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An evaluative study of the 1972-74 standards of quality and objectives for public schools in Virginia

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AN EVALUATIVE STUDY OF THE 1972-74 STANDARDS OF QUALITY AND OBJECTIVES FOR PUBLIC SCHOOLS IN VIRGINIA

The College of William and Mary in Virginia ED.D. 1980

AN EVALUATIVE STUDY OF THE 1972-74 STANDARDS OF QUALITY AND OBJECTIVES FOR PUBLIC SCHOOLS IN VIRGINIA

A Dissertation
Presented to
The Faculty of the School of Education
The College of William and Mary

In Partial Fulfillment
of the Requirements for the Degree of
Doctor of Education

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by

Norman Steven Smith

May 1980

APPROVAL SHEET

We the undersigned do certify that we have read this dissertation and that in our individual opinions it is acceptable in both scope and quality for the degree of Doctor of Education.

Royce W. Chesser, M.Ed., Chairman

George M. Bass, Ph.D.

Robert B. Bloom, Ph.D.

AN EVALUATIVE STUDY OF THE 1972-74 STANDARDS OF QUALITY AND OBJECTIVES FOR PUBLIC SCHOOLS IN VIRGINIA

Smith, Norman Steven, Ed.D. The College of William and Mary in Virginia, 1980. 353 pp. Advisor: Royce W. Chesser

On November 3, 1970, the voters of Virginia approved a new Constitution. Within Article VIII, the education article, was the constitutional provision for a new statewide program to "seek to insure that an educational program of high quality is established and continually maintained" throughout the Commonwealth. An important aspect of this program, The Standards of Quality and Objectives, was the directive that each school division develop systematic, multi-year plans to guide the quest for quality.

The purpose of this study was (1) to determine whether progress has been made by Virginia's school divisions toward reaching a major goal of the Standards of Quality and Objectives which has usually been stated as, "The student will become competent in fundamental academic skills;" (2) to examine the relationship between multi-year planning and the progress made toward reaching this goal; and (3) to examine the use of time-series data and analysis on unobtrusive measures to conduct a summative evaluation of a statewide educational program.

The population in this study consisted of all the public school divisions in the Commonwealth of Virginia. The twenty-one divisions comprising the sample were drawn from those divisions whose 1975-80 Five-Year School Improvement Plans were ranked as high, average, or low in overall quality on a rating instrument especially designed for this purpose in an earlier doctoral study. Two types of data were collected for these divisions. The first type included measures specifically identified in the 1972-74 Standards of Quality and Objectives. These included overageness in grades K-7, attendance in grades K-12, and scores on standardized tests of ability and achievement. The second type of data included unobtrusive measures, including retentions in grades 8-12, K-12, 11 and 4; overageness in grades 8-12, K-12, 11 and 4; attendance in grades K-7 and 8-12; high school graduates; and high school dropouts. The source of data was state records.

It was hypothesized that significant changes would occur in the levels of both types of measures during the 1972-74 period and that school divisions with multi-year plans rated high would have significantly higher levels of performance than those divisions with plans rated low. The archival data were organized in graphic and tabular form. The TSX and CORREL computer programs were used to test for significant differences in the levels of measures before and after the introduction of the Standards of Quality and Objectives. Insufficient data points existed to permit the use of the computer programs and the data were analyzed through visual inspection.

The following conclusions were drawn. Performance objectives regarding the measures stated in the Standards of Quality and Objectives were achieved. While improvements in performance did occur during and after the 1972-74 period, the historical trend preceding the introduction of the Standards of Quality and Objectives was such that one cannot assign causality for the changes to the Standards themselves. School divisions with multi-year plans rated high tended to perform better than those divisions with plans rated low.

Although statistical tests of significance were not possible, the consistent trends of the data, when examined as a time-series, led to the conclusion that the 1972-74 Standards of Quality and Objectives tended to reinforce trends that had been in evidence for several years. In addition, other variables, especially size, could have influenced the performance of school divisions.

AN EVALUATIVE STUDY OF THE 1972-74 STANDARDS OF QUALITY AND OBJECTIVES FOR PUBLIC SCHOOLS IN VIRGINIA

DEDICATION

This study is dedicated to my wife, Miriam K. Smith.

פיה פתחה בחכמה ותורת חסד על לשונה

משלי לא,כו

ACKNOWLEDGEMENTS

This study could not have been completed without the assistance of the following individuals whose contributions I gratefully acknowledge.

Professor Royce W. Chesser, my advisor and doctoral committee chairman, suggested an examination of the impact of the Standards of Quality and Objectives, provided prompt personal attention throughout my graduate work at William and Mary, and served as a model of professional judgment and integrity. Dr. Robert B. Bloom and Dr. George W. Bass, members of my committee, gave invaluable technical assistance in the areas of research design and evaluation methodology.

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sizable amount of data I collected.

Finally, I express my thanks to my typists Mrs. Frances Lemons, Mrs. Kathy Harris, and Mrs. Teresa Lemons. Their attention to detail and concern for accuracy are greatly appreciated.

The assistance of all of the people listed above is not limited to what I have mentioned here. A complete listing of all the professional and personal considerations they have shown me would rival this study in length.

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Chapter I

THE PROBLEM

Background

In his address at the opening session of the General Assembly in January 1968, Governor Mills E. Godwin requested permission to appoint a small group of able people to propose a major revision of the Virginia Constitution. The General Assembly agreed with the Governor on the need for change and quickly granted his request. The eleven members of the Commission on Constitutional Revision were appointed by Governor Godwin within the month.

When the Commission began its task, Virginia's public education system was battered from almost fifteen years of unsuccessful attempts to thwart, avoid, and stall the effect on the Old Dominion of the Supreme Court's 1954 decision in Brown vs. Board of Education.[1] In addition, serious problems existed regarding the inefficiency of many small school divisions, the inequality of educational opportunity, and

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[1]Brown vs. Board of Education, 347 U.S. 483 (1954).

the inability of the Commonwealth[2] to aid private institutions of higher learning.

The Commission's 1969 Report[3], which contained its proposed revisions, dealt forcefully with these issues. The proposed Bill of Rights was expanded to include Thomas Jefferson's famous statement regarding the relationship between a free government and public education.

> That free government rests, as does all progress, upon the broadest possible diffusion of knowledge and that the Commonwealth should avail itself of those talents which nature has sown so liberally among its people by assuring the opportunity for their fullest development through an effective system of public education.[4]

This language raised education, as a state function, to a level it had never before known in Virginia. As A. E. Dick Howard, Executive Director of the Commission, put it, "Education thus takes its place

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[2]Virginia, as well as Massachusetts, Pennsylvania, and Kentucky, still refers to itself offically as a Commonwealth rather than a state. Throughout this dissertation, references to Virginia as a political entity will use the word Commonwealth, but the term, state, in various forms, will be used in discussions of program evaluation. Statewide, for example, is simply a less cumbersome expression.

[3]Virginia, Commission on Constitution Revision, The Constitution of Virginia: Report of the Commission on Constitutional Revision to his Excellency, Mills E. Godwin, Jr., Governor of Virginia, The General Assembly and the People of Virginia (Charlottesville, Virginia: The Michie Company, 1969).

[4]Ibid., p. 33. Interestingly, the only change made by the General Assembly in the final wording of this statement was the deletion of the word "public."

alongside such fundamentals as free exercise of religion and freedom of expression as one of the values basic to Virginia."[5]

The proposed Education Article, Article VIII, contained four major proposals which reinforced this position and sought to remedy the other ills. First, the language indicating the Commonwealth's commitment to its public education system was strengthened. Second, the fiscal responsibilities of the state and localities for public education were clearly delineated. Third, provisions were included to expedite the consolidation of school divisions. Fourth, financial aid to individuals in pursuit of higher education was permitted without regard to the public or private nature of the institution attended.

Although each of these proposals was modified somewhat before the Constitution was approved, the General Assembly and the voters agreed that Virginia's commitment to public education should be strengthened. Sections 1 and 2 of Article VIII in the adopted Constitution not only set forth this commitment but also mandated a new statewide educational program, Standards of Quality.[6]

> Section 1. Public Schools of High Quality to be Maintained
>
> The General Assembly shall provide for a system of free public elementary and secondary schools for all children of school age throughout the Commonwealth, and shall seek to ensure that an educational program of high quality is established and maintained.

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[5]A. E. Dick Howard, Commentaries on the Constitution of Virginia vol. II (Charlottesville, Virginia: University of Virginia Press, 1974). p. 886.

[6]In discussing the first set of standards, the General Assembly changed the name of the program to Standards of Quality and Objectives.

Section 2. Standards of Quality: State and Local Support of Public Schools

> Standards of quality for the several school divisions shall be determined and prescribed from time to time by the Board of Education, subject to revision only by the General Assembly.
>
> The General Assembly shall determine the manner in which funds are to be provided for the cost of maintaining an educational program meeting the prescribed standards of quality, and shall provide for the apportionment of the cost of such programs between the Commonwealth and the local units of government comprising such school division. Each unit of local government shall provide its portion of such cost by local taxes or from other available funds.

Even with the changes made by the General Assembly, the original intent remains, and the Report's commentary on the proposed language still applies.

> Section 1 is the linchpin of the Education article. Subsequent sections dealing with the public schools are intended to assist and guide the General Assembly in effectuating section 1's mandate....As will be seen under proposed section 2 the localities, with the help of the Commonwealth, are to provide sufficient funds to establish and maintain public schools meeting the standards of quality.[7]

Later commentaries on the adopted Constitution agreed with this statement regarding the importance of Sections 1 and 2. Hullihen W. Moore even used the same metaphor to describe their significance. "Sections 1 and 2 of the Education Article form the linchpin of public education in Virginia and continue the constitutional mandate for public education that began in 1869."[8] A. E. Dick Howard noted that,

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[7] Report, p. 259.

[8] Hullihen W. Moore, "In Aid of Public Education: An Analysis of the Education Article of the Virginia Constitution of 1971." University of Richmond Law Review 5 (1970): 264.

"Section 1 sets the tone and thrust of the Education article,"[9] while "Section 2 deals with the essential components of quality education: standards and money."[10]

Essential to this discussion is the twofold nature of the commitment in Sections 1 and 2 of Article VIII. The first part of Section 1, "The General Assembly shall provide for a system of free public elementary and secondary schools for all children of school age throughout the Commonwealth," mandates the resolve never to tamper with the public school system to deny access to any eligible student. The second part, "... and shall seek to ensure that an educational program of high quality is established and continually maintained," is a statement of intent regarding the level of quality to be sought for Virginia's public education system.

The Commission's proposed statement of intent was even stronger. It read, "The General Assembly ... shall ensure that an educational program of high quality is established and continually maintained."[11] While the Report emphasized that this was the language of aspiration rather than that of mandating a fixed level of performance, the General Assembly agreed with Governor Godwin, who warned in his speech at the opening of the special session in 1969 that the proposed language could lead to legal action against the Commonwealth. The General Assembly included "seek to" to clarify the intent and, at the same time, to

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[9]Howard, Commentaries, p. 886.

[10]Ibid., p. 897.

[11]Report, p. 256.

prevent the possibility of suit.

Section 2 of the Education Article establishes the machinery for the implementation of the program known as the Standards of Quality and Objectives. Beginning with the 1972-74 biennium, standards and objectives have been proposed by the Department of Education. The proposals are reviewed, revised, and adopted by the State Board of Education which, in turn, submits them to the General Assembly for final review and revision. Ultimately the General Assembly enacts an approved set of standards and objectives.

Thus, the Standards of Quality and Objectives came into being as a statewide program in Sections 1 and 2 of Article VIII which sought to remedy the ills of the past and to push Virginia's public education system toward higher levels of achievement in the future.

The Need for the Study

The need for this study arises from the lack of summative evaluation of the Standards of Quality and Objectives. Sections 1 and 2 of Article VIII of the Virginia Constitution appear to have been successful in preventing a reoccurrence of the legal actions of the 1954 to 1968 period. The unanswered question is to what degree have the aspirations for quality of Sections 1 and 2 been fulfilled?

Specifically, there are five reasons why this study should be done. First, no summative evaluation has been conducted on the progress made toward realizing any of the major goals of the Standards of Quality and Objectives. The program has had a set of overall goals from the outset. While some revisions have occurred, which makes any evaluation difficult, even those goals which have remained constant have not been subjected to summative evaluation. Second, the design of

the program limits the evaluative role of the Department of Education to monitoring and reporting on local divisions' compliance and implementation. Thus, the Department of Education, which one might assume would be responsible for evaluating the program, has not conducted summative evaluations. Third, reports concerning the outcomes of the Standards of Quality and Objectives generally deal with short range performance. The literature on time-series design suggests that such reporting may not present the most accurate picture of what has occurred. Fourth, considerable resources are expended on the program. Directly or indirectly, it touches everyone involved in public education in Virginia. Those responsible for the program need to know if it has been worth the effort. Finally, the planning standard was intended to be the crucial element of the program. The first five-year planning cycle has been completed, and it is appropriate to determine what has happened. Before the Standards of Quality and Objectives become a political and educational band wagon, a carefully devised summative evaluation should be done to assess, using the best methods currently available, their impact on the public education system of Virginia.

The Purpose

Several considerations guided the selection of the purposes of this study. First, unobtrusive data already exists on the academic achievement of Virginia's public school students. Second, the design of the program places great emphasis on planning. A relationship between the quality of planning and the achievement of goals is assumed but has not been studied. Finally, a concern for choosing the most appropriate methodology led to the selection of a research design rarely, if ever, used in statewide program evaluation in education in Virginia.

Given this context, the study has the following three purposes.

1. To determine whether progress has been made by Virginia's school divisions toward reaching the consistent major goal of the Standards of Quality and Objectives usually stated as, "The student will become competent in fundamental academic skills."
2. To examine the relationship between the multi-year planning standard and the progress made toward achieving the goal of individual competence in fundamental academic skills.
3. To examine the use of time-series design and analysis on unobtrusive measures to conduct a summative evaluation of a statewide educational program.

Hypotheses

There are two hypotheses in this study.

1. The first hypothesis is that there has been no significant difference in the levels of specific indicators or criteria used to measure competence in fundamental academic skills since the inception of the Standards of Quality and Objectives.

2. The second hypothesis is that there is no relationship between the quality of multi-year plans, as measured by the Five-Year School Improvement Plan Rating Scale,[12] and the achievement of individual competence in fundamental academic skills.

Definition of Terms

In this section, terms used throughout this study and in state records are defined.

Standards of Quality and Objectives

Virginia's statewide educational program mandated by the Commonwealth's constitutional revision of 1971.

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[12]For a description of this rating instrument see p. 10 below.

Evaluation

The determination of the extent to which a program has achieved its stated goals.

Competency in Fundamental Academic Skills

This is never precisely defined by the Constitution or the General Assembly but can be inferred from succeeding versions of the Standards of Quality and Objectives to mean cognitive skills. The first two versions, for 1972-74 and for 1974-76, count the number of students participating in the process of education and compile scores on norm referenced tests. For example, an objective found in 1972-74 states, "The percentage of the student population achieving at or above grade level norms or the equivalent as measured by approved standardized achievement tests should equal or exceed the mean ability level of the student population as measured by appropriate scholastic apptitude tests." In 1972-74, the same level of performance was limited to standardized tests in reading and mathematics. The 1976-78 version deleted such performance objectives and moved toward criterion-referenced testing with a minimal competency testing program. Competency thus became defined as receiving a passing score on this test.

Specific Indicators

Unobtrusive measures of student performance found in official records and publications of local divisions, the Department of Education, and the State Board of Education will be used as indicators of academic competency.

Time-Series Design

This is a quasi-experimental research design involving "some number of repeated observations, O, of an outcome variable across time

with an intervention, I, introduced between two observations which coincides with I may be the effect of I on the outcome variable."[13]

Time-Series Analysis

The computer programs, CORREL, and TSX, will be used to analyze time-series data. These programs allow one to determine, at a given level of significance, whether a change in the levels of pre- and post-intervention observations were the result of chance.

Five-Year School Improvement Plan Rating Scale

This is a scale prepared by Dr. Jean M. Epps in her unpublished doctoral dissertation and designed to rate the quality of multi-year plans.[14]

Multi-Year Plans

These are the 130[15] self-improvement plans under consideration which are prepared by each school division and submitted to the Department of Education. The plans originally were to cover a period of five years. The 1976-78 Standards added one year to the planning cycle.

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[13]Gene V. Glass, Victor, L. Willson, and John M. Gottman, Design and Analysis of Time-Series Experiments (Boulder, Colorado: Colorado Associated University Press, 1975), p. 1.

[14]Dr. Jean M. Epps, "An Analysis of Comprehensive Curriculum Planning Processes Employed in the School Divisions of Virginia" (Ed. D. dissertation, University of Virginia, 1976), pp. 230-46.

[15]The specific set of plans under consideration number 130. Subsequently, the number of school divisions in Virginia has increased.

Terms Used in Pupil Accounting.[16]

Pupil Age - This is the age of the pupil as of October 1 of the school year.

Overage - An overage pupil is a student who is one year or more older than the typical age for a given grade.

Enrollment - This is the total number of different pupils admitted to the school unit concerned.

