490 |
| 1975-76 | 0.2117 | 0.3115 | 0.0778 |
| 1976-77 | 0.1600 | 0.2494 | 0.0199 |
| 1977-78 | 0.1923 | 0.2254 | 0.0317 |
| 1978-79 | 0.2316 | 0.2336 | 0.0241 |
| 1979-80 | 0.2447 | 0.2566 | 0.0506 |
| 1980-81 | 0.2511 | 0.2385 | 0.0705 |
| 1981-82 | 0.2795 | 0.2712 | 0.0709 |
| 1982-83 | 0.3003 | 0.3446 | 0.0797 |
| 1983-84 | 0.2855 | 0.3258 | 0.0469 |
| 1984-85 | 0.3042 | 0.3773 | 0.0374 |
| 1985-86 | 0.3009 | 0.3905 | 0.0696 |
| 1986-87 | 0.3062 | 0.4002 | 0.0850 |
| 1987-88 | 0.3383 | 0.4406 | 0.0918 |
| 1988-89 | 0.3476 | 0.4913 | 0.1105 |
| 1989-90 | 0.3217 | 0.4822 | 0.1088 |
| 1990-91 | 0.3255 | 0.5096 | 0.1634 |

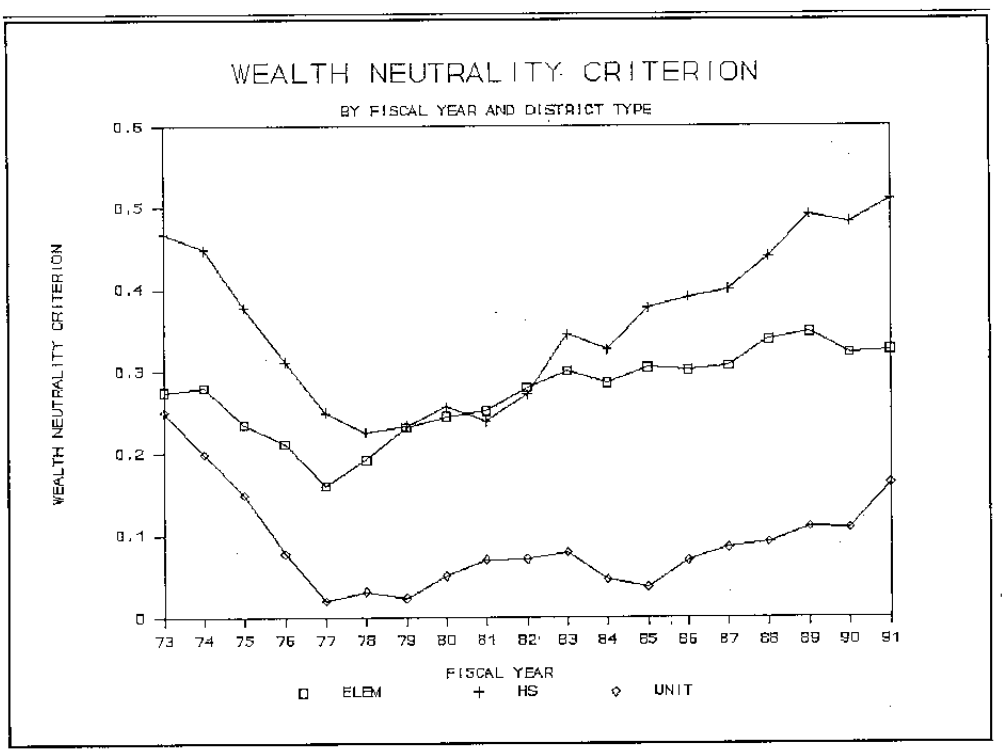