Original Entry Pupils - These are pupils entering any public school for the first time during that year. The two types of original entry students are identified as follows:

E_1 - Any pupil who has not previously , during this school year, entered any public school in this or any other state.

E_2 - Any pupil from another state who has not previously, during this school year, entered any public school in this state but who has during the year, been entered in the state from which he came (This includes any school operated by the Federal Government).

Membership - This is the number of pupils belonging to a school unit at any given time. It is calculated by adding original entries, re-entries, and subtracting withdrawals.

Average Daily Membership (ADM) - This is the average number of pupils belonging each day in a room, school, or school system for the period of report.

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[16]The source for the terms used in pupil accounting is the Virginia Teacher's Register. Certain modifications were made to conform to current practices and the needs of this study. These modifications will be made explicit at the appropriate places in this study.

End-of-year Membership - This is the total number of pupils promoted and retained as indicated on the table entitled "Age-Grade Distribution for All Original Entry Pupils ($E_1 + E_2$) and the Number of Pupils Promoted and Retained During the School Year by Grade" which is submitted in the Superintendent's Annual Report of division superintendents to the Department of Education. Statewide statistics are reported yearly in the Annual Report of the State Superintendent of Public Instruction.

Re-entries - These are pupils who, for each school year, are received from another classroom in the same school or from another public school in the state.

Attendance - This is the presence of a pupil on days when school is in session.

Average Daily Attendance (ADA) - This is the average number of pupils present each day school is in session during the period of report.

Percent of Attendance - This is the percentage of pupils belonging or in membership who are in attendance for the period of report. It is calculated by dividing average daily attendance by average daily membership.

Withdrawals - These are pupils who have permanently severed their connection with classes, grades, and schools.

Dropouts - These are pupils in grades eight to twelve who withdraw from school and do not enter another school during the reporting period.

Dropout Rate - This is calculated by dividing the number of dropouts by the end-of-year membership plus the number of dropouts.

$$\text{Dropout Rate} = \frac{\text{Dropouts}}{\text{End-of-year membership + dropouts}}$$

Promotion Rate - This is calculated by dividing the number of pupils promoted by the end-of-year membership.

$$\text{Promotion Rate} = \frac{\text{Promotions}}{\text{End-of-year membership}}$$

Retention Rate - This is calculated by dividing the number of pupils retained by the end-of-year membership.

$$\text{Retention Rate} = \frac{\text{Retentions}}{\text{End-of-year membership}}$$

Assumptions

Several assumptions are made in this study. First, it is assumed that the impact of the planning standard made itself felt at the outset of the program. Secondly, it is assumed that the specific indicators chosen are appropriate measures of competency in fundamental academic skills. Finally, it is assumed that the quality of planning in a school division is related to student achievement in that division.

Limitations

The results of the study are restricted by the following limitations. Only one goal of the Standards of Quality and Objectives is studied. Generalizations can not be made about the other goals. The availability of data and the early stage of the program are also limiting factors. Because time-series design and analysis have not been used frequently for program evaluation in education, this study should not be considered definitive. Replication will be necessary to confirm the use of this approach in educational program evaluation. The sampling technique used limits the applicability of the study's findings to Virginia. Other limitations are the quasi-experimental

and ex post facto nature of the design. For all of these reasons, the study should be considered exploratory, its findings tentative, and replication necessary before final judgement is passed on the efficacy of the Standards of Quality and Objectives.

Overview of the Study

The plan to be used in conducting this study is described in this section. In chapter 2, the bodies of literature concerning the Standards of Quality and Objectives and program evaluation are reviewed. The history of this statewide educational program is traced through its major influences. In the review of the literature on program evaluation, the diversity of social scientific thought regarding this topic is noted, the history of evaluation research and practice are related briefly, the most prevalent models of program evaluation are explored, and other studies of the Standards of Quality and Objectives are reviewed. In chapter 3, time-series design and analysis, the research methodology and statistical procedures employed in this study, are discussed. Also located there are the research hypotheses, the descriptions of the population and the sample, and the manner in which the goal under consideration was operationalized. The data will be presented in chapter 4, and the results will be discussed in chapter 5.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

In this chapter, three bodies of relevant literature are reviewed. The first includes material regarding the history of the Standards of Quality and Objectives. A chronological account of the major influences on the program is given. The second literature of interest concerns evaluation. Although a relatively new area of social scientific inquiry, its literature contains a surprising abundance and diversity of thought. The third body of literature consists of those reviews, reports, articles, and studies of the Standards of Quality and Objectives which have been completed. Some of the conclusions reached in these early efforts underscore the need for this study. Careful consideration of all three was necessary to conduct this summative evaluation.

History of the Standards of Quality and Objectives

Early Influences

Since the Standards of Quality and Objectives originate in the Virginia Constitution, it is the most appropriate place to begin the search for the origins of this legislation. The earliest mention in Virginia's Constitution of a statewide public education system did

not appear until 1870 in the so-called Underwood Constitution of the Reconstruction Era and referred not to the system's quality but to its existence. A reason for the Commonwealth's late entry into public education can be found in the motivation of its earliest settlers. "The Virginia Colony, established at Jamestown in 1607, was a commercial enterprise of the London Company. Unlike the Pilgrims, who fled to the New World to escape an autocratic church and state, the Virginia colonists sought to extend English rule in America."[1] The English tradition of private education, the absence of a middle class for almost two hundred years, and the rather isolated life of the plantations inhibited the establishment of a statewide public school system. The children of those who could afford it were educated by private tutors. The education of poor and orphaned children came to be seen as a public duty, and, thus, the notion of public education as primarily a service to the unfortunate became well entrenched in the minds of Virginians. In 1810, the General Assembly created the Literary Fund which, until 1870, provided the single source of limited funds for the operation of public schools provided by the Commonwealth.[2]

The Underwood Constitution enjoyed little popularity or support among many Virginians, but it accomplished three things for public education. First, it created the statewide public school system. The

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[1]Virginia State Department of Education, "Historical Development of Virginia's Public School System: 1870-1970," Public Education in Virginia: A News Magazine of the State Department of Education 5(Winter, 1970):3.

[2]Ibid, p. 7.

General Assembly had, "To provide by law, at its first session under this Constitution, a uniform system of public free schools and for its gradual equal and full introduction into all the counties of the state by the year 1876, and as much sooner as possible."[3] The latter part of this mandate included the second accomplishment. The system was to be brought into being quickly. Indeed, the first duty of the newly created post of State Superintendent of Public Instruction was to submit to the General Assembly, within thirty days of his appointment, his plan for the statewide system of schools.[4] The third accomplishment of the Underwood Constitution was to establish the basic structure of Virginia's public school system.

> A Board of Education composed of the Governor, the Superintendent, and the Attorney General, was to appoint county superintendents and to manage school funds; the Literary Fund was given constitutional status; and revenues to accrue to the Fund were enumerated, including fines for offenses against the State. Other provisions of the 1870 Constitution dealt with taxation for the support of public schools, textbooks, and the establishment of normal schools for the training of teachers, as well as the power of the General Assembly to pass compulsory attendance laws and to enact "needful laws and regulations" to carry into effect the public school system mandated by the Constitution.[5]

The Constitution of 1870 thus gave life to Virginia's statewide public education system and has had a lasting influence on it. In his 1941 doctoral dissertation, Meade wrote it was "the first step in the

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[3]J. L. Blair Buck, The Development of Public Schools in Virginia: 1607-1952 (Richmond: Commonwalth of Virginia, 1952), p. 65.

[4]Virginia, "Historical Background," p. 8.

[5]A. E. Dick Howard, Commentaries on the Constitution of Virginia 2(Charlottesville: University Press of Virginia, 1974) pp. 881-82. Howard's footnotes indicating the constitutional source of each provision have been omitted here.

evolution of Virginia's constitutional organization for public education. Every integral part of the organization of the school system as provided for in this constitution exists today."[6]

The next constitutional revision to affect public education did not occur until 1902. This time language was included which described the kind of system sought. Section 129 read:

> Free Schools To Be Maintained - The General Assembly of Virginia shall establish and maintain an efficient system of public free schools throughout the state.

That public education had finally become accepted in the Old Dominion can be inferred from the lack of debate on this section. The only discussion it stimulated in the 1901-1902 Constitutional Convention concerned the inclusion of the phrase "establish and." These words seemed unnecessary to the author of an amendment to delete them since the existence of Virginia's public education system was an easily discernible fact and had been so for thirty years. The answer given by the chairman was that the system as it existed was woefully inefficient, and it was for the establishment of an efficient system that the Constitution called.[7] Other revisions and additions to the 1902 Constitution changed the membership of the State Board, redefined the Board's duties, provided for the popular election of the State Superintendent, reduced the number of school districts, established a new system to distribute

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[6]Richard Andrew Meade, "A History of the Constitutional Provisions for Education in Virginia" (U. Va. Ph. D. dissertation, 1941) pp. 152-153, quoted in A. E. Dick Howard, Commentaries, p. 887.

[7]Howard, Commentaries, p. 888.

funds, authorized localities to impose a property tax for the support of elementary schools, authorized the General Assembly to establish other types of schools, established ages for compulsory attendances, provided free textbooks for those who could not afford them, generally limited public funds to public institutions, established membership rules for educational institutions, and established a capitation tax to be used for the support of public schools.[8] Section 149, which was also inserted at this time, stated, "White and colored children shall not be taught in the same schools."[9]

Influence of Legal Battles

In attempting to maintain a racially segregated public school system in the face of Brown v. Board of Education, the Virginia General Assembly tried several legal manuevers which constitute the second major influence on the Standards of Quality and Objectives. The most important cases will be reviewed here because of their influence on Sections 1 and 2 of Virginia's present Constitution. To the credit of the Commission on Constitutional Review, the General Assembly, and the voters, Sections 1 and 2 were written and enacted with an eye to both the past and the future. They were intended to prevent the reoccurrence of similar tactics to disassemble the Commonwealth's public school system and, at the same time, to proclaim the effort to work towards a public education system that would be

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[8]Buck, Public Schools in Virginia: 1607-1952, pp. 126-28. Several of these provisions are no longer in force today. For example, the State Superintendent is appointed and the capitation tax no longer exists.

[9]Ibid, p. 128.

marked by high quality. That both efforts are mandated in the same sections indicates the necessity to know the former well in attempting to understand the latter.

Relating the entire history of Virginia's reaction to the Supreme Court's decision in Brown would be beyond the scope of this study. Muse[10] and Gates[11] have written extensive accounts of the period, but Howard's[12] concise summary of the relevant cases provides an adequate background for this discussion.

Howard notes that as part of its initial massive resistance to school desegregation the General Assembly met in special session in August 1956 and "amended and reenacted the appropriations act it had previously approved in March."[13] Keep in mind the language of Section 129 which stated, "The General Assembly of Virginia shall establish and maintain an efficient system of public free schools throughout the state." The revised act limited appropriations of commonwealth funds to school divisions that were efficient and prohibited appropriations to those that were inefficient. Efficient was defined as segregated.

> The General Assembly declares, finds and establishes as a fact that the mixing of white and colored children in any elementary or secondary public school within any county, city or town of the Commonwealth constitutes a clear and present danger affecting and endangering the health and welfare of the children and citizens residing in such county, city or town,

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[10]Benjamin Muse, Virginia's Massive Resistance (Bloomington, Indiana: Indiana University Press, 1961).

[11]Robbins L. Gates, The Making of Massive Resistance: Virginia's Politics of Public School Desegration, 1954-1956 (Chapel Hill, North Carolina: The University of North Carolina Press, 1962).

[12]Howard, Commentaries, pp. 888-907.

[13]Ibid, p. 890.

> and that no efficient system of elementary and secondary public schools can be maintained in any county, city or town in which white and colored children are taught in any such school located therein.[14]

At the same session, the Pupil Placement Act was also passed. This legislation "had the effect of freezing any child in the school he then attended until graduation unless it could be shown that he was enrolled in a different school by the Pupil Placement Board, a three-member body appointed by the Governor."[15] Race was not specified as a criterion, but a variety of socioeconomic factors were to be taken into account by the Board in reaching a decision. The action taken to define efficient, however, left little doubt about the influence of race. The sudden definition of efficient was noted by the federal court in its opinion striking down the act.[16]

> By §129 of the Constitution of Virginia, the General Assembly is required to establish and maintain an efficient system of public schools throughout the State. That this provision is mandatory cannot be doubted under the decision of School Board of Carroll County v. Schockley, 160 Va. 405, 168 S. E. 419. The word "efficient" has not heretofore been defined by the Legislature or by the courts of Virginia. Suddenly, for the first time since the adoption of the Constitution of Virginia and significantly at a session of the General Assembly convened for the purpose of considering educational matters, the Legislature defines the word "efficient" in the Appropriations Act, and in Chapter 67, so as to exclude any school system wherein both white and colored children are in attendance. When we turn to the Pupil Placement Act and the use of the word "efficient" under § 3(1) and § 3(8), it would indeed be charitable to assume that the General Assembly had in mind varying interpretations of this word.[16]

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[14] Ibid, p. 891.

[15] Ibid.

[16] Adkins v. School Board., 148 F Supp. 430, 442 (E.D. Va), aff'd, 246 F. 2d 325 (4th Cir.), cert. denied, 355 U.S. 855 (1957), cited by Howard, Commentaries, p. 892.

In the late 1950s, the General Assembly tried another strategy. Howard continues, "To the end of preventing desegregation in the public schools, the Assembly decreed that any elementary or secondary public school in which white and colored children were enrolled was to be automatically closed, removed from the public school system, and placed under the control of the Governor."[17] State and local funds to that division were then to be used for tuition grants so that children could attend nonsectarian private schools. Virginia's Attorney General argued before the Supreme Court of Appeals that there was a mutual dependence between Sections 140 and 129, and that invalidating one would have the same effect on the other. The Court did not accept this argument.[18]

The last year of the decade saw the General Assembly abandon massive resistance in favor of a freedom of choice program. The legal maneuvering became more subtle.

> "The Assembly repealed the school closing legislation enacted in 1956 and 1958, as well as the tuition grant laws, and enacted new tuition grant and pupil placement programs. It also repealed Virginia's compulsory attendance laws and instead made school attendance a matter of local or parental option."[19]

The same year, 1959, also gave rise to a legal action that was to have a profound effect on Article VIII, Section 1 of the 1971 Constitution. Rather than establish an integrated school division, the Prince Edward County Board of Supervisors simply refused to pay any school taxes for the 1959-1960 school year. Its public schools remained

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[17]Howard, Commentaries, p. 892.

[18]Ibid., p. 893.

[19]Ibid.

closed until 1964 when the United States Supreme Court ruled that this action violated the equal protection clause of the Fourteenth Amendment.

Virginia's Supreme Court of Appeals, basing its decision on the Virginia Constitution, had reached an entirely different decision.

> "In brief, the Court ruled that the Constitution and statutes enacted pursuant to it established a local option system in which operation of the schools was left to the determination of local authorities and the receipt of state funds was conditional by law upon the appropriation of local funds. Thus, when Prince Edward County refused to support public schools, the Commonwealth was entitled to withhold its support."[20]

The U. S. Supreme Court's decision superseded that of the Virginia Supreme Court of Appeals, and the schools were forced to reopen.

Influence of the Constitutional Revision of 1971

It was against this background of legal battles regarding the Commonwealth's public education system that the constitutional revision of 1971, the third major influence on the Standards of Quality and Objectives, took place. The process actually had begun three years earlier, in January 1968, when Governor Mills E. Godwin, in his welcoming address to the General Assembly, noted that the forty years since the last major revision[21] had taken their toll. The Governor requested authorization for a commission to prepare the necessary changes.

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[20] Ibid, p. 895.

[21] Two influential surveys conducted by highly recognized scholars suggested several improvements for Virginia's public education system. Among those incorporated in the constitutional revision of 1928 were a change in the membership of the State Board, the appointment of the State Superintendent by the Governor, and the transfer of authority to select and appoint division superintendents from the State Board to localities who have had to choose from a list provided by the State Board. Buck, Public Schools in Virginia: 1607-1952, pp. 252-253.

Within the month, authorization was granted and the members of the Commission on Constitutional Revision were appointed. Within the year, the Commission had completed the task.

That Commission elevated the status of education in Virginia in its proposed Constitution as was evident from a new inclusion in the Bill of Rights.

> Section 15. Qualities necessary to preservation of free government
>
> That no free government, nor the blessings of liberty, can be preserved to any people, but by a firm adherence to justice, moderation, temperance, frugality, and virtue; by frequent recurrence to fundamental principles; and by the recognition by all citizens that they have duties as well as rights, and that such rights cannot be enjoyed save in a society where law is respected and due process is observed.
>
> That free government rests, as does all progress, upon the broadest possible diffusion of knowledge, and that the Commonwealth should avail itself of those talents which nature has sown so liberally among its people by assuring the opportunity for their fullest development through an effective system of public education.[22]

All of the language from, "and by the recognition," to the conclusion of the second paragraph was new. The concluding clause of the first paragraph was intended to emphasize that the duties of citizenship are of equal importance as its rights and privileges. The Report's comments on the second paragraph indicate its importance and makes explicit its connection to Sections 1 and 2 of Article VIII wherein

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[22]Virginia Commission on Constitutional Revision, The Constitution of Virginia: Report of the Commission on Constitutional Revision to His Excellency, Mills E. Godwin, Jr., Governor of Virginia, The General Assembly and the People of Virginia: January 1, 1969 (Charlottesville, Virginia: The Michie Company, January 1, 1969), pp. 32-33. Here after referred to as Report.

are found the constitutional mandate for the Standards of Quality and Objectives.

> ....The second addition is the second paragraph of the proposed section, giving recognition to the importance of education in a democractic society. Placing such language in the Bill of Rights signalizes the relation of an educated citizenry to other fundamental values and underscores the thrust of the revised Education article, especially sections 1 and 2. The language proposed for the second paragraph of section 15 is adapted from Thomas Jefferson's Notes on the State of Virginia.[23]

Section 1 of Article VIII, the proposed Education Article, reads:

> Section 1. Public schools of high quality to be maintained.
>
> The General Assembly shall provide by law for a statewide system of free public elementary and secondary schools open to all children of school age, and shall ensure that an educational program of high quality is established and maintained.[24]

Section 1 replaced Section 129 of the old constitution which read, "The General Assembly shall establish and maintain an efficient system of public free schools throughout the state." The Commission's Report indicated that this language had not been strong enough to prevent the Virginia Supreme Court of Appeals from ruling that the determination of what constituted an efficient system was left to the General Assembly. Thus, when Prince Edward County refused to appropriate its share toward the support of its public schools, the Commonwealth could withhold its portion and still not be in violation of the constitutional mandate to "establish and maintain an efficient system of public free schools". The Report characterized its proposal as follows:

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[23] Ibid, p. 99.

[24] Ibid, p. 61.

> The proposed section indicates clearly the nature of the system which the General Assembly is to create: it is to be a statewide system "open to all children of school age" and one which provides "an educational program of high quality."

The Commonwealth's public education system, as described in this section was to be open to all eligible students and provide an education of great merit.[25]

Proposed Section 2 specifically reinforced the public school system's defenses against the tactics used in Prince Edward County by clearly delineating the financial responsibilities of the Commonwealth and the local divisions. It also specified the responsibility for determining standards of quality.

> Section 2. State and local support of public schools; standards of quality
>
> The General Assembly shall ensure that funds necessary to establish and maintain an educational program of high quality are provided each school division, and it shall take care that the cost of maintaining such programs is divided equitably between the localities, wherein rests the primary responsibility for the public schools and the Commonwealth. The standards of quality shall be determined and prescribed from time to time by the State Board of Education, subject to revision only by the General Assembly.[26]

The first sentence of this section explicitly prohibits the General Assembly from allowing a locality to abolish its public schools through the withdrawal of financial support. The Commission's suggested course of action to remedy such a situation included withholding all state funds to the locality, reports to the Governor by the State Board of Education to bring the weight of public opinion to bear on the locality,

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[25] Ibid, p. 258.

[26] Ibid, p. 258.

and, ultimately, the Commonwealth's assuming the financial burden until the other means had accomplished their task.

The Report said standards of quality were mentioned in Section 2 to underscore the relation between the standards and the financial resources of the Commonwealth.

> The language "of high quality" is intended to convey the idea of a progressively higher statewide standard, achievable under present conditions, but to be advanced as resources and circumstances permit. It would clearly be unworkable to enshrine a fixed standard in the Constitution, and undesirable to leave the standard to judicial construction. Therefore, standards of quality are to be established by the State Board of Education, the governmental agency most familiar with the needs of the public school system, subject to revision only by the General Assembly, which, because of its fiscal responsibilities for meeting the standards, must have ultimate control of them.[27]

Thus, the standards are clearly relative. They depend on the financial resources of the Commonwealth. The governmental agency to be made responsible for establishing the standards was the most logical choice, the State Board of Education. To prevent judicial takeover of this function and to place a check on the State Board, the General Assembly was given ultimate responsibility for reviewing and enacting the standards.

To summarize, the Commission on Constitutional Revision proposed a document which changed the status of education in Virginia in several ways. In the Bill of Rights, the recognition of education as an essential ingredient of free government was made explicit. In Sections 1 and 2 of Article VIII, the changes proposed were designed to guarantee access to Virginia's public schools, to all its eligible students to prevent the closing of individual systems in the manner of Prince Edward

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[27] Ibid, p. 260.

County, to cause the public education system to strive towards a high caliber of performance within its fiscal constraints, and to establish the machinery to implement this effort. This study will examine the extent to which the Standards of Quality and Objectives have accomplished these last two tasks. It has been necessary to review this portion of their history to understand the selection of the goals which guide them.

Influence of the General Assembly

The Commission's report was published January 1, 1969. To hasten the amendment process, Governor Godwin called a special session of the General Assembly to meet in February 1969. Transcripts of both sessions were taken to provide subsequent generations with a record of the intent underlying each section of the new constitution. These discussions led to some modifications of the Commission's work and, ultimately, to the Constitution which was presented to the voters of Virignia in four sections on November 3, 1970 and went into effect at noon on July 1, 1971.

Before the Commission's proposed document was debated on the floors of the House and Senate in the General Assembly, it was discussed and modified in separate and joint committee hearings and meetings. Interesting and significant changes regarding education took place. The word "public" was removed in committee from Section 15 of the Bill of Rights. In answer to Delegate Rawlings' question on the floor of the House about this omission, Delegate Harrell said:

> It was felt that that was a limiting statement. We feel that the diffusion of knowledge should be through all types and forms of educational development and knowledge, from whatever source. It was not the intention to eliminate "public" to indicate "private,"

> the one opposed to the other, to avoid any limitation was the basic reason, and removing "public" does make the statement more in conformity with what I would say is the preamble.[28]

Delegate Harrell's answer did not deter Delegate Hightsey from offering an amendment shortly after the preceeding exchange to restore the word "public" to Section 15. Speaking in opposition to the amendment, Delegate Fidler explained the removal as an attempt to encourage the existence and growth of the private colleges within the Commonwealth.[29] Delegate Rawlings, who became the principal spokesman for the amendment, argued that the intent of the Commission on Constitutional Revision was to bolster support for public education, and that this intent was correct. Private institutions, he continued, were in no imminent danger and enjoyed guarantees written elsewhere in the Constitution. Delegate Harrell countered that no single system was being supported or indicted. The amendment was rejected by a vote of 17 for and 77 against.[30]

Interestingly, the Senate had not deleted the word, but to reconcile its version with that of the House it agreed to follow the House version. The excision did not take place, however, without a a protest from Senator Howell:

> Gentlemen of the Senate, this constitutional ship is being buffeted hither and yon. The great things that we do in the

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[28]Virginia General Assembly, House of Delegates, Proceedings and Debates of the House of Delegates pertaining to Amendment of the Constitution: Extra Session 1969: Regular Session 1970, p. 539. Hereafter referred to as Senate Debates.

[29]Ibid, p. 485.

[30]Ibid, p. 488.

> Senate are devasted, obliterated, liberated and pulverized if you will, in the House of Delegates and then we yield like a group of small little kittens lapping at a bowl of cream.[31]

Senator Howell's oratory was unheeded, and the Senate agreed to the House version by slightly more than two to one.[32]

More substantive changes took place in Sections 1 and 2 of Article VIII as a result of committee deliberations. The language adopted by these committees proved so persuasive that none of the amendments offered on the floor of either house succeeded. Portions of charts from Musselman's recent dissertation[33] allow for comparisons of the different versions.

FIGURE 1

ARTICLE VIII OF THE CONSTITUTION OF 1971 AS PROPOSED BY THE COMMISSION ON CONSTITUTIONAL REVISION

Section 1. Public Schools of High Quality to be Maintained

The General Assembly shall provide by law for a statewide system of free public elementary and secondary schools open to all children of school age, and shall ensure that an educational program of high quality is established and maintained.

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[31]Virginia General Assembly, Senate Proceedings and Debates of the Senate of Virginia pertaining to Amendment of the Constitution: Extra Session 1969: Regular Session 1970, p. 539. Hereafter referred to as Senate Debates.

[32]The vote was 23 Yeas and 11 Nays. Ibid, p. 541.

[33]Don R. Musselman, "The Development of Article VIII of the 1971 Constitution: Its Impact on Educational Programs in Virginia and the Extent to Which Those Influences Are Consistent With the Intent of the Constitution" (Ed. D. dissertation, Virginia Polytechnic Institute and State University, 1978). This information was taken from an early typed version of Dr. Musselman's dissertation which did not contain page numbers throughout all the text.

FIGURE 2

ARTICLE VIII OF THE CONSTITUTION OF 1971 AS REPORTED BY THE COMMITTEE ON EDUCATION TO THE FLOOR

Section 1. Public Schools of High Quality to be Maintained

The General Assembly shall provide for a system of free public elementary and secondary schools for all children of school age throughout the Commonwealth, and shall seek to ensure that an educational program of high quality is established and continually maintained.

FIGURE 3

ARTICLE VIII OF THE CONSTITUTION OF 1971 AS AMENDED AND COMMUNICATED TO THE FLOOR

Section 1. Public Schools of High Quality to be Maintained

No change.

FIGURE 4

ARTICLE VIII OF THE CONSTITUTION OF 1971 AS FINALLY ADOPTED BY THE GENERAL ASSEMBLY

Section 1. Public Schools of High Quality to be Maintained

The General Assembly shall provide for a system of free public elementary and secondary schools for all children of school age throughout the Commonwealth, and shall seek to ensure that an educational program of high quality is established and continually maintained.

FIGURE 5

ARTICLE VIII OF THE 1971 CONSTITUTION AS PROPOSED BY THE COMMISSION ON CONSTITUTIONAL REVISION

Section 2. State and Local Support of Public Schools; Standards of Quality

The General Assembly shall ensure that funds necessary to establish and maintain an educational program of high quality are provided each school division, and it shall take care that the cost of maintaining such programs is divided equitably between the localities, wherein rests the primary responsibility for the public schools, and the Commonwealth. The standards of quality shall be determined and prescribed from time to time by the State Board of Education, subject to revision only by the General Assembly.

FIGURE 6

ARTICLE VIII OF THE 1971 CONSTITUTION AS REPORTED BY THE COMMITTEE ON EDUCATION TO THE FLOOR OF THE HOUSE AND SENATE

Section 2. Commonwealth and Local Support of Public Schools; Standards of Quality

Standards of quality for the several school divisions shall be determined and prescribed from time to time by the State Board of Education, subject to revision only by the General Assembly.

The General Assembly shall determine the manner in which funds are to be provided for the cost of maintaining an educational program meeting the prescribed standards of quality, and shall provide for the apportionment of the cost of such program between the Commonwealth and the local units of government comprising such school division. Each unit of local government shall provide its portion of such cost by local taxes or from other available funds.

FIGURE 7

ARTICLE VIII OF THE 1971 CONSTITUTION AS AMENDED AND COMMUNICATED TO THE FLOOR OF THE HOUSE AND SENATE

Section 2. Commonwealth and Local Support of Public School; Standards of Quality

No change.

FIGURE 8

ARTICLE VIII OF THE 1971 CONSTITUTION AS FINALLY ADOPTED BY THE GENERAL ASSEMBLY

Section 2. Standards of Quality; State and Local Support of Public Schools

No change.

While the floor discussion recorded in the Proceedings and Debates of the House and Senate produced no changes in Sections 1 and 2, they do provide some insights into both the reasoning for the revisions made by the committees and into the concerns of Virginia's legislators. Thus, these changes are the fourth major influence on the Standards of Quality and Objectives. In this section, those discussions concerning Sections 1 and 2 - especially those amendments and arguments concerning the Standards of Quality - are excerpted and summarized.

That both sections were considered important can be learned from the opening remarks of Delegate Pope, Chairman of the House Education Committee, as he introduced the committee's proposed Education Article on Thursday, March 27, 1969.

> Sections 1 and 2 of the proposed Education Article are closely related. Together they established the Commonwealth's goal in the field of education and provide for the implementation of that goal. In the judgment of the committee, its revisions of Sections 1 and 2 preserve the purpose which lay behind the proposals of the Commission on Constitutional Revision while at the same time, through some remissions of the language, making it clearer how the machinery is to operate.[34]

Continuing, Delegate Pope gave a brief overview of each section in the Education Article and of the substantive changes made by his committee. In Section 1, the committee added language "to make it clear that the latter part of Section 1, making a program of high quality the Commonwealth's goal, is the language of aspiration, not a mandate which might be held to be a subject of judicial enforcement."[35] The committee's proposed Section 2, he said, not only dealt with the three questions of the Commission's version -- "(1) standards of quality, (2) the General Assembly's duties to provide funds, and (3) the apportionment between the localities and the Commonwealth of the costs of operating the school system"[36] -- it was also more explicit regarding the duty of a locality to provide its share of the financial burden. This provided clearer and more acceptable guidelines for action against these divisions derelict in this duty.

The Proceedings and Debates of the House of Delegates can be characterized as free flowing discussions that wandered from topic to topic before amendments were put on the floor. Regarding Section 1, Delegates Butler and Rawlings were deeply concerned about the effect of

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[34] House Debates, p. 236.

[35] Ibid.

[36] Ibid.

adding "seek to" to the Commission's language. Delegate Rawlings first asked Delegate Pope, "Why do you feel, other than because of the cost that you mentioned before, it was so necessary to water down the commitment as expressed in the revisor's suggestion?"[37] When Pope referred Butler to Delegate Smith, who chaired the subcommittee which dealt with this area, Butler was asked by Smith to restate his question. He did as follows, "Why did the committee conclude that it was necessary to insert in the substitute language 'of aspiration' instead of language 'of mandate' as in the suggestion of the Constitutional Revision Committee?"[38] After noting the great amount of discussion generated by the phase "high quality" in the press as well as in the General Assembly, Smith answered:

> The committee felt that to put into the draft of the proposed Constitution language mandating an educational program of high quality would take away future General Assemblies' right to determine what is high quality and would in all likelihood put that determination in the courts. We therefore moved from that language to language which we think charges this General Assembly with the continuing duty to strive to ensure an educational program of the highest quality, not only to seek to achieve it but to continually maintain it.
>
> We feel this is very strong and realistic language.[39]

Delegate Butler countered that Section 2's language making standards subject to revision only by the General Assembly should be enough to forestall judicial intervention. Delegate Smith, however, said that language was no guarantee.[40] The matter was dropped as the discussion

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[37] Ibid, p. 242.

[38] Ibid.

[39] Ibid.

[40] Ibid, p. 243.

moved to another topic, but it resurfaced later as an amendment.

Delegate Butler, who was responsible for the abrupt change of topics, raised a question about the absence of remedial sanctions in Section 2 against those localities which refuse to support financially their own school systems. Delegate Smith answered that the language set forward by the committee

> put a very strong obligation on the General Assembly of Virginia to see that the funds are provided either by the State or locality to provide the high quality standard of education called for in this Constitution. The General Assembly can set the amount that is going to be necessary; it can say who is going to pay which part of it; and the last sentence, while it is silent as to any particular remedial action, says in very strong language that each unit of government shall provide its portion of said costs by local taxes or other available funds.[41]

Such language would authorize the General Assembly to take a wide variety of actions when it met. A short while later, a similar question from Delegate DuVal provided this response from Smith:

> The duty of seeing that the funds are provided rests on the General Assembly; but there is no duty to provide all of the funds from State sources. The language charges the General Assembly to see that the funds are supplied and to determine the apportionment of these funds between the state and the local divisions.[42]

For those localities who refuse to pay their share of educating their children, Smith suggested the Commonwealth could provide funds temporarily and then seek redress through legislation.[43]

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[41] Ibid, p. 245.

[42] Ibid.

[43] Ibid.

After a discussion of some other items in the Education Article, Delegate Butler stated his feeling that the committee's changes had abandoned the constitutional mandate for high quality education proposed by the Commission on Constitutional Revision. Delegate Pope returned that the conflict was over timetables not goals. The committee's version, he suggested, did not require everything be done at once.[44]

The free flowing debate ended with the preceeding encounter between Butler and Pope. The discussion became more focused with the introduction of amendments. Three different amendments to Section 1 were introduced. All were rejected. Delegate Rawlings offered an amendment which added to the charge that the public school system provided by the Commonwealth should be open to all children the language "including those children who are physically or mentally handicapped and would benefit from attendance at such schools."[45] His reasoning was that progress in providing adequate educational services for these children would continue to move at a snail's pace without the force of a constitutional mandate behind it. While all the delegates who spoke were sympathetic to the plight of such children, many expressed reservations about Rawlings' approach. His motion was rejected with 32 delegates voting for and 67 voting against his amendment.[46]

The second amendment to Section 1, offered by Delegate Giesen,

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[44]Ibid, p. 250.

[45]Ibid, p. 252.

[46]Ibid, p. 259.

would have deleted the words "seek to" from the section. Giesen, a Republican, felt that this section of the Constitution should have the language "of mandate" rather than that "of aspiration." He argued that if the Commission on Constitutional Revision, which consisted of several lawyers, did not fear the interpretation of "ensure high quality" neither should the General Assembly.[47] Delegate Rawlings, a Democrat, offered an identical motion to prevent the House Republicans from reaping any political reward.