Table 6: WEALTH NEUTRALITY
UNWEIGHTED REGRESSION APPROACH, USING DISTRICT INCOME PER CWADA

| Year | District Type Elementary | High School | Unit |
|---|---|---|---|
| 1972-73 | 0.27738 | 0.22835 | 0.12495 |
| 1973-74 | 0.23795 | 0.22514 | 0.19580 |
| 1974-75 | 0.25418 | 0.19112 | 0.18470 |
| 1975-76 | 0.25218 | 0.17709 | 0.13288 |
| 1976-77 | 0.20221 | 0.11094 | 0.10917 |
| 1977-78 | 0.19729 | 0.10251 | 0.11673 |
| 1978-79 | 0.21992 | 0.14970 | 0.14825 |
| 1979-80 | 0.20892 | 0.12671 | 0.11994 |
| 1980-81 | 0.20000 | 0.14780 | 0.11361 |
| 1981-82 | 0.26240 | 0.24520 | 0.14710 |
| 1982-83 | 0.29202 | 0.29204 | 0.15970 |
| 1983-84 | 0.30155 | 0.33647 | 0.14910 |
| 1984-85 | 0.32903 | 0.37084 | 0.13821 |
| 1985-86 | 0.32362 | 0.37974 | 0.14257 |
| 1986-87 | 0.32034 | 0.38197 | 0.14183 |
| 1987-88 | 0.35835 | 0.49942 | 0.13249 |
| 1988-89 | 0.36339 | 0.52360 | 0.15742 |
| 1989-90 | 0.34450 | 0.55397 | 0.13096 |
| 1990-91 | 0.35660 | 0.56672 | 0.14752 |

Note: The wealth variable in this table was derived from 1970 census data and held constant throughout the time period 1973-1981. Income data from the 1980 census was introduced with the year 1981-82 and was used from that point on.

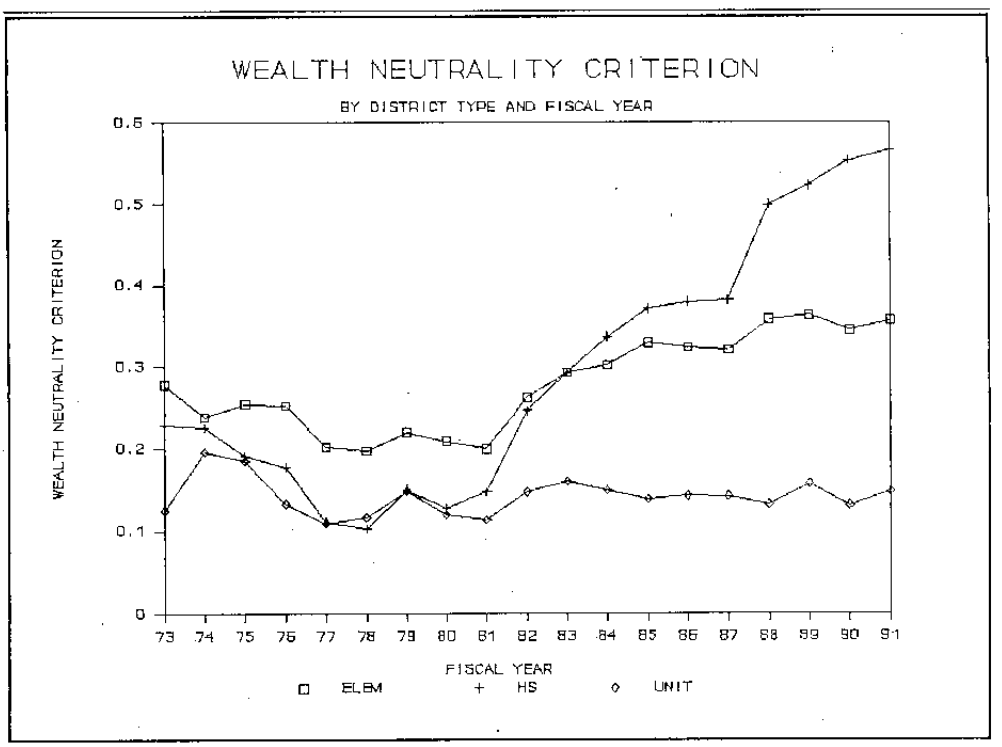
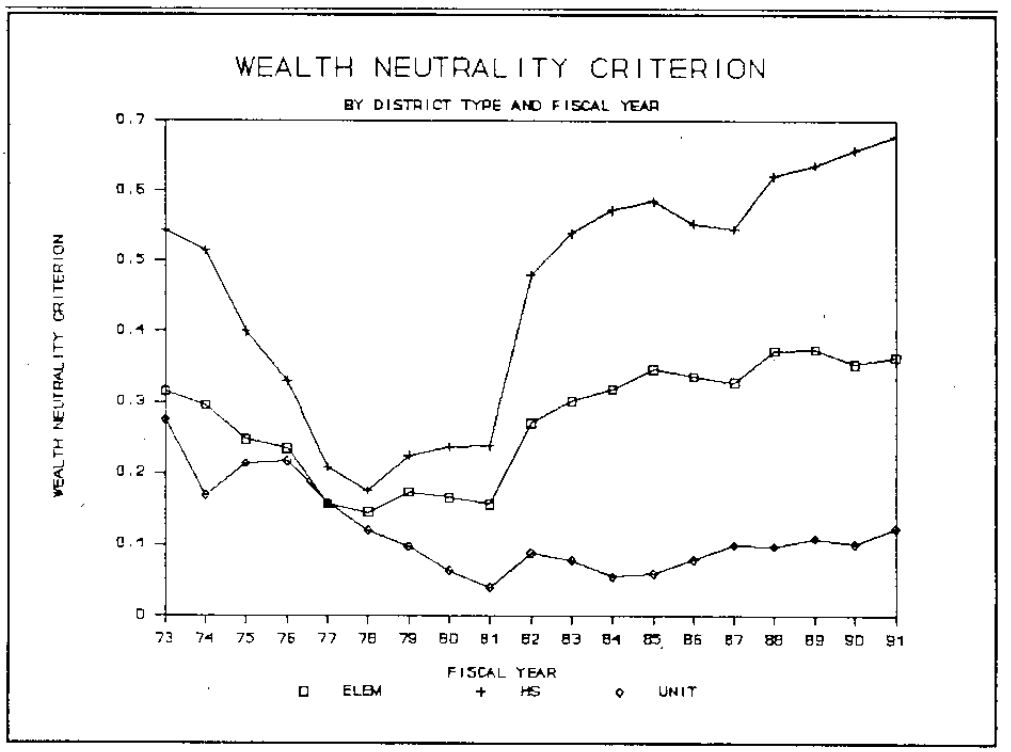