> Mr. Speaker and ladies and gentlemen of the House, I have proposed an identical amendment and I want to stand before you and say to the Democractic members of the House, it should be a bipartisan effort to bring high quality education to Virginia and to ensure it. I am determined that the Republican delegation in the House shall not latch onto this issue and make themselves the champions of high quality education in Virginia. This is exactly what you are allowing them to do.[48]

Delegate Rawlings became the chief spokesman for this amendment. He argued the constitutional language of this charge should be more forceful than "seek to" denotes. After much discussion, Rawlings was still unable to convince a majority of his colleagues who posed questions concerning the definition of quality, judicial intervention, financing, and enforcement. A vote was taken on Giesen's amendment which yielded 23 for and 70 against; whereupon Rawlings withdrew his motion.[49]

Unperturbed by the defeat, Delegate Rawlings offered the third amendment to Section 1 which would have added the following sentence to the end of the section, "Adequate provision shall be made by the

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[47] Ibid.

[48] Ibid.

[49] Ibid, pp. 264-65.

General Assembly for the education or training of physically and mentally handicapped children of school age."[50] His attempt, he said, was to provide to handicapped students constitutional aid that House members could "support without a great deal of concern about putting any undue burden on the public schools."[51] Although the question of providing education to handicapped youngsters accounts for much of the discussion of Article VIII, Rawlings' amendment merited only a few negative remarks from Delegate Pope before it was defeated by a voice vote.[52]

There were no amendments to Section 2 of Article VIII offered in the House of Delegates, and this discussion shall now turn to the debate in the Senate.

Senate debate on Sections 1 and 2 of Committee Substitute for Senate Joint Resolution No. 14, as the Education Article was identified, was more formal than its counterpart in the lower house. After a brief overview by Senator Andrews, debate occurred only on the various amendments to each section.

In his remarks, Andrews said the following:

> The publicity and discussion relative to Sections 1 and 2 -- and they should be treated as companion sections -- are well known to the Senate. Subcommittees of the House Committee and after extended discussion and drafts, the Committee Substitute in Section 1 and 2 unanimously recommended by the joint subcommittees, both carries out the purport and thrust of the revisors' proposals and meets technical, legal objectives varied by the Attorney General.

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[50] Ibid, p. 265.

[51] Ibid.

[52] Ibid, p. 256.

> I may add parenthetically that these two sections have passed the House unchanged.[53]

The language worked out in committee proved to be as forceful in the Senate as it had been in the House.

Senator Bateman offered two amendments to Section 1 that were intended to bring it closer to the original language of the Commission on Constitutional Revision. The first would have inserted the word "statewide" after "a." The second would have deleted the words "for all" and substituted "open to all." Bateman's proposed language is compared with that of the committee:

> Committee Substitute for Section 1
>
> The General Assembly shall provide for a system of free public elementary and secondary schools for all children of school age throughout the Commonwealth, and shall seek to ensure that an educational program of high quality is established and continually maintained.
>
> Committee Substitute for Section 1 with Senator Bateman's Amendments
>
> The General Assembly shall provide for a <u>statewide</u> system of free public elementary and secondary schools <u>open to</u> all children of school age throughout the Commonwealth, and shall seek to ensure that an educational program of high quality is established and continually maintained.

The Senator from Newport News explained that the language he proposed was closer to that of the Commission which more clearly set forth the commitment of the Commonwealth to keep all school divisions open to all eligible children. In other words, Bateman wanted to ensure that the strategy of Prince Edward County would be impossible under the new Constitution. His colleagues in the Senate, however, felt the language of the Committee Substitute adequate and defeated his amendments

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[53] <u>Senate Debates</u>, p. 203.

14 (for) to 24 (against).[54]

An effort, similar to the one in the House, was made in the Senate to delete "seek to" from Section 1. Senators Turk and Pearson offered one amendment jointly, and Senator Howell, who subsequently withdrew his to avoid duplication, offered another. Senator Turk stated that the omission of these two words would speed up the equalization of educational opportunity throughout the Commonwealth,[55] while Senator Howell's homespun rhetoric decried the timidity of the expression.

> Certainly we all agree that education is a nonpartisan issue, and I am happy to follow the eminent Senator from Radford (Senator Turk), speaking in favor of raising the flag of public education so high that it can be seen all over Virginia, so strong that it can never be hauled down again.
>
> I can not see why in the world we have to go tiptoeing around in the Constitution. That is what we do when we give one inch to those who feel there should be two or three systems of education in Virginia, a system of public education, a system of private education and a system maybe halfway between the two, semi-public and semi-private. This is one of the most crucial sections that we are going to take up. It does not lend itself to legislative compromise. It should be bold, should be clear, should be simple. I just can not bring it to my heart and my fingertips to vote for a tippytoe phrase "seek to ensure."
>
> "Seek to, seek to," just think of these words. Listen to them. "Seek to". What the people of Virginia are looking for is a guarantee. You fix a Constitution, when you prepare a Constitution, when you draft a Constitution, when you pass a Constitution. We are talking about fundamental guarantees. Permissiveness is left for the cycle of legislative opinion. In a Constitution we should not, "seek to" anything. We should not whisper through a Constitution. We should not suggest in a Constitution. A Constitution is made up of guarantees. I hope your heart will not fail, that you will do what you know you must do and vote for this amendment and take the "seek to" stuff out.[56]

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[54] Ibid, p. 209.

[55] Ibid.

[56] Ibid, p. 210.

Senator Hopkins countered that deleting "seek to" might encourage those counties who want to dump their share of the financial partnership for supporting public schools onto the Commonwealth. The amendment failed 10 (for) to 28 (against).[57]

Senator Bateman then offered an amendment to Section 2 which would replace the first paragraph of the Committee Substitute with the following:

> An acceptable standard of quality for the several school divisions shall be determined and prescribed from time to time by the Board of Education, subject to revision only by the General Assembly. No school division, however, shall be limited to such acceptable standard of quality.[58]

Senator Bateman found several things wrong with the language of the first paragraph of the Committee Substitute. First, he felt it allowed for the possibility of multiple standards. Second, he felt his version would more forcefully encourage those divisions capable of going beyond the minimum standard to do so. Third, he feared the Committee Substitute allowed the Board of Education to set goals which some divisions would find impossible to meet.[59]

Senators Fitzgerald, Andrews, and Dawborn, however, found serious problems with Bateman's amendment. Fitzgerald and Andrews felt the word "acceptable" muddied the waters of interpretation rather than cleared them. Moreover, Andrews said the last clause could be an escape hatch for localities wanting to shirk their responsibility.

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[57] Ibid, p. 211.

[58] Ibid, p. 212.

[59] Ibid.

Senator Dawborn expressed the fear that Bateman's amendment would bring the level of quality set by the Board of Education

> down to the lowest common denominator, because the Board of Education could not, in my opinion, prescribe a standard beyond the needs of the school division or its ability to support those needs. We would have not just one minimal standard, which would have the tendency to elevate the educational system.[60]

Senator Bateman's rebuttal that the language of the committees was being received with too much deference and too little flexibility did not persuade his colleagues to accept his amendment which was defeated 10 (for) to 28 (against).[61]

The only substantive changes in the language of Section 1 and 2 of Article VIII, as proposed by the Commission on Constitutional Revision, took place in the various committee meetings of the House and Senate. The addition of the phrase "seek to" in Section 1 prompted amendments for its removal in both houses, but both amendments failed. No amendments were offered to Section 2 in the House, and likewise all the amendments to it arising in the Senate were defeated.

The effects of the changes made in committee were to weaken the constitutional mandate for quality education in Section 1 and to strengthen the General Assembly's hand in implementing the Standards of Quality and Objectives. Roles were clarified, financial responsibilities delineated, and the means for resolving problems were provided. Furthermore, all of the changes and discussions cited above occurred during the special session of the General Assembly in 1969. Nothing happened

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[60] Ibid, p. 213.

[61] Ibid, p. 215.

to Sections 1 and 2 during the regular sessions held in 1970, nor did much happen to affect any other part of the constitution. The majority of the work had taken place during the special session.

The new Constitution was submitted to the voters of Virginia on November 3, 1970 as four separate proposals. Three matters -- lotteries, general obligation bonds, and revenue bonds -- were considered controversial and were submitted separately in addition to the proposal to revise the main body of the Constitution. It was thought unwise to allow opposition to one issue endanger the general revision by offering the matter to the voters as an all inclusive take-it-or-leave-it referendum. This strategy proved highly successful. All four proposals passed by substantial margins.

The Influence of the State Department of Education and the State Board of Education

The Standards of Quality became a legal fact of life when the proposed Constitution was accepted by the voters of Virginia, but it was not until the machinery described in Section 2 of Article VIII had been activated that the program began to function. The events which brought the first set of standards to life are the sixth major influence on the program.

Working from primary documents and personal interviews, Dr. Jean Epps, in her unpublished doctoral dissertation, has provided a record of the events which brought about the implementation of the constitutional mandate regarding the Standards of Quality and Objectives. She relates that in December 1970, Dr. Woodrow W. Wilkerson, State Superintendent of Public Instruction, appointed a three-man steering committee, later expanded to five, "to prepare tentative recommendations for standards and to set up a machinery for involving school division

superintendents in the formulation of the standards.[62] The committee recommended a four-part structure by which Virginia's public education system should be examined.

> (1) Goals - the ends sought by the schools; (2) Input - the resources that are available for the schools to work with; (3) Process (program) - procedures and techniques through which resources (input) are used to achieve goals and (4) Output - the effects of input and process on the realization of educational goals.[63]

In addition, the committee recommended four sub-committees be formed to study each of these matters in depth. The work of all these committees was compiled by the steering committee, presented at the Annual Superintendent's Conference in April, revised several times, and presented to the State Board of Education on August 5, 1971.[64] Further revision was made at the recommendation of the Board, and the first set of standards was adopted by the State Board of Education on April 7, 1971.[65] After review and revision by the General Assembly, the Standards of Quality and Objectives were enacted on April 10, 1972.[66]

Epps relates two actions of the General Assembly at its 1973 session that affected the Standards. First, a section was added which

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[62] Jean M. Epps, "An Analysis of Comprehensive Curriculum Planning Processes Employed in the School Divisions of Virginia" (Ed. D. dissertation, University of Virginia, 1976), p. 23.

[63] Ibid, p. 24.

[64] Ibid, p. 28.

[65] Ibid.

[66] Ibid, p. 32.

covered communication between school boards and their employees and also established a grievance procedure. The second action was to revise the Commonwealth's funding formula to more equitably distribute funds for educational purposes to all school divisions.[67]

To improve the quality of management within the State Department of Education, Dr. Woodrow W. Wilkerson, State Superintendent of Public Instruction, and eleven other state department administrators attended a training program in Hamilton, New York, offered by the American Management Association. Among the outcomes of this training was the proposed Standards of Quality and Objectives for the 1974-1976 biennium. With only one deletion, the Department's proposals were enacted by the General Assembly. Epps carries her history to the enactment of the 1974-1976 Standards. She points out that from the beginning of the program the Department of Education offered several types of aid to the local divisions. Consultants, training sessions, manuals, and brochures were provided to help make the task easier.

The Planning Standard

The concept of planning holds a place of special importance in the Standards of Quality and Objectives, and the relationship of planning to goal achievement is of particular interest in this study. The history of the planning standard predates that of all the other standards and the constitutional revision itself. It began at the annual meeting of the State Board of Education in August 1966 when the Board authorized the State Superintendent of Public Instruction to

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[67] Ibid, p. 32-33.

appoint a group named the Committee on Raising the Level of Public Education in Virginia. The Committee's assignment was "the responsibility of formulating a plan for accomplishing substantial progress among those localities having the greatest educational need and thereby raising the floor of education in Virginia to an acceptable level of adequacy."[68] Recognizing its time constraints, the Committee selected several areas of concentration and through a combination of expert judgment, experience, first-hand knowledge of Virginia's schools, and an evaluation instrument produced a report which included forty recommendations to equalize educational opportunity at an acceptable level throughout the Commonwealth.

One outcome of the Committee's recommendations was the creation of a new position at the Department of Education, Special Assistant for Planning and Evaluation.[69] The man appointed to the position, Fendall R. Ellis, began immediately to implement the recommendations of the committee. Under the auspices of this office, a special project was undertaken in Southwest Virginia. The project, entitled Project to Raise the Level of Education in Selected School Systems,[70] was another direct outgrowth of the Committee's work. The school divisions participating in the study were not necessarily the worst ones in the state.

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[68]Virginia, "Raising the Level of Public Education in Virginia: A Report by a Study Committee," (Richmond, Virginia: State Board of Education, 1967), p. 1.

[69]George W. Holmes III and William H. Seawell, Administration by Objectives: A Systematic Approach to Educational Planning in Virginia (Eric Document EA 003 921, 1971), p. 7.

[70]Ibid.

No one wanted to claim that dubious distinction nor was it feasible to work easily with systems scattered around the state. It was thought that a regional approach would be best, and the Southwest Virginia Superintendents' Study Group accepted Mr. Ellis' invitation to participate.[71] George W. Holmes, III and William H. Seawell, of the Department of Administration and Supervision of the School of Education at the University of Virginia, served as consultants.[72]

As the project evolved, so too did a planning model based on administration by objectives. The model, formalized by the consultants, grew serendipitously out of the visits of the consultants to the divisions.

> Originally it had been assumed, if not stated, that when all the data were in and a report had been prepared on each participating school system, an evaluation of each report would be made by some group from outside the particular school system in question. As a result of the visits, it was concluded that the final evaluation of each report should take the form of a statement of needs as revealed by the report and that the statement of needs should be prepared by the personnel of the school system for which the report was made. In other words, the process would be one of self-evaluation. This meant that at no point in the project would any school system be rated in relation to any other school system. It also meant that at no point in the project would anyone other than local people evaluate any of the participating school systems. Thus, a project which at one time appeared to be based on the thought that the State of Virginia should "raise the level of education" became one in which local commitment was the key. School employees came to see themselves as partners in an on-going process rather than as clients or subjects to which a process was being applied by outside forces.[73]

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[71] Ibid, p. 10.

[72] Ibid, p. 11.

[73] Ibid, Holmes and Seawell's emphases.

Even a cursory reading of the relevant documents leaves no doubt that the approach to planning which evolved in the Project to Raise the Level of Education in Selected School Systems was transplanted in toto into the Standards of Quality and Objectives. Holmes and Seawell's model appears in the 1972-74 Manual for Implementing Standards of Quality and Objectives for Public Schools in Virginia[74] just as it does in their original article.[75] The essential ingredients which appear to make the model so attractive are: (1) its nonthreatening nature; (2) its systematic procedures; and (3) its emphasis on self-help. The importance of the planning standard can hardly be understated. The 1972-1974 Manual says, "They (the Standards) place noteworthy emphasis on educational planning, which is the most important function of the public school administrator."[76]

To satisfy the planning standard, each school division had to involve all segments of the public it served in identifying needs, suggesting corrective actions, selecting a plan of action, monitoring the implementation of the plan, reviewing the results, and making any necessary modifications. The model to be followed was Holmes and Seawell's administration by objectives model. The plan of action was to cover a five-year period and was to be submitted in writing to the

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[74]Virginia State Department of Education, Manual for Implementing Standards of Quality and Objectives for Public Schools in Virginia: 1972-74 (Richmond, Virginia: The Department, September, 1972), pp. 45-52.

[75]Holmes and Seawell, Administration by Objectives, pp. 13-21.

[76]Virginia, Manual for Implementing Standards of Quality, p. i.

State Department of Education. How well Virginia's school divisions did this planning has already been examined.[77] The relation between the quality of planning and the achievement of the program's goals will be of primary concern in this study.

Literature on Evaluation

Evaluation in the Social Sciences

A qualifying note is in order before reviewing the literature on evaluation. The term evaluation occurs in many social sciences, and its meaning often depends on the context in which it is found. In economics, for example, evaluation appears in discussions of cost-benefit analysis. In education and psychology, evaluation is found within the context of tests and measurements. The term also appears frequently in sociological and medical studies of the efficacy of social action and public health programs. In these situations it refers to the extent to which an intervention produced a desired change. The general approach to program evaluation used in this study owes much to the work done in social action and public health programs because the Standards of Quality and Objectives represent a social reform.

A History of Evaluation Research

In a brief history, which is actually a small component of a long article, Howard E. Freeman says that the origins of evaluation research go back at least to the days of the Great Depression. "In 1935, an obscure sociologist, teaching at a then small state university in the southern United States, published a paper pleading for the experimental

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[77]This was an area of inquiry for Epps in her doctoral dissertation.

evaluation of Franklin D. Roosevelt's New Deal social programs."[78] With each passing decade, he finds the number, scope, and quality of evaluative studies increasing. From the Westinghouse Electric study in the thirties, to the "American Soldier" in the forties, to the large scale national and international social action programs in the fifties, to the improved methodological tools of the sixties, he argues convincingly that evaluation is a growth industry.[79]

> It is impossible to estimate the current volume of evaluation research activities. In the United States, by the beginning of the 1970's [sic], there were about 300 new studies begun each year with direct federal support and average budgets of about $100,000 each. By now, the number of evaluations started has probably doubled and dollar costs have risen markedly. While not usual, studies may have budgets as great as 10 to 20 million dollars, as in the case of on-going evaluations of compensatory education in the U. S.[80]

Francis G. Caro extends the history of evaluative research even futher back than Freeman does. Caro finds the "anticipation of formal social experimentation and evaluation research can be traced back to the writing of early social scientists."[81] He cites Lester Ward who in 1906 predicted the use of the scientific method in promulgating social legislation.[82] In 1917, F. Stuart Chapin published an article

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[78] Howard E. Freeman, "The Present Status of Evaluation Research" in Evaluation Studies Review Annual: Volume 2, eds. Marcia Guttentag with Shalom Saar (Beverly Hills: Sage Publications, 1977), p. 18. Freeman originally prepared this article for the 1976 UNESCO Evaluation Research Conference, Washington, D. C.

[79] Ibid, p. 19.

[80] Ibid, pp. 19-20.

[81] Francis G. Caro, ed., Readings in Evaluation Research (New York: Russell Sage Foundation, 1971), p. 4.

[82] Ibid.

calling for sociological experimentation.[83] Dodd, in 1934, studied "the effects of a health education program on hygenic practices in rural Syria."[84] Caro cites many of the studies included in Freeman's list as being highly influential -- for example, the Westinghouse studies and those studies of American soldiers in World War II. After the war, many evaluative studies focused on social action programs, Caro relates.

> Other frequently cited psychological contributions to the evaluative research literature during this period include Deutsch and Collins' (1951) study of an inter-racial housing project and Riecken's (1952) evaluation of a volunteer work camp. Other major evaluative research reported in book form during this period include Power and Witmer's (1951) study of a delinquency prevention project; Hyman, Wright, and Hopkins' (1962) work on a summer camp experience for college students; Wilner and associates' (1962) work on the implications of public housing for health and social psychological adjustment; Weeks' (1958) research on the effects of an innovative program for the treatment of delinquents; and Meyer, Borgatta, and Jones' (1965) experimental research on the effects of social work intermention.[85]

None of these influential studies come from the field of education.

A renewed or heightened interest in evaluation research is attributed by many to the social action programs mandated by Congress in President Johnson's War on Poverty in the 1960s. Headstart is the example most often cited. The awareness of the need for program research became so widespread that an evaluation requirement was written into the Elementary and Secondary Education Act of 1965.

The future for evaluation research appears bright. The literature

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[83] Ibid.

[84] Ibid.

[85] Ibid, p. 6.

in the field is growing. Some of today's most influential researchers are devoting much of their attention to evaluation. In education, decreasing resources and increasing demands for accountability and performance demand educators employ more rigorous procedures to evaluate current and proposed programs.

Definitions of Evaluation

In spite of the increased interest in evaluation, no researcher has put forth a definition that enjoys universal support. Most define it as a process containing several specific activities. The nature of those activities vary considerably as a partial listing of definitions will indicate. For example, Alkin says, "Evaluation is the process of ascertaining the decision areas of concern, selecting appropriate information, and collecting and analyzing information in order to report summary data useful to decision-makers in selecting among alternatives."[86] While agreeing that evaluation is a process, Provus concentrates on the differences between expectations and results. He defines evaluation as "the process of (a) agreeing upon program standards, (b) determining whether a discrepancy exists between some aspect of the program and the standards governing the program, and (c) using discrepancy information to identify the weakness of the program."[87] Weiss defines it this way,

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[86] Marvin C. Alkin, "Evaluating Theory Development." in Evaluating Action Programs: Readings in Social Action and Education, ed. Carol H. Weiss (Boston: Allyn and Bacon, Inc., 1972), p. 107.

[87] Malcolm Provus, "Evaluation of Ongoing Programs in the Public School System," Educational Evaulation: New Roles, New Means in The Sixty-eighth Yearbook of the National Society for the Study of Evaluation, pt. 2 (Chicago, Illinois: University of Chicago Press, 1969), p. 245.

"The traditional formulation of the evaluation question is: To what extent is the program succeeding in reaching its goals?"[88] For Riecken, "Evaluation is the measurement of desirable and undesirable consequences of an action intended to forward some goal that the actor values."[89] Scriven says, "The activity consists simply in gathering and combining of performance data with a weighted set of goals to yield either comparative or numerical ratings, and in the justification of (a) the data gathering instruments, (b) the weightings, and (c) the selection of goals."[90] According to Sax, "Evaluation is a process through which a value judgement or decision is made from a variety of observations and from the background and training of the evaluator."[91]

While each definition has its own nuance, they all seem to have the following in common. First, they characterize evaluation as a process. Second, the outcome of the process is a decision or judgement regarding alternative actions or choices. Third, values or priorities are

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[88]Carol H. Weiss, Evaluating Research: Methods for Assessing Program Effectiveness, Prentice-Hall Methods of Social Science Series, Herbert Costner and Neil Smelser, eds. (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1972), p. 24.

[89]Henry W. Riecken, "Memorandum on Program Evaluation," in Evaluating Action Programs: Readings in Social Action and Education, ed. Carol H. Weiss (Boston: Allyn and Bacon, Inc., 1972), p. 86.

[90]Michael Scriven, "The Methodology of Evaluation," in Evaluating Action Programs: Readings in Social Action and Education, ed. Carol H. Weiss (Boston: Allyn and Bacon, Inc., 1972), pp. 123-124.

[91]Gilbert Sax, Principles of Educational Measurement and Evaluation (Belmont, California: Wadsworth Publishing Company, Inc., 1974), p. 3.

established and considered in guiding the decision-making process. Lastly, the process itself is a carefully designed series of actions designed to help achieve rationality in decision-making.

Approaches to Evaluation Methodology

Evaluation methodologies have been organized in various ways. The usual approaches attempt to give an overview of the entire field by selecting some aspect of methodology and using that as the basis for categorizing. In spite of the overlapping that occurs when these general approaches are compared, each has added something useful to the field's body of knowledge. Interestingly, most of them take the form of dichotomies. In several dichotomies the basis for division tends to be categories of opposites, but this is not always the case. Two typical examples of each will be cited.

One approach contrasts traditional methods with more formal research oriented approaches. Weiss describes three examples of traditional assessment. "One way is through an impressionistic inquiry; an individual, a team, or a committee can go in and ask questions."[92] She points out, however, that these methods rely heavily on the skill and objectivity of the observers and may not tell much about the program's outcomes. The second traditional technique she cites appears, on the surface, to be more scientific. It is "to administer questionnaires or interviews that ask people's opinions about the program,"[93]

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[92] Carol A. Weiss, ed., Evaluating Action Programs: Readings in Social Action and Education (Boston: Allyn and Bacon, Inc., 1973), p. 5.

[93] Ibid.

but she cautions that one can not always rely on what people say. The third traditional approach is to look at "well accepted standards of program orientation that can form the basis for another type of assessment."[94] Once again, she states the often tenuous relation between program inputs and outputs. In contrast to these approaches, Weiss says, there is evaluative research which is conducted much like the typical laboratory experiment with randomization and control groups. Realistically, she adds, such ideal conditions are seldom achieved in program evaluation.

Stake's dichotomy contrasts informal versus formal evaluation.

> "Informal evaluation is recognized by its dependence on casual observation, implicit goals, intuitive norms, and subjective judgment. Perhaps because these are also characteristic of day-to-day, personal styles of living, informal evaluation results in perspectives which are seldom questioned. Careful study reveals informal evaluation of education to be of variable quality-sometimes penetrating and insightful, sometimes superficial and distorted."[95]

On the other hand, "Formal evaluation of education is recognized by its dependence on checklists, structured visitation by peers, controlled comparison, and standardized testing of students."[96] Stake's category of formal evaluation contains at least two methods - checklists and structured visitations - that Weiss includes under informal methods, yet there is considerable overlap of the two approaches. Indeed, one

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[94] Ibid.

[95] Robert E. Stake, "The Countenance of Educational Evaluation," in Evaluating Action Programs: Readings in Social Action and Education, ed. Carol H. Weiss (Boston: Allyn and Bacon, Inc., 1972), p. 31.

[96] Ibid, pp. 31-32.

could state that traditional methods of program evaluation are often informal while research methods are generally more formal. The dichotomies, however, are still more helpful than this truism in understanding evaluation methodologies.

As noted earlier other dichotomies tend to set up categories that simply stress different rather than opposing aspects of evaluation. Perhaps the best known of these is Scriven's formative versus summative evaluation. Scriven's categories depend on the time the evaluation takes place, the types of people conducting it, and the intent of the evaluation. Formative evaluation takes place throughout the life of a program, is often conducted by program staff, and is intended to provide corrective feedback to help improve the implementation of the program. Summative evaluation, on the other hand, generally takes place at the conclusion of a program or cycle, is usually done by someone outside the program, and is designed to help those responsible for the program make major decisions - for example, whether to continue, increase, decrease, modify, or terminate the program.[97]

Recent approaches to evaluation methodology typically create models of evaluation. Here too, a dichotomy is present. "In seeking to conceptualize the various approaches to evaluation, two research models stand out: (a) the goal-attainment model, and (b) the system model."[98]

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[97]Michael Scriven, "The Methodology of Evaluation," in Perspectives of Curriculum Evaluation, eds. Ralph W. Tyler, Robert M. Gogne, and Michael Scriven, AERA Monograph Series on Curriculum Evaluation, No. 1 (Chicago: Rand McNally & Co., 1967), pp. 39-83.

[98]Herbert C. Schulberg and Frank Baker, "Program Evaluation Models and the Implementation of Research Findings," in Readings in Evaluation Research, ed. Francis G. Caro (New York: Russell Sage Foundation, 1971), p. 74.

The former views evaluation as the process of determining to what degree a program has achieved its stated goals. In the effort to make this determination, it advocates using as many of the trappings of the classical experiment as possible. A shortcoming of this approach pointed out by Schulberg and Baker is that the results of such an evaluation model often do little to influence the actual operation of the organization in which the program functions. This lack of impact can mean the organization will go on conducting business as usual and pay little or no attention to an evaluator's recommendations. The system model of evaluation attempts to rectify this. It "is concerned with establishing a working model of a social unit which is capable of achieving a goal."[99] It attempts to restructure the organization so that resources are used to best advantage. Changing the actual structure of the organization also increases the likelihood evaluation recommendations are actually incorporated into the organization's daily functions.

Evaluation Models

The dichotomies cited above are helpful in gaining a broad perspective of evaluation methodology, but the nature of the endeavor is so practical that specific models for program evaluation must be considered. This examination of evaluation models will also make explicit the real diversity among the various models. Each one has been designed for a specific purpose or for use under specific conditions. Employing an

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[99] Ibid, p. 77

inappropriate model may lead to misinformation. Using the right tool for the task is as applicable to program evaluators as it is to carpenters and mechanics.

Howard E. Freeman's tripartite approach to categorizing evaluation methodologies, modified somewhat, will serve as the organizational framework of this review. Freeman says, "Fundamentally, there are two questions that one is concerned with in doing evaluations. The first is whether or not a particular program, intervention, or treatment was implemented according to its stated guidelines; the second is whether or not a program made a difference."[100] The former he calls process evaluation and the latter impact evaluation. His third category, comprehensive evaluation, simply combines both process and impact evaluation into one larger study.[101]

This researcher agrees with Freeman's three part structure and with the titles he has given. Disagreement arises over the definition of the categories. For the purposes of this study, evaluation models categorized under process are those for which considerations other than the stated goals of the program are of primary interest. Some of these models are at such an early stage of development that researchers are more interested in the model than in the program under consideration. Models labeled as impact, called product evaluation by others, place unwavering emphasis on stated goals and employ rigorous experimental

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[100] Freeman, "Status of Evaluation Research," p. 25.

[101] Ibid, p. 26.

procedures. Comprehensive models are all-encompassing structures that look at many aspects of a program. Comprehensive models of evaluation are so broad they can also be used as models for program development, that is, the initiation, implementation, and evaluation of new programs. Two impact models, four process models, and three comprehensive models will be reviewed.

The evaluation research model conceives of evaluation as an experiment. The more experimental controls the better the quality of the evaluation, according to this view, because experimental controls give one the greatest certainty in determining the degree to which goals have been met. Rossi's hierarchy of evaluation research designs clearly indicates the experimental orientation of this impact model.

> Most Desired Design: Classical Fisherian experiments, preferably using factorial designs Quasi-experiments with impure control groups, e.g., training program trainees compared with their unemployed friends Correlational designs in which statistical controls are used Program and project audits: Qualitative judgments made by outside observers...
>
> Least Desired Design: Project and program administrators' narrative reports[102]

Program evaluators are quick to point out the difficulties in attempting to apply a rigid experimental design to an evaluation. Goals are rarely stated precisely and are often not measurable. Controls are usually unavailable. Programs are often not implemented the same way.

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[102]Peter H. Rossi, "Testing for Success and Failure in Social Action," in Evaluating Social Programs: Theory, Practice, and Politics, eds., Peter H. Rossi and Walter Williams (New York: Seminar Press, 1972), pp. 46-47.

Data may be insufficient, inaccurate, destroyed, or nonexistent. Statistical analyses often indicate no significant differences between controls and subjects. Finally, evaluation reports are often ignored or attacked for political reasons.

The second impact study to be considered is Malcom Provus's discrepancy evaluation model. Provus's model is a systematic approach to finding and resolving the discrepancies that occur at any stage of program development and implementation as well as discrepancies between the intended and the real products.

The Discrepancy Evaluation Model posits five stages of evaluation

(1) Design
(2) Installation
(3) Process
(4) Product
(5) Cost

> At each of these stages a comparison is made between reality and some standard or standards. The comparison often shows differences between standard and reality; this difference is called discrepancy. On the basis of the comparisons made at each stage, discrepancy information is provided to the program staff, giving them a rational basis on which to make adjustments in their program.[103]

The discrepancy model is listed here as an impact model because of its unswerving emphasis on goals.

An example of process models, Rippey's transactional model illustrates well how this group of models places considerable value on matters other than official statements of program goals. The transactional model focuses on the effects of change on an organization.

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[103] Malcolm Provus, Discrepancy Evaluation for Educational Program Involvement and Assessment (Berkeley, California: McCutchan Publishing Corporation, 1971), p. 46.

Change, which is often perceived as threatening by members of an organization, may be met with actions that thwart its implementation. Rippey's model begins by identifying potential sources of conflict by surveying organization members. In the next step, declared proponents and opponents develop and implement an evaluation plan. Particular tasks are reviewed by both at specified stages until the plan is adopted or rejected.[104]

Draper's description of how such a model would work is helpful.

> How does transactional evaluation work? First of all, the need for a change is indicated either by the availability of new ideas or by dysfunction in the existing system. If the goal is to implement new ideas, the transactional evaluator begins by distributing a detailed description of the proposed change to those who will be affected by the change (e.g., administrators, teachers, and students). Each participant is asked to submit an anonymous written response to the proposed change. If the goal is to deal with a system dysfunction, the evaluator asks for a brief, anonymous written report on what is wrong with the present system. The evaluator uses the information from the reports to prepare a questionnaire of scaled agreement responses that represent the various viewpoints expressed. This questionnaire is then distributed throughout the system, and its results are tabulated and returned to all the system participants.
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> Up to this point, it has been the aim of transactional evaluation to prevent any direct confrontations between disagreeing parties. However, after the questionnaire results are dispersed, proponents and antagonists of the major conflicting views are brought together. By delaying actual confrontation, the evaluator has pre-focused the group's attention on the issues that have a major bearing on the potential conflict. At this point, a specialist skilled in interpersonal group communications is used to moderate the discussion.

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[104] Robert M. Rippey, ed., Studies in Transactional Evaluation (Berkeley, California: McCutchan Publishing Company, 1973), p. 6.

> Following the initial group discussion, a pilot test of the proposed change is begun. Those members of the group who are most favorably disposed toward the change act as change proponents. Those members of the group who oppose the change act as critics. Now the strengths and weaknesses of the innovation can be openly discussed while the legitimacy of the arguments is being concurrently tested in a practical situation. In this way, much of the energy previously used to subject the change may be channeled into constructive evaluation of the program. Defensiveness can be played down, agreement need not be required, and questions can be substituted for arguments. Group impasses are referred to an impartial observer for arbitration.
>
> After the pilot program has had time to stabilize, its overall success is evaluated by the confrontation group. At this time, any decision about implementing the change on a wider scale has a much greater chance of being decided on rational grounds. If the change is implemented, it also has a much better chance of survival.[105]

How the confrontation group would arrive at a final decision is not clear. It is clear that the model works hard at achieving consensus among those affected by a forthcoming change.

While most evaluators decry the poorly stated goals found in many programs, Michael Scriven's goal free evaluation model maintains that the dogged effort to measure intended goals can blind the evaluator to the importance of unintended or unanticipated effects. Indeed, he maintains that these side-effects often become the main reasons why programs live or die. To use the goal free model,

> The evaluator would make a deliberate effort not to be co-opted by the rhetoric of program goals, which are viewed as appropriate targets in program planning and development but not in evaluation. He would gather data bearing on a broad array of actual effects and would evaluate the importance of these effects in meeting educational needs (or producing educational or personal harm). To be sure, the program goals could usually be induced from this array

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105 Encyclopedia of Educational Evaluation: Concepts and Techniques for Evaluating Education and Training Programs, s.v. "Transactional Evaluation," by Thomas W. Drapes.