Table 7: WEALTH NEUTRALITY
WEIGHTED REGRESSION COEFFICIENTS,
USING DISTRICT INCOME PER CWADA

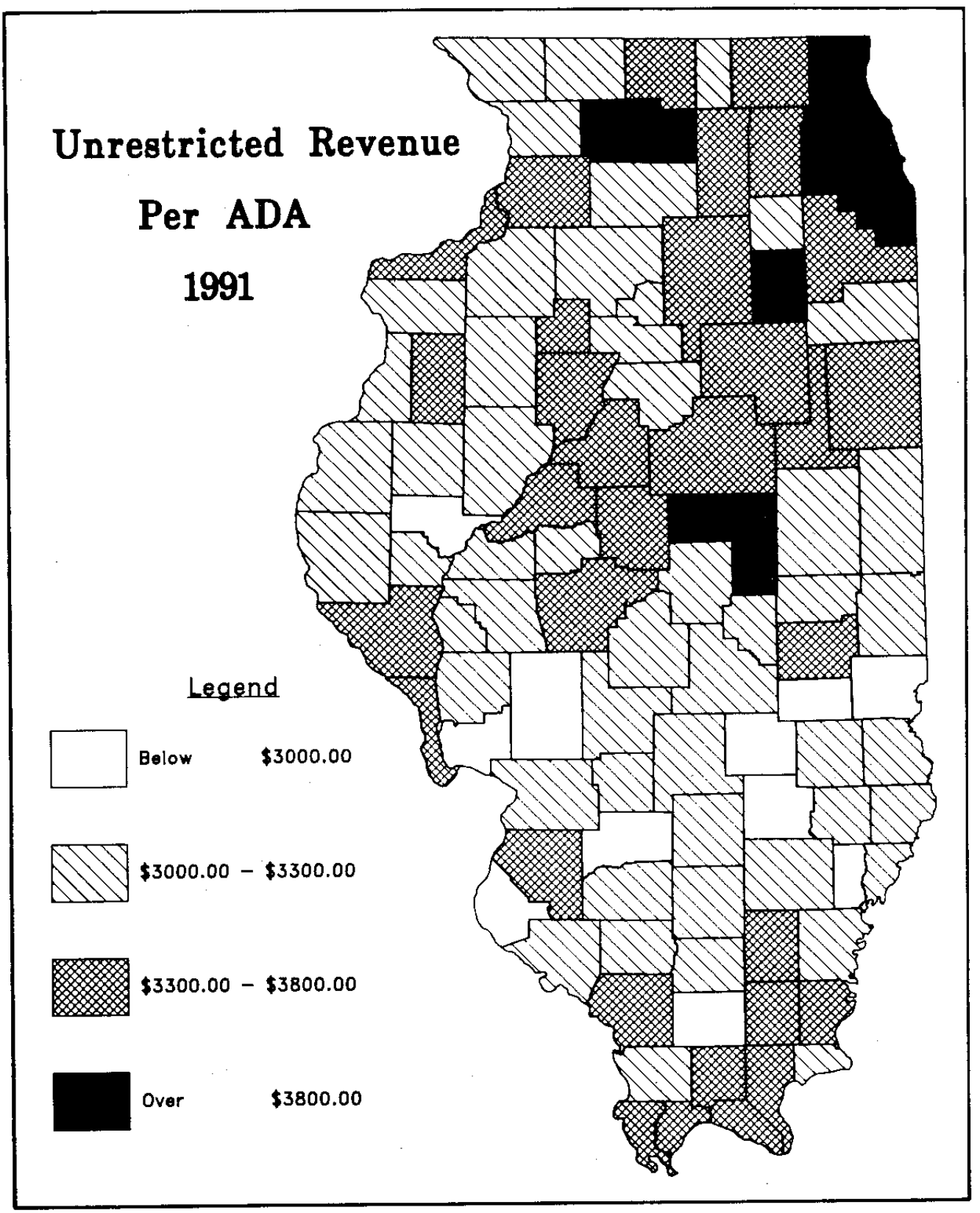
| Year | District Type Elementary | High School | Unit |
|---|---|---|---|
| 1972-73 | 0.31564 | 0.54480 | 0.27477 |
| 1973-74 | 0.29524 | 0.51499 | 0.16953 |
| 1974-75 | 0.24761 | 0.40023 | 0.21365 |
| 1975-76 | 0.23509 | 0.33092 | 0.21715 |
| 1976-77 | 0.15724 | 0.20838 | 0.15875 |
| 1977-78 | 0.14539 | 0.17587 | 0.12030 |
| 1978-79 | 0.17400 | 0.22567 | 0.09753 |
| 1979-80 | 0.16583 | 0.23705 | 0.06409 |
| 1980-81 | 0.15694 | 0.23855 | 0.04047 |
| 1981-82 | 0.27126 | 0.48087 | 0.08821 |
| 1982-83 | 0.30257 | 0.53991 | 0.07846 |
| 1983-84 | 0.31890 | 0.57250 | 0.05553 |
| 1984-85 | 0.34780 | 0.58510 | 0.05912 |
| 1985-86 | 0.33750 | 0.55353 | 0.07918 |
| 1986-87 | 0.32873 | 0.54570 | 0.09963 |
| 1987-88 | 0.37397 | 0.62137 | 0.09845 |
| 1988-89 | 0.37526 | 0.63651 | 0.10899 |
| 1989-90 | 0.35486 | 0.65887 | 0.10052 |
| 1990-91 | 0.36489 | 0.67927 | 0.12322 |