> does not turn out to include all the major goals, the program developer might be tempted to view the whole enterprise as irrevelant, but he would usually be better served to recommend revising the program and even modifying its goals, possibly to capitalize upon side effects documented in the evaluation effort.[106]

Here again we see stated program goals taking a rear seat to some other interest, for example, side-effects whose influence may determine the future for the program.

A bold attempt which borrows methods of arriving at a conclusion from another field and applies them to evaluation is the adversary evaluation model. Owens suggests that experimental designs suffer from three major weaknesses. They "do not question the fundamental value or worth of proposed programs, they are geared toward the creation of knowledge rather than toward decision-making, and they limit too severely the variables they consider.[107]

Simply put, adversary evaluation is conducted like a trial in which each of two opposing sides argues as vigorously as possible to sustain the supremacy of its point of view. Thurston explains the four stages needed to implement the model by citing Tymitz and Wolf.

> 1) the issue generation stage (aimed to identify as broad a range of issues as possible as perceived by the variety of persons involved in or affected by the program in question);

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[106] Ibid, s.v. "Goal-Free Evaluation," by Samuel Gessick.

[107] T. R. Owens, "Educational Evaluation by Adversary Proceedings," in E. R. House, ed., School Evaluation: The Politics and the Process (Berkeley, California: McCutchan, 1973), p. 295.

2) the issue selection stage (involve(s) reducing the array of issues to a manageable number for the hearing so that issue reduction involves extensive analysis of content as well as critique of influences and logic);
3) the preparation of arguments stage (collecting testimony evidence, synthesizing existing information, locating and abstracting relevant documents, etc.);
4) the hearing stage itself (presentation of arguments and evidence...and panel deliberation).[108]

Although a relatively new development, the adversary model has already sparked debate within professional journals.[109]

The last process model to be considered is Robert Stake's responsive evaluation model. It is particularly applicable in evaluating those programs where typical data are unavailable, for example, programs involving the arts. Once again stated goals are not the focal point of the model. Responsive evaluation emphasizes the program's activities and audience demands.

> To do a responsive evaluation, the evaluator conceives of a plan of observations and negotiations. He arranges for various persons to observe the program, and with their help prepares brief narratives, portrayals, product displays, graphs, etc. He finds out what is of value to his audiences, and gathers expressions of worth from various individuals whose points of view differ. Of course, he checks the quality of his records; he gets program personnel to react to the accuracy of his portrayls; authority figures to react to the importance of various findings; and audience members to react to the relevance of his findings. He does much of this informally-iterating and keeping a record of action and reaction. He chooses media acceptable to his audiences

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[108] B. Tymitz and R. L. Wolf, An Introduction to Judicial Evaluation and Natural Inquiry. Training materials prepared for four state IEP hearings, developed by Nero and Associates, Inc., 1977, under a grant from State Programs Studies Branch, BEH, U.S. Office of Education, quoted in Paul Thurston's, "Revitalizing Adversary Evaluation: Deep Dark Deficits or Muddled Mistaken Musings," Educational Researcher 7 (July/August, 1978): 3.

[109] W. J. Popham and D. Carlson, "Deep Dark Deficits of the Adversary Evaluation Model," Educational Researcher 6(June 1977): 3-6 and Thurston's response cited above.

> to increase the likelihood and fidelity of communication. He might prepare a final written report, he might not-depending on what he and his clients have agreed on.[110]

Process models offer the greatest diversity among evaluation models. Each one has a particular interest other than the intended goals of the program under consideration. The transactional model concerns itself with the acceptance of real change by organization members; the goal free model tries to get to the heart of a program by ignoring superficial, albeit official, statements; the adversary model likewise aims at substantive issues through articulate debate; and finally, responsive evaluation seeks to judge those activities which heretofore have been beyond the capacity of other models.

Comprehensive is an apt designation for the third main class of evaluation models. These models conceive of evaluation in very broad terms. One of the oldest is that advanced by the California Center for the Study of Evaluation at the University of California at Los Angeles. The model, called CSE, concentrates on the timing and the audience of evaluation. "It points out phases during the development of a program during which various audiences might effectively use credible information."[111] The model has the following four stages:[112]

Needs Assessment	Program Planning	Formative Evaluation	Summative Evaluation

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[110]Robert Stake, ed., Evaluating the Arts in Education: A Responsive Approach (Columbus, Ohio: Charles E. Merrill Publishing Company, 1975), p. 14.

[111]Lynn Lyons Morris, e.d., Program Evaluation Kit (Beverly Hills, California: Sage Publications, 1978), Evaluator's Handbook by Lynn Lyons Morris and Carol Taylor Fitz-Gibbon, p. 7.

[112]Ibid., p. 8.

In phase 1, the program goals are determined. In phase 2, those competent and concerned plan a program to meet the goals of highest priority as determined in phase 1. Phase 3 involves collecting information about the program and feeding it back to those responsible for implementing it. The goal of this phase is refinement and improvement so that the program can become as successful as possible. In phase 4, the total impact of the program is studied.

Typical questions are asked at each phase. "What can be done better?" or "What else needs to be done?" are the kinds of questions asked in phase 1. To answer them and to determine priorities among needs requires seeking information from many sources. "What kinds of programs will satisfy the need?" is the typical question asked in Phase 2. "Is the program working, is it what was expected, can it be improved?" are asked during the formative phase of evaluation. Once the proverbial wrinkles are ironed out, the remaining questions are, "Did the program work, to what degree did it work, and was it worth the effort?"

A similar four step model was developed by Daniel Stufflebeam in 1967 at Ohio State University. Originally intended to help improve the quality of evaluations that were being submitted in compliance with Title III of the 1965 Elementary and Secondary Education Act, the CIPP model has wide applicability. Each letter of its name stands for one of four major decisions as identified by Stufflebeam, that require evaluation.[113] The four kinds of decisions involve the Context in which

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[113]Sax, Educational Measurement and Evaluation, p. 559.

the program will occur, the Input in terms of human and natural resources it will receive, the Process used to implement the change, and the Product produced by the program. As diagrammed by Stufflebeam, the complete model appears on the following page.

The similarities between the CSE model and Stufflebeam's CIPP are quite evident. One could argue about which step is taken at precisely which stage, but there appear to be no major differences.

Metfessel and Michael's eight step model simply specifies in greater detail what the CIPP and CSE models suggest in more general terms. The eight steps are:

1. Direct and indirect involvement of various members of the community, including laymen, professional school personnel, and students.
2. Construction of a set of educational objectives and priorities.
3. Development of a set of behavioral objectives useful for instruction.
4. Development of criterion measures needed to evaluate school programs.
5. Administration of tests and other instruments considered valid for specific purposes.
6. Analysis of data, such as the comparison of mean test performance.
7. Interpretation of data using various judgmental standards and values.
8. Formulation of recommendations needed to improve the project or program being evaluated.[114]

It should be reiterated here that the three comprehensive models reviewed -- CIPP, CSE, and Newton and Metfessel's -- can also be used as models of program development. Under the needs assessment, context evaluation, and involvement of interested parties, agreement is reached about overall programmatic goals. In the second step, strategies are

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[114] Sax, Educational Measurement and Evaluation, p. 568.

The CIPP Evaluation Model: A Classification Scheme of Strategies for Evaluating Educational Change

	Context Evaluation	Input Evaluation	Process Evaluation	Product Evaluation
OBJECTIVE	To define the operation context, to identify and assess needs in the context, and to identify and delineate problems underlying the needs.	To identify and assess system capabilities, available input strategies, and designs for implementing the strategies.	To identify or predict, in process, defects in the procedural design or its implementation, and to maintain a record of procedural events and activities.	To relate outcome information to objectives and to context, input, and process information.
METHOD	By describing individually and in relevant perspectives the major subsystems of the context: by comparing actual and intended inputs and outputs of the subsystems; and by analyzing possible causes of discrepancies between actualities and intentions.	By describing and analyzing available human and material resources, solution strategies, and procedural designs for relevance, feasibility, and economy in the course of action to be taken.	By monitoring the activity's potential procedural barriers and remaining alert to unanticipated ones.	By defining operational and measuring criteria associated with the objectives, by comparing these measurements with predetermined standards or comparative bases, and by interpreting the outcome in terms of recorded input and process information.
RELATION TO DECISION-MAKING IN THE CHANGE PROCESS	For deciding upon the setting to be served, the goals associated with meeting needs and the objectives associated with solving problems, i.e., for planning needed changes.	For selecting sources of support, solution strategies, and procedural designs, i.e., for programming change activities.	For implementing and refining the problem design and procedure, i.e., for effecting process control.	For deciding to continue, terminate, modify, or refocus a change activity and for linking the activity to other major phases of the change process, i.e., for evolving change activities.

[114]Daniel L. Stufflebeam, Theory into Practice 6(June 1967): 130 cited in Sax, Educational Measurement and Evaluation, p. 560.

devised to implement the goals. In the third step, the strategies are used, and formative evaluation provides corrective feedback. Finally the total program is evaluated to allow for the resolution of major policy questions regarding the program.

In this section specific models have been reviewed. A three-category system was used to classify models. Product models, the first category, were found to emphasize goals and rigorous procedures. Process models, the second group, focused on matters other than goal statements to arrive at conclusions about a given program. Comprehensive models, the third type, conceptualized evaluation as a total process involved with a program from its literal beginnings to its end.

Literature on the Standards of Quality

Introduction

No one has yet undertaken to determine whether the Standards of Quality and Objectives have in fact moved the Commonwealth of Virginia any closer toward achieving the program's major goals. The closely related literature tends to fall into one of four categories: (1) legal reviews of Article VIII; (2) legislative reports; (3) related journal articles; and (4) dissertations on related topics. In this section, this literature will be reviewed chronologically. Conclusions or recommendations of a legislative report and two completed dissertations will make explicit the need for this study.

Legal Reviews

The earliest scholarly articles took the entire Education Article as their purview and were written by two attorneys who had served as counsel to the Commission on Constitutional Review. Each took a

somewhat different view of the entire article, but both men agreed on the importance of Sections 1 and 2. The first into print was Hullihen W. Moore. Writing in the Spring 1971 volume of the University of Richmond Law Review, Moore took the position that the Education Article is a poor example of constitutional law. He said it is "little more than a compilation of unnecessary grants of power, non self-executing mandates and details that belong in the Code rather than the Constitution."[115] While noting its legal deficiencies, he also pointed out that it was carefully woven into the fabric of the Constitution and insistance on a legally elegant Education Article might have spelled disaster in terms of acceptance by the voters. For all its weaknesses, the Constitution was approved by a large margin.

The strengths of the Education Article, Moore said, were in the clarifications it made regarding the General Assembly's power to require localities to maintain and financially support their school systems and the financial assistance it provides to both public and private colleges. While calling Section 2, "the greatest stride forward,"[116] he maintained the majority of the article had little legal impact but should be considered important "because they [the sections] reflect well the attitude of the Assembly toward public education."[117] Moore's concluding remarks noted the General Assembly's removal of the

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[115]Hullihen W. Moore, "In Aid of Public Education: An Analysis of the Education Article of the Virginia Constitution of 1971," University of Richmond Law Review 5(Spring, 1971): 308.

[116]Ibid, p. 309.

[117]Ibid.

word "public" from Section 15 of the Bill of Rights indicated something less than total support for public education.

A. E. Dick Howard, who served as Executive Director of the Commission on Constitutional Revision, authored the two-volume Commentaries on the Constitution of Virginia published in 1974. The Commentaries, cited earlier in this study in relating the origins of Sections 1 and 2 of Article VIII, elaborated the legal history of each article and section of the constitution as proposed by the Commission and later passed by the General Assembly. Regarding the Education Article, Howard was at odds with Moore on its actual legal power. To Moore's charge that Section 1 is not self-executing, for example, he argued "a court can create remedies that by their negative operation enforce an affirmative right...."[118] Howard tended to give greater significance to the Constitution as the formal expression of the desires of Virginians than did Moore. He agreed with Moore, however, on the efficacy of Section 2 of the adopted Constitution in clearing up any doubts regarding the determination of responsibilities for funding local divisions.[119]

Legislative Report

The first major study of the Standards of Quality was a legislative review by a Joint House-Senate Subcommittee which was created at the 1974 General Assembly session.[120] The Joint Subcommittee's mission

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[118] Howard, Commentaries, p. 896.

[119] Ibid, pp. 902-905.

[120] Virginia General Assembly, "Report of the Joint House-Senate Subcommittee to Review the Standards of Quality in Education: To the Governor and the General Assembly of Virginia: House Document No. 19." (Richmond, Virginia: Commonwealth of Virginia, 1976), p. 1.

was "to review the Standards of Quality and to determine the impact they are having on public education in Virginia."[121] The Subcommittee took it upon itself to expand its mission and "sought to review comprehensively all aspects of publicly financed education in Virginia."[122] To accomplish this, the Joint Subcommittee first undertook its own study and submitted its "findings, premises and questions to...teachers, administrators, P-TAs [sic], the media and the public."[123] In May 1975, the Subcommittee held five hearings throughout the Commonwealth to elicit input. Members digested the material received and met twice in August to draft a report. A public hearing was held in Richmond on December 1, 1975, to hear public comment on the draft report. Later in the month, the final draft was prepared and submitted to the Governor and the General Assembly.[124] The Subcommittee cited "lack of time and lack of experimental research data" as the two greatest limitations.[125]

Besides making recommendations regarding the proposed Standards for the 1976-78 biennium, the Joint Subcommittee reported the following findings regarding the Standards:

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[121] Ibid.

[122] Ibid.

[123] Ibid., p. 2.

[124] Ibid., pp. 2-3.

[125] Ibid., p. 2.

> 1) In practice, the principal emphasis of the Standards has been on financial inputs. Secondary emphasis has been placed on outputs, the product of the learning process.
> 2) One very beneficial impact of the Standards has been that laggard school divisions have been brought up in quality. The presumption now exists in Virginia that the overall quality of its public school system has improved. However, by some tests or measures, disparities may still exist.
> 3) The trend in recent years has been to increase the resources invested in students at the higher and, to an even greater extent, at the lower end of the ability scale.[126]

The emphasis on output or product rather than process was pervasive throughout the report. To describe the process by which the Subcommittee arrived at these findings one could say it was a compilation of the best judgment and opinions of interested parties according to the best judgment of the members of the Subcommittee. It would appear that in its legislative zeal, the Subcommittee attempted too much and would have accomplished more had it stuck to the narrow charge of its original mission

Publications of the Commonwealth

The next body of literature relating to the Standards to be reviewed is that found in the official publications of official Commonwealth agencies and officers. Since the inception of the program, the Department of Education's official news magazine Public Education in Virginia has periodically reported on it. Early articles tended to explain the program and its implementation, while later ones reported on changes made to the standards. The State Board's Report on Public Education in Virginia includes reports on implementation of the program and identifies those

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[126]Ibid, p. 5.

divisions which have not met particular standards. Finally, the Annual Report of the State Superintendent of Public Instruction also includes reports on the status of the program. According to the reports published in these official publications, the program has been satisfactorily implemented. Those few divisions or schools which have not met all the Standards are on their way toward meeting them.

In none of the publications, however, has a systematic research project which evaluated the Commonwealth's progress toward achieving any of the program's major goals been published. It seems that the self-evaluation concept of Holmes and Seawell's administration by objectives model is largely responsible for this. By incorporating this change strategy, the state agencies responsible for implementing the program have been placed in an inactive role. Providing technical expertise, as the agencies do, may not be sufficient if the localities lack the capacity for planning.

Relevant Studies

The quality and planning procedures of the second set of five-year plans submitted to the Department of Education was the focus of Jean M. Epps's doctoral dissertation in 1976. Her research looked at how comprehensive the multi-year plans of small, medium, and large divisions were in relation to certain planning criteria which she measured with an instrument of her own construction. In addition, she tried to verify whether the participation of individuals in the actual planning process matched what was reported in the multi-year plans.[127]

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[127]Epps, "Comprehensive Curriculum Planning Processes". p. 8.

Her findings were that few divisions used a comprehensive approach to planning, plans evidenced an uneveness in quality with no significant relation between the size of a division and the quality of its plans, and a sample of participants in the planning process verified what took place in the planning groups.[128]

Epps's conclusions suggest the need for this evaluative study. She says:

> (1) Although school divisions have been required to develop medium-range systematic participative educational plans, they do not possess the necessary planning capability to accomplish the task.
> (2) There is a need for the development of needs assessment and program evaluation tools which can be used by school divisions so that more planning decisions may be based on empirical evidence of needs and program effectiveness.
> (3) School division personnel who are responsible for planning should be provided training in planned change theory and technology so that they may better facilitate participative decision making.[129]

This study will examine the degree to which goals have been accomplished and the relation between the quality of multi-year plans and achievement of goals. The methodology used may prove to be of great assistance to local and state educational leaders in providing the empirical evidence which Epps found lacking heretofore.

In his recent dissertation, Don R. Musselman considered three issues. First, he looked at the differences in "scope, focus, and

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[128] Ibid, pp. 211-213.