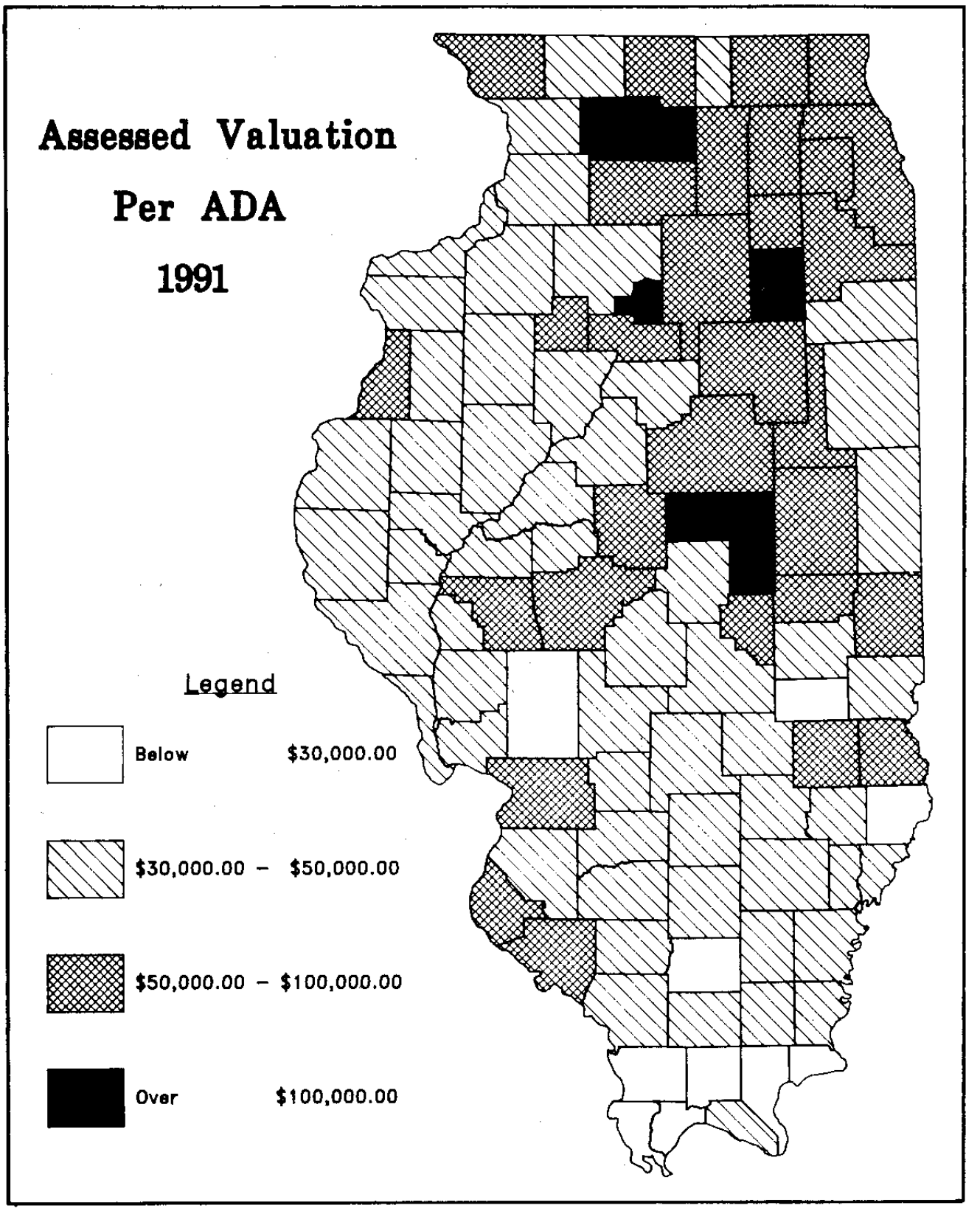
Note: The wealth variable in this table was derived from 1970 census data and held constant throughout the time period, 1973-1981. Income data from the 1980 census was introduced with the year 1981-82 and was used from that point on.

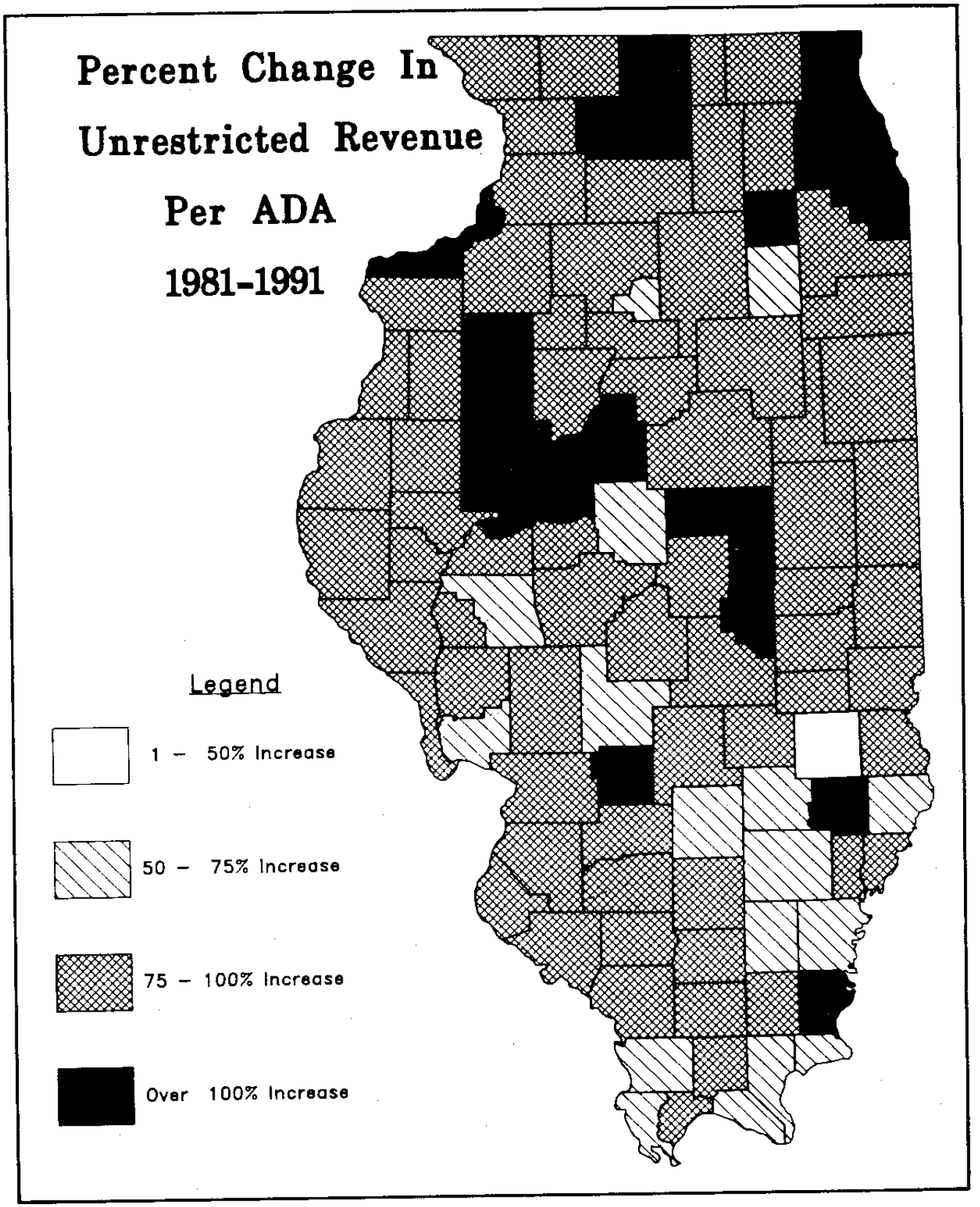


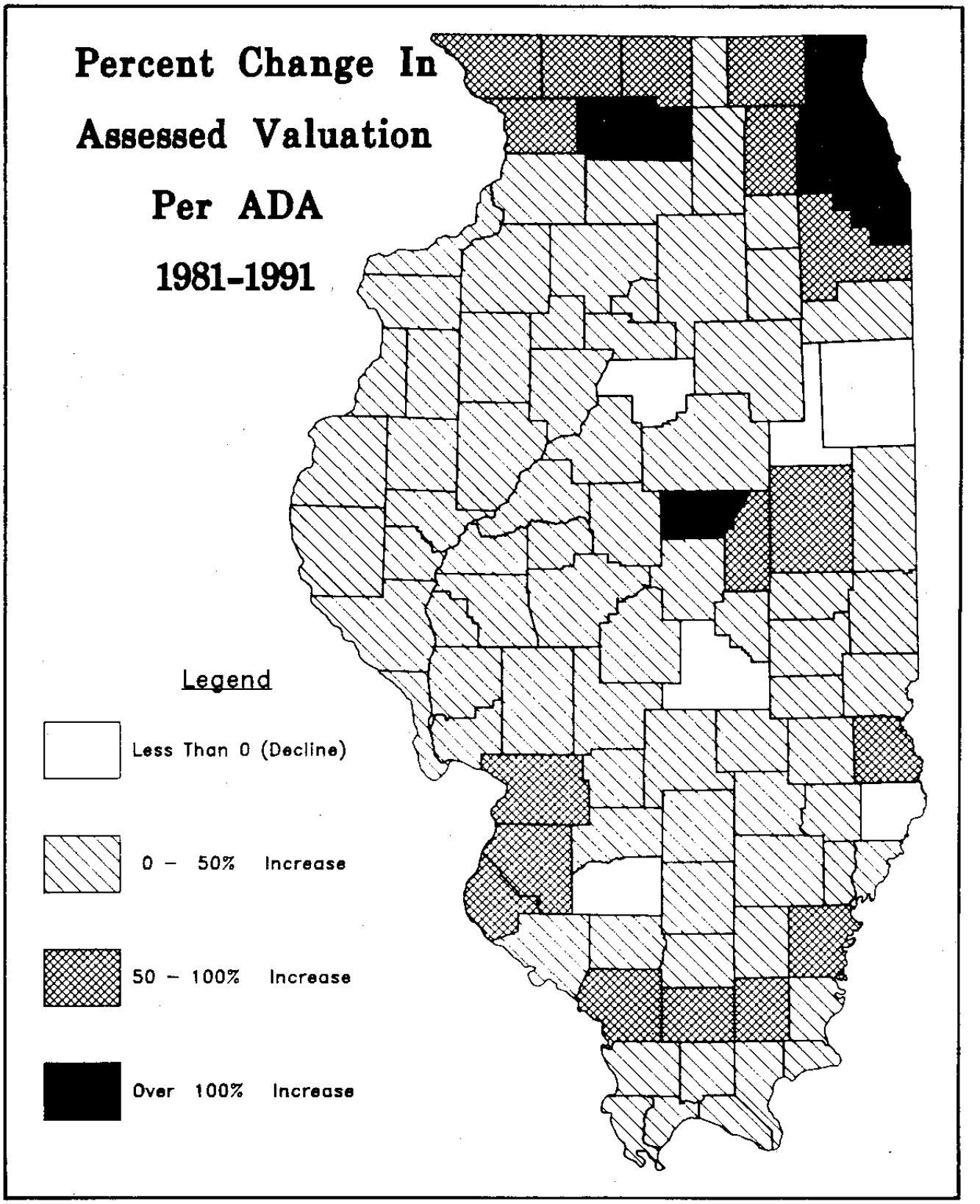
**APPENDIX B**

MAP A




Assessed Valuation
Per ADA
1991
Legend
Below $30,000.00
$30,000.00 - $50,000.00
$50,000.00 - $100,000.00
Over $100,000.00


Percent Change In
Unrestricted Revenue
Per ADA
1981-1991
Legend
1 - 50% Increase
50 - 75% Increase
75 - 100% Increase
Over 100% Increase