[129] Ibid, pp. 213-214.

language"[130] between the 1971 Educational Article and its predecesser. Second, he examined the differences between the Education Article as proposed by the Commission on Constitutional Revision and the Article as adopted by the General Assembly and ultimately approved by the voters of Virginia.[131] Third, he attempted to identify "significant programs, policies, or activities which have been implemented in the school systems of Virginia since 1971 and the extent to which these programs, policies, or activities represent intent of those most responsible for the development of that Constitution."[132] Musselman concluded that (1) the General Assembly accepted the proposals of the Commission on Constitutional Revision with few reservations, (2) that the new Article VIII was an improvement over its predecessor, and (3) the authors of the 1971 Constitution felt the programs originated by it were within its original intent.[133]

Regarding the Standards of Quality and Objectives, however, more needs to be said. While the Commonwealth of Virginia probably can not be sued for failure to maintain public schools of high quality, the 1979 session of the General Assembly enacted legislation empowering the Attorney General, at the recommendation of the State Board of Education, to file a petition for a writ of mandamus against any local

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[130] Musselman, The Development of Article VIII, p. 11.

[131] Ibid, p. 12.

[132] Ibid.

[133] Ibid, Chapter 5 of working draft.

division that fails or refuses to comply with any Standard.[134] This gives the State a useful tool but can it be said that the language of aspiration, over which members of both houses waxed so eloquently, has been met with accomplishment? To ask an even older question, has the level of public education in Virginia been raised? The question appears to have been with us for a long time. This study will attempt to answer one small part of it by building on the work of others who have already made contributions toward seeking the answer.

Summary of Chapter Two

Three bodies of literature were reviewed in this chapter. The origins of the Standards of Quality and Objectives were traced from the Constitution of 1870 to the most recent one. The review of evaluation literature indicated the diversity among the models available for program evaluation. Finally, the few studies directly or indirectly related to this statewide educational program call for its further study.

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[134]Virginia General Assembly Chapter 529: Acts of the Assembly of 1978: Amended Right of the Attorney General to Require Mandamus, p. 53. The reference is to a noncertified copy of the action taken.

CHAPTER III

METHODOLOGY

Introduction

In this chapter, the following matters relating to the methodology employed in this study will be considered: (1) the evaluation model selected for use; (2) time-series design and analysis, the quasi-experimental research design selected and the statistical procedures used to determine the degree of significance for it; (3) the Five-Year School Improvement Plan Rating Scale, the population under consideration, and the sample derived from it; (4) the specific goal of the Standards of Quality and Objectives to be evaluated; (5) the criteria for this goal set forth in the program; (6) the unobtrusive measures taken from official state records that will be used to operationalize the goal under consideration; and (7) the specific research hypotheses guiding this study.

The Evaluation Model Used

The evaluation research model as outlined by Rossi[1] was selected as the most appropriate one for this study for several reasons. First, it is a product model and devotes unwavering attention to measuring the achievement of program goals. From the efforts of the Committee to Raise the Level of Public Education in Virginia in 1968 to the conclusions of

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[1]Peter H. Rossi, "Testing for Success and Failure in Social Action," in Evaluating Social Programs: Theory, Practice, and Politics, eds. Peter H. Rossi and Walter Williams (New York: Seminar Press, 1972), pp. 46-47.

the Joint House-Senate Subcommittee Review of the Standards of Quality and Objectives in 1975 to the minimum competency testing program in 1978, the demand has been to improve student performance, the product of Virginia's public education system.

The need to measure goal achievement rather than to find the discrepancies between goals and achievement ruled out Provus's model.[2] Moreover, his model requires that any necessary corrective action be taken before the evaluation process can move to subsequent steps. The power to make these changes is ultimately limited to the General Assembly. This is a serious obstacle for the outside evaluator who wants to conduct a summative evaluation using the discrepancy model.

With their secondary and sometimes tertiary interest in program goals, none of the process models is as suitable as the research model. For almost the same reason, the selection of a comprehensive model was ruled out. These models are best employed at the earliest planning stages of a program when specialists from many fields can be consulted. The Standards of Quality and Objectives have already been developed and are an ongoing statewide program. Many aspects of the comprehensive evaluation models are actually intended for program development. The development of the program in question is now a moot point and best left to educational historians. Finally, the research model best lends itself to time-series design and analysis, a quasi-experimental design which, with its accompanying statistical tests, makes a significant contribution to program evaluation in education. For all these reasons, the evaluation

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[2]Malcolm Provus, Discrepancy Evaluation for Educational Program Improvement and Assessment (Berkeley, California: McCutchan Publishing Corporation, 1971).

research model was selected for this study.

Time-Series Design and Analysis

The key function of program evaluation in education is to determine whether, or to what degree, a program has effectuated a change in its clients, but the establishment of this casual relationship is not an easy task. The most objective way to demonstrate the existence, degree, and cause of such a change would be to employ a rigorous experimental design to compare treated subjects and untreated controls. Carol H. Weiss has provided a clear statement of evaluation research procedures for social action and educational programs. Her five basic stages are:

1. Finding out the goals of the program;
2. Translating the goals into measurable indicators of achievement;
3. Collecting data on the indicators for those who have been exposed to the program;
4. Collecting similar data on an equivalent group that has not been exposed to the program (control group);
5. Comparing the data on program participants and controls on terms of goal criteria.[3]

Adding the random selection and placement of subjects at the outset provides a piece of evaluative research that would satisfy the most demanding experimentalist. The research hypothesis is that the measurable program goals have been met because of the intervention. By employing the appropriate statistical tests, one can accept or reject

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[3]Carol H. Weiss, ed. Evaluating Action Programs: Readings in Social Action and Evaluation (Boston: Allyn and Bacon, Inc., 1972), p. 6.

the hypothesis with a given level of confidence.

Unfortunately, the conditions for conducting program evaluation in the manner outlined by Weiss rarely occur in education. Numerous obstacles prevent a strict experimental approach. Program goals are often broadly stated to insure the adoption and funding of the program, but they provide poor guidelines for its implementation and evaluation. Translating statements of intent into measurable indices of goal attainment leaves the evaluator open to the charge of neglecting the program's humanistic qualities. The data collected on program participants are often nonexistent, unavailable, or irrelevant. Control groups, as well as the random selection and placement of subjects, are often impossible to establish. This is particularly true of large scale programs where, by law, every member of the population must be exposed to the treatments at the same time. The statewide implementation of Virginia's Standards of Quality provides a typical example of such a situation. Comparisons are difficult when suitable controls are absent.

If these technical difficulties were not enough to discourage the educational program evaluator, there are human problems as well. Those charged with implementing the program, and whose salaries, positions, and professional reputations depend on its success, may be less than candid with the evaluator. Indeed, the implementation and operation of the program may produce something quite different from its original formulation. When so many technical and human complications arise, the evaluator is certainly justified in questioning the cause of any change he finds. Fiscal, social, political, or historical factors other than the program could have been responsible.

While the problems grow more complicated, the demand for better

program evaluation also grows more intense. Local, state, and federal governments are increasing their demands for proof of program efficacy before they pour public dollars into its support. Dwindling resources are forcing educators into providing ways to demonstrate to a critical public and to themselves which programs work and which do not.

Given the inability to institute strict experimental controls and the increased need for better evaluation procedures, the evaluator can turn to a quasi-experimental approach - in particular, time-series design and analysis - to conduct a program evaluation. Recent advances in statistics, as well as in the practical applications of the time-series design and its analysis in noneducational areas, have enhanced their potential value to program evaluation in education. Before proceeding to the discussion of these advances, however, brief reviews of the quasi-experimental time-series design and of its analysis are in order. A portion of this review will be accomplished by summarizing Donald T. Campbell's "From Description to Experimentation: Interpreting Trends as Quasi-Experiments."[4]

Employing the same terminology, notation, and explanations of the chapter and monograph, Experimental and Quasi-Experimental Designs for Research which he co-authored with Julian C. Stanley, Campbell uses a group of quasi-experimental designs to demonstrate how casual inferences can be made from observations over time. He also indicates the potential

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[4]Donald T. Campbell, "From Description to Experimentation: Interpreting Trends as Quasi-Experiments," in Problems in Measuring Change, ed. C.W. Harris (Madison, Wisconsin: University of Wisconsin Press, 1963), pp. 212-39.

weaknesses of each using as criteria the twelve potential sources of invalidity he and Stanley developed. A portion of the relevant table is reproduced in figure 9 and forms the basis for discussion.

Moving from Design 2 through Design 14, the researcher gains increasing control over sources of internal invalidity, suggesting the conclusion that the experimental treatment did make a difference in this experimental instance.[5]

Design 2 is included for discussion purposes rather than as a recommended research design. It indicates the numerous rival hypotheses which can explain changes in performance over time. First, events external to the treatment (History) might cause a change. The experimental isolation which makes this design viable in other sciences becomes an actual intrusion for the social sciences. Second, the pretreatment observation or pretest (Testing) might affect performance on subsequent measures. Third, the measurement method itself (Instrumentation) might be responsible for changes. Fourth, the regression phenomenon could cause a change in the observations. Finally, the interaction of selection and maturation or the interaction of other factors can jeopardize internal validity.

Calling Design 7 the "interrupted time-series experiment," Campbell says, "The essence of this experimental design is the presence of a periodic measurement process on some group or individual and the introduction of an experimental change into this time-series of measurements, the results of which are indicated by a discontinuity

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[5]Ibid., p. 214.

Figure 9[6]

Check-Off of Sources of Invalidity

Designs	Internal								External			
	History	Maturation	Testing	Instrumentation	Regression	Selection	Mortality	Interaction of selection and maturation, etc.	Interaction of testing and X	Interaction of selection and X	Reactive arrangements	Multiple-X inference
2. One-group pretest-post-test design O X O	-	-	-	-	?	+	+	-	-	-	?	
7. Time-series O O O X O O O	-	+	+	?	+	+	+	+	-	?	?	
10. Nonequivalent control-group design O X O ------- O O	+	+	+	+	?	+	+	-	-	?	?	
14. Multiple time-series O O O X O O O ---------- O O O O O O	+	+	+	+	+	+	+	+	-	-	?	

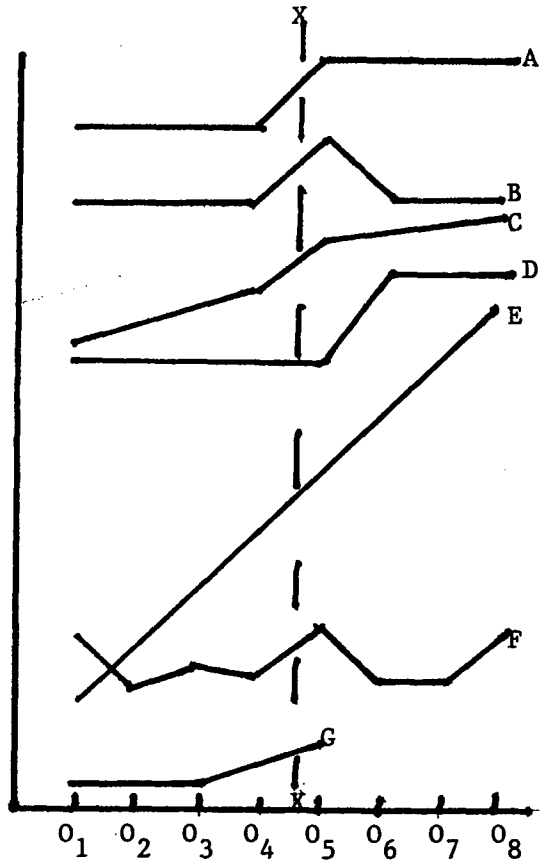
NOTE: A minus indicates a definite weakness, a plus indicates the factor is controlled, a question mark indicates a possible source of concern, and a blank indicates not relevant.

[6]Ibid., p. 217.

in the measurement recorded in the time-series."[7] This design controls for all sources of internal invalidity except History and Instrument. History is by far the most serious problem in the time-series design. Included in this category are effects due to the season, weather and institutional cycles.[8] The absence of a control group during the period of observation makes comparisons, and thus causal inferences, extremely difficult. As figure 10[9] indicates, change over time can take many shapes.

FIGURE 10

PATTERNS OF CHANGE IN A TIME SERIES



Some possible outcome patterns from the introduction of an experimental variable at point X into a time-series of measurements, O_1-O_8. (Except for D, the O_4 - O_5 gain is the same for all time-series while the legitimacy of inferring an effect varies widely, being strongest in A and B, and totally unjustified in E, F, and G.)

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[7] Ibid., p. 220.

[8] Ibid., p. 222.

[9] Ibid., p. 221.

Without a control group for comparison, a change in observations can be attributed to causes other than the intervention. It is also possible that a simple change in the method of recording observations or record keeping (Instrumentation) is responsible for the change. In another article[10], Campbell cites a good example of this. A reorganization of the Chicago police force in 1959 appeared to cause a rise in the number of crimes committed when, in fact, the increase was due to accompanying changes that were instituted in record keeping procedures.

Since 1963, other researchers have developed variations of the basic time-series design. Some of these variations are listed here. For review purposes, the name adequately explains the design. "O" represents an observation, "I" an intervention, and dotted lines represent separate non-equivalent groups.

Variations on the Basic Time-Series Experimental Design[11]

Single-Group-Single-I

O O O I_1 O O O I_2 O O O

Multiple-Group-Single-I

O O O I_1 O O O

O O O I_1 O O O

O O O I_1 O O O

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[10]Donald T. Campbell, "Reforms as Experiments," in Evaluating Action Programs: Readings in Social Action and Education, ed. Carol H. Weiss (Boston: Allyn and Bacon, Inc., 1972), p. 198.

[11]Gene V. Glass, Victor L. Willson, and John M. Gottman, Designs and Analysis of Time-Series Experiments (Boulder, Colorado: Colorado Associated University Press, 1975), p. 20.

Multiple-Group-Multiple-I

$$\underline{O\ O\ O\ I_1\ O\ O\ O}$$

$$\underline{O\ O\ O\ I_2\ O\ O\ O}$$

$$O\ O\ O\ I_3\ O\ O\ O$$

'Reversal' Design

$$\underline{O\ O\ O\ I_1\ O\ O\ O\ I_2\ O\ O\ O}$$

$$O\ O\ O\ I_2\ O\ O\ O\ I_1\ O\ O\ O$$

'Operant' Design

$$O\ O\ O\ I_1\ O\ I_1\ O\ I_1\ O\ O\ O\ O\ I_1\ O\ I_1\ O\ I_1$$

'Interaction' Design

$$O\ O\ O\ I_1\ O\ O\ O\ I_2\ O\ O\ O\ I_1\ I_2\ O\ O\ O$$

Sequential Multiple-Group-Multiple-I

$$\underline{O\ O\ O\ I_1\ O\ O\ O}$$

$$O\ O\ O\ I_2\ O\ O\ O$$

'Stratified' Multiple-Group-Single-I

Type A Units: $\underline{O\ O\ O\ I_1\ O\ O\ O}$

Type B Units: $\underline{O\ O\ O\ I_1\ O\ O\ O}$

Type C Units: $O\ O\ O\ I_1\ O\ O\ O$

This listing does not include all the possibilities. The researcher or evaluator is limited only by his creativity and the extent to which he controls for invalidity.

According to Campbell's discussion, the design which controls for all sources of internal validity is the Multiple Time-Series, Design 14.

External validity, as the chart indicates, is a problem for all of these designs. Campbell limits his discussion of this topic to commenting that Design 7 is particularly applicable to institutions, such as schools, where observations, testing, and measurements are an expected part of the daily routine. In such a setting, he says, experimental observations can be conducted as nonreactive measures and thus improve external validity. His discussion of the topic is not completely satisfying. In some cases of program evaluation, the evaluation is concerned only with the program at hand. In not a few instances, however, a pilot program is evaluated and the fate of a larger enterprise rests on the generalizations that can be drawn. The problem of external validity is one that will require more work by those who use time-series. Because the Standards of Quality and Objectives are in force throughout Virginia, the concern for external validity is not salient for this study. The question would arise if one wanted to compare Virginia to other states.

An even greater drawback to the use of time-series has been the absence of statistical tests of significance. As figure 10 showed, changes in a series of observations can take on several shapes. Statistical tests of significance are necessary to demonstrate that change has not occurred because of random fluctuation. The usual tests which compare differences between pre- and post-intervention means are inappropriate. Statistically significant differences in means can occur as a result of the time-series pattern. In his 1963 article, Campbell indicated the problem in the conclusion of his discussion of tests of significance for Design 7 with the following, "In preparing our chapter for Gage's Handbook of Research on Teaching, Julian Stanley and I considered in detail several possible tests of significance. In the end,

equivocation between the alternatives of undesirable weakness and implausible assumptions led us to cut 90 per cent of our prepared discussion from the final manuscript..."[12] For the most powerful time-series, Design 14, Campbell says, "At present time tests of significance appropriate to this design have not been uncovered."[13]

Two problems obstructed the effort to devise tests of significance for a series of observations over time. The first was the inability to handle non-stationary time-series; that is, those time-series in which the observations do not vary about some mean point. This made comparisons between pre- and post-intervention observations difficult. The second obstacle was serial dependency; that is, the correlation between succeeding observations in a series. This relationship made the usual statistical tests of significance, which assume independent observations, inappropriate.