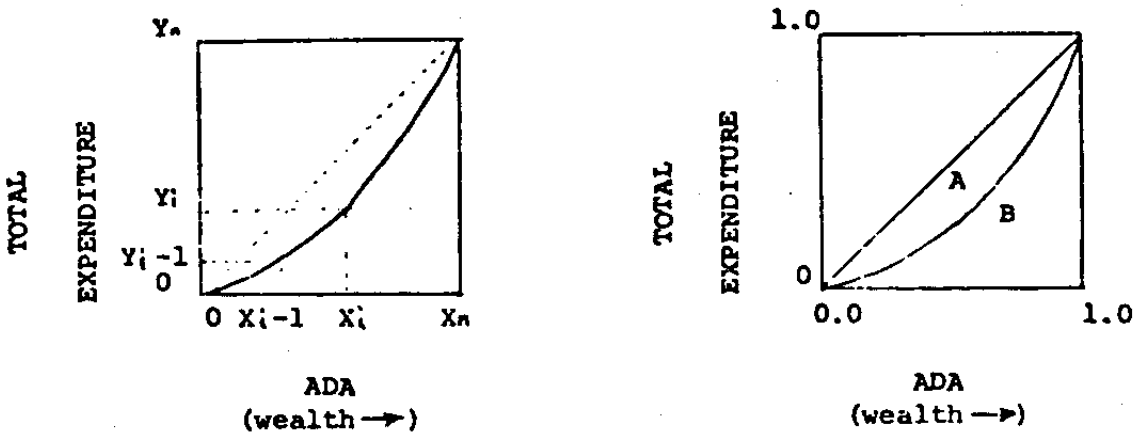

Percent Change In
Assessed Valuation
Per ADA
1981-1991
Legend
Less Than 0 (Decline)
0 – 50% Increase
50 – 100% Increase
Over 100% Increase

# Illinois Counties

## APPENDIX C

### COMPUTATION OF GINI COEFFICIENT

The districts are sorted in ascending order of wealth per pupil. The cumulative proportions of pupils in the districts are represented by the horizontal axis and the cumulative proportions of total operating expenditures accounted for by these districts are represented by the




vertical axis. The curve thus plotted would be a straight line if the operating expenditures per pupil were the same in all districts. A sagging curve represents lesser expenditure in poorer districts. The measure of this inequality as defined by Gini Coefficient G is given by the formula:

$$G = \frac{\text{Area A}}{\text{Area (A+B)}}$$

or after further simplication

$$G = \frac{0{\cdot}5 - \text{Area B}}{0{\cdot}5}$$

$$= 1 - 2\text{Area B} \qquad (1)$$

Area B is the area under the curve and if n is the number of districts, and

$X_i$ = cumulative proportion of ADA for the ith district

$Y_i$ = cumulative proportion of $ for the ith district

$$\text{Then Area B} = \sum_{i=1}^{n} \frac{(x_i - x_{i-1})\ (y_{i-1} + y_i)}{2}$$

$$\text{or 2 Area B} = \sum_{i=1}^{n} (x_i y_{i-1} - x_{i-1} y_{i-1} + x_i y_i - x_{i-1} y_i)$$

$$= (x_i y_0 - x_0 y_0 + x_1 y_1 - x_0 y_1$$
$$+ x_2 y_1 - x_1 y_1 + x_2 y_2 - x_1 y_2$$
$$+ x_n y_{n-1} - x_{n-1} y_{n-1} + x_n y_n - x_{n-1} y_n)$$
$$= (x_2 y_1 - x_1 y_2) + (x_3 y_2 - x_2 y_3) + \ldots$$
$$+ (x_n y_{n-1} - x_{n-1} y_n) + x_n y_n$$
$$= \sum_{i=2}^{n} (x_i y_{i-1} - x_{i-1} y_i) + 1 \qquad (2)$$
$$= 1 - \sum_{i=2}^{n} (x_{i-1} y_i - x_i y_{i-1})$$

substituting the value of area B in eq 1

$$G = \sum_{i=2}^{n} (x_{i-1} y_i - x_i y_{i-1}) \qquad (3)$$