The history of the effort to construct tests of significance for time-series is a good example of how researchers build on their own work and that of others to make scientific progress. As a result of the efforts of those in diverse fields of activity, sufficient progress has been made so that not only do statistical tests of significance exist but also mathematical models have been constructed which allow us to better understand the true nature of the time-series. In fact, the latter achievement came before the former.

Box and Jenkins, in 1962, had already devised a stochastic model

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[12]Campbell, "From Description of Experimentation," p. 229.

[13]Ibid., p. 235.

called "the integrated moving average process"[14] which could be used to represent non-stationary time-series. Rather than finding the mean of all observations before and after a treatment or event, a unit of time is selected and a moving mean is computed as follows. Taking the first observation as the starting point, one counts off the predetermined amount and computes the mean for that set of observations. Next, one takes the second observation, counts off the same number, and finds the mean of this set. The process continues until one can no longer count off a complete set of observations. This work formed the basis for the next step forward in the effort to build tests of significance for time-series. In a 1965 article by Box and Tiao, entitled "A Change in Level of a Non-Stationary Time Series,"[15] the integrated moving average process was employed in a method for "making inferences about a possible shift in level of the series associated with the occurrence of an event E at some particular time."[16]

In 1970, Box and Jenkins expanded and elaborated upon the work which had been done on time-series analysis with Time Series Analysis: Forecasting and Control.[17] In this book, they propose a mathematical

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[14]G.E.P. Box and G.M. Jenkins, "Some Statistical Aspects of Adaptive Optimization and Control," Journal of the Royal Statistical Society Series B 24 (April 1962): 297-343, cited by G.E.P. Box and George C. Tiao, "A Change in Level of a Non-Stationary Time Series," Biometrika 52 (June 1965): 181.

[15]G.E.P. Box and George C. Tiao, "A Change in Level of a Non-Stationary Time Series," Biometrika 52 (June 1965): 181-92.

[16]Ibid., p. 181.

[17]George E.P. Box and Gwilyn M. Jenkins, Time Series Analysis: Forecasting and Control (San Francisco: Holden-Day, 1970).

model to represent serial dependency.

> ...A stochastic model which can be extremely useful in the representation of certain practically occurring series is the so-called autoregressive model. In this model, the current value of the process is expressed as a finite, linear aggregate of previous values of the process and a shock a_t. Let us denote the value of a process at equally spaced times t, t-1, t-2,... by z_t, z_{t-1}, z_{t-2},... Also let z_t, z_{t-1}, z_{t-2},....be deviations from μ: for example $z_t=z_t-\mu$. Then $\tilde{z}=\phi_1\tilde{z}_{t-1}+\phi_2\tilde{z}_{t-2}...+\phi_p\tilde{z}_{t-p}+a_t$ is called an autoregressive (AR) process or order p.[18]

In this model, ϕ is the correlation coefficient showing the strength of the relationship between observations and z is an observation at a given time t. The symbol ~ means deviations from μ.

Box and Jenkins' explanation of the model of the moving average process is quite clear in this book. Since this information is necessary to understand later discussions, it is included here.

> Another kind of model of great practical importance in the representation of observed time series, is the so-called moving average process. Here we make z_t linearly dependent on a finite number of previous a's. Thus
> $$\tilde{z}_t=a_t-\theta_1a_{t-1}-\theta_2a_{t-2}-...-\theta_qa_{t-q}$$
> is called a moving average (MA) process of order q.[19]

Here, the only new notation is θ which is the correlation coefficient between the random shocks, the a's.

Many time-series contain components of both the autoregressive and the moving averages process. Thus, Box and Jenkins developed a model to represent this type of time-series which they called the autoregressive integrated moving average process or ARIMA. Researchers now had a mathematical model to represent time-series, but there was still something missing. As the title of their book indicates, Box and

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[18]Ibid., p. 9.

[19]Ibid., p. 10.

Jenkins were interested in applying time-series analysis to problems of forecasting and control, particularly in business and industry. Educational evaluators requirements are different. They need to know the probability that changes in a series are the result of chance or random fluctuation of the observations.

This question is resolved in the most recent and complete discussion of time-series design and analysis published to date, Design and Analysis of Time-Series Experiments, by Glass, Willson, and Gottman.[20] Building on the work which preceded it, the method involves determining the exact nature of the Box-Jenkins autoregressive integrated moving average model a particular time-series demonstrates by first identifying the series in terms of three basic properties: "1) the observed series is stationary or nonstationary, and if the latter, there exists a degree of 'differencing' of the series required to produce stationarity; 2) the order of the autoregressive component of the model; 3) the order of the moving average component of the model."[21] The three properties are denoted, respectively, as d, p, and q, of the ARIMA model. An example of what is meant by differencing follows:

> ...if the values of a new series are 1, 3, 5, 7, 9, etc. there is a linear trend. First differencing reduces the series to 2 (=3-1), 2 (=5-3), 2 (=7-5), 2 (=9-7) and the resulting series of all 2's is clearly stationary. If the values of a series are 1, 4, 9, 16, 25, 36, there is a quadratic trend. First differencing gives 3, 5, 7, 9, 11, and differencing again gives 1, 2, 2, 2, 2. In general, first differencing eliminates linear trend, second differencing eliminates quadratic trend, and so on.[22]

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[20]Glass, Willson, and Gottman, Time-Series Experiments. A complete citation appears earlier in footnote 11.

[21]Ibid., p. 78.

[22]Ibid., p. 78-9.

Differencing allows one to treat nonstationary series as if they were stationary. How much differencing to do is determined by examining the correlograms (the plots of lagged autocorrelation coefficients) of several differences of a series for pre- and post-I observations.

> If the correlogram neither damps out or truncates for a given d, but instead remains large, then nonstationarity at that level of differencing is indicated. The correlograms of successive differences should be inspected (d=1, 2, 3,...) until a plot approximating sationarity is observed; that is, differencing of the data is performed until the correlogram either shows a damping to zero (indicating an autoregressive component) or an abrupt drop to zero (indicating a moving average component).[23]

This is quite logical. If the observations are serially independent, then each observation is related to the one preceding it. This relationship shows up in the damping out of the correlogram. If the observations are affected by the random shocks of the moving average process, the correlogram drops off sharply to zero at a given level of differencing.

Once d has been found, components p and q can be identified by referring to a table prepared by Glass, Willson, and Gottman.

Identification of the Autoregressive and Moving Averages Components of an ARIMA (p, 0, q) Series[24]

Model	Autocorrelation	Partial Autocorrelation
ARIMA (p, 0, 0)	Dies out slowly	Cut off after lag p
ARIMA (0, 0, q)	Cuts off after lag q	Dies out slowly
ARIMA (p, 0, q)	Dies out slowly	Dies out slowly

After determining p, d, and q, "the parameters θ_1, θ_2,..., θ_q and ϕ_1, ϕ_2,..., ϕ_p must be estimated from the observed time series."[25]

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[23]Ibid., p. 27.

[24]Ibid., p. 98.

[25]Ibid., 101.

Intervention effects are tested by averaging pre- and post-I autocorrelations and then transforming the identified ARIMA model into the form of the general linear model. Values for θ and ϕ are tested between -1 and +1. For each value, the data are transformed to y, and the least-squares solution for $\hat{L}$ (the level of the series and δ (the change in level) is obtained. The correct solution is that which provides minimum error variance. The t-test can be used to test for significance.

Computer programs are available from Glass for both essential steps. CORREL identifies the ARIMA model.

> The program computes autocorrelations and partial autocorrelations for raw data and several differencings of the data. Partial autocorrelations are calculated via the Durbin Algorithm and many lie outside the range -1 to +1 due to inaccuracy of the estimation procedure. Standard errors are also given for each coefficient. Means and variances of the original and differenced data are also printed. A chi-square test is performed of whether the series or differenced series is 'white noise'. In addition, a seasonal option is available in CORREL for identifying cyclic series; a known cycle length $\underline{s}$ is entered into the program and differences corresponding to a multiplicative model...are formed and autocorrelated.[26]

The program TSX, for Time-Series Experiment, allows one to test intervention effects.

> The basic input into this program is the data $\underline{z_t}$, the values of $\underline{n_1}$ and $\underline{n_2}$ and the indices $\underline{p}$, $\underline{d}$, $\underline{q}$, of the ARIMA which the data have been identified as following. The program transforms the observations by means of the psi-weights formulation into $\underline{y}$, which is in linear model form, a least-squares analysis is then performed. Output from the program comprises error variances from the least-squares analysis and the point estimates and t-tests (for significance of difference from zero) for $\underline{L}$ and δ. Since $\phi_1,\ldots\phi_p$, and θ_q are known the transformation and least-square analysis is performed for all combinations of values of these parameters which lie in the invertibility-stationarity regions. Upper limits on the indices $\underline{p}$, $\underline{d}$, and

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[26] Ibid., p. 118.

> q are 3, 4, and 3, respectively; nearly every process encountered in practice can be accomodated within these limits.
>
> Unless otherwise specified, it is assumed in the program that the intervention effect is an abrupt and constant change, δ, in level of the series. This option can be overridden by entering a design matrix X which specifies the number and nature of intervention effects across time.[27]

The invertibility-stationarity regions mentioned above refers to a set of conditions that depend on the value of p or q. The descriptions of CORREL and TSX complete the discussion of the efforts made to devise a test of significance for time-series. We can turn now to an examination of several studies which have put these advances in inferential statistics to use.

Time-series design and analysis have been used to good advantage in testing the impact of legal reform. The four studies most frequently cited in the literature are reviewed here briefly as examples. Two articles in the August 1968 issue of Law and Society Review examine a Connecticut crackdown on speeding in the light of time-series design and its statistical analysis. In the first article, Donald T. Campbell and H. Lawrence Ross[28] focus on matters of research design. They point out that by examining the reduction in highway deaths which occurred after the crackdown as a time-series or a multiple time-series the reduction in deaths which occurred is not as dramatic as the then governor, Abraham Ribicoff, had stated. State officials had only considered the death rates in the one year immediately preceding the crackdown and the one year immediately following it. The former had been a year in which

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[27] Ibid., pp. 162-63.

[28] Donald T. Campbell and H. Lawrence Ross, "The Connecticut Crackdown on Speeding: Time Series Data in Quasi-Experimental Analysis," Law and Society Review 3 (August 1968): 33-53.

highway death rates in the state had hit a record high. In considering several years prior to and succeeding the intervention, Campbell and Ross find solid evidence for the influence of rival hypotheses for the reduction of the death rate.

Glass, in the second article[29], applies the statistical procedures discussed above and finds a significant difference between the shift in the highway death rate of Connecticut and the average shift of rate of four neighboring states over the same time period. He cautions, however, against neglecting the real possibility of rival hypotheses in interpreting the data. In this instance, for example, the fact that the crackdown had occurred after a year in which highway death rates had hit an all-time high might itself be the cause for the decrease the following year. This is a good example of the regression effect in operation. Glass, Ross, and Campbell agree that the level of the rate changed at the time the crackdown began. They suggest, however, that the change was neither as drastic as public officials indicated nor due only to the state's crackdown. They also agree that time-series design and analysis provide the most productive way to examine this question under the prevailing conditions.

In 1971, Glass, Tiao, and Maguire[30] analyzed the data of a study concerning the revision in 1900 of German divorce laws and came to different conclusions from the original authors. The latter had

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[29]Gene V. Glass, "Analysis of Data on the Connecticut Speeding Crackdown as a Time-Series Experiment," Law and Society Review 3 (August 1968): 55-76.

[30]Gene V. Glass, George C. Tiao, and Thomas O. Maguire, "The 1900 Revision of German Divorce Laws: Analysis of Data as a Time-Series Quasi-Experiment," Law and Society Review 5 (May 1971): 539-62.

examined the fit and shape of pre- and post-intervention regression lines and concluded that the nation-wide legal revision had had neither immediate nor long range effects on divorce proceedings in Germany. The former, employing time-series analysis, conclude that, in fact, there was a statistically significant change in the level of divorce as a result of the legal reform. They call to task Rheinstein, an early reviewer of the original study for his unfortunate choice of language, "...it (the change in divorce rate) was insignificant and without lasting effect."[31] Glass, Tiao, and Maguire consider the length of the effect to be a separate question.

> Whether the effects were temporary or relatively permanent cannot be determined with a high degree of confidence from the available data. The possibility that the effects were temporary should not be cited as though it somehow calls into question the one conclusion for which convincing evidence exists, namely that both the divorce and petition for reconciliation rates show the effect of adoption of the new Civil Code in 1900.[32]

In time series analysis as in other instances of inferential statistics, accurate interpretation of the data is vital.

The final study to be cited, "Determining the Social Effects of a Legal Reform: The British 'Breathalyser' Crackdown of 1967"[33], demonstrates several improvements over earlier studies. This legal crackdown, instituted to remove drunken drivers from the road, was not

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[31]Max Rheinstein, "Divorce and the Law in Germany: A Review," American Journal of Sociology 65 (March 1960): 489-498 cited by Glass, Tiao, and Maguire, "1900 Revision of German Divorce Laws," p. 558.

[32]Glass, Tiao, and Maguire, "1900 Revision of German Divorce Laws," p. 561.

[33]H. Lawrence Ross, Donald T. Campbell, and Gene V. Glass, "Determining the Social Effects of a Legal Reform: The British 'Breathalyser' Crackdown of 1967," American Behavioral Scientist 13 (March/April 1970): 493-509.

a reaction to a highly publicized death rate. The approach, based on careful study beforehand, was an attempt to alleviate a chronic problem rather than to offer a knee-jerk reaction to a crisis. Thus, the regression effect, a powerful and plausible rival hypothesis in the Connecticut program, was not an issue here. Other plausible rival hypotheses were carefully considered. Because of the nature of the problem and the manner in which the reform was conducted, these rival hypotheses could be rejected. For example, the accompanying publicity campaign is ruled out as a rival causal influence because "a similar safety campaign conducted in Britain in 1964, on the same scale and with the same media as the 1967 campaign, had had no notable effect on the casualty rate."[34] In like manner, other rival hypotheses are rejected, and the authors conclude that the breathalyser crackdown did reduce significantly the casualty rate on British roads.

The four studies summarized indicate the potential power of time-series design and analysis. They also suggest that Campbell's strictures about quasis-experimental designs are still relevant. First, like all quasi-experimental designs, time-series should be done when more elegant designs are impossible. Second, the data gathered must support the interpretation, and third, plausible rival hypotheses must be considered and rejected. Nevertheless the improvements made in the statistical analysis and in the application of time-series since the publication of Campbell and Stanley's monograph make it a promising methodology for program evaluation.

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[34]Ibid., p. 505.

In his 1975 unpublished report [35] on the trends of standardized test scores of Virginia's public school students, Dr. Claude Sandy, Associate Director of Testing of the Department of Education, looked at fourth and ninth grade test scores as time-series data. He suggested that such an analysis indicated declines may have been the result of changes in the tests and their norm groups rather than an actual decline in the ability or achievement of Virginia's public school students or in the effectiveness of the public school system. Dr. Sandy concludes his report by suggesting that other factors[36] which may influence test scores need further study.

An essential aspect of this evaluative study of the Standards of Quality and Objectives will be the examination as a time-series of the standardized test scores of those grades in Virginia's public schools which have been tested the longest. In addition, certain unobtrusive data will also be considered. It is assumed that the impact of the Standards of Quality should become evident by changes in these data. The strength of that impact should be seen in the size of the changes, the direction of the changes, the number of measures that change, and the agreement among these measures in the size and direction of their changes.

The time appears ripe to apply this methodology to education. In this limited evaluative study of Virginia's Standards of Quality program,

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[35] Claude Sandy, "Study of Test Score Trends in Virginia: Preliminary Report" (unpublished manuscript: State Department of Education, February 1975).

[36] He refers specially to "...changes in promotion policies and increases in the percentage of students remaining in school." Ibid., p. 12.

the time-series design and the analysis described earlier have much to offer. First, the conditions are appropriate. The lack of advance planning for an evaluation and the nature of the legislation which brought the program into being do not allow for a strict experimental design with random selection, random placement, and a control group. Second, the regression effect will not be a plausible rival hypothesis because the program was not a reaction to a crisis. Third, nonreactive measurements in the form of state records are available. Fourth, the experience of researchers in other fields in applying this approach to legally mandated programs indicates its feasibility. Fifth, the program has gone through a complete cycle in terms of its own operation. Enough time has elapsed for the influence of the program to be felt. Sixth, the availability of the necessary computer programs makes the computation involved in the task manageable.

A serious limitation to the use of time-series analysis as developed by Glass, Willson, and Gottman is the minimum number of time points needed for model identification. "It will be quite difficult to identify most processes with any confidence when fewer than about fifty time points are available. Occasionally a particularly well-behaved series will show its true nature in thirty-five or forty observations."[37] Given the short history of the Standards of Quality and Objectives, statistical analysis employing TSX and CORREL can be conducted only on data gathered monthly, weekly, or daily.

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[37] Glass, Willson, and Gottman, Time-Series Experiments, p. 112.

Five-Year School Improvement Plan Rating Scale

The Five-Year School Improvement Plan Rating Scale is an instrument developed by Dr. Jean M. Epps for her 1976 doctoral dissertation[38] and was designed to rate the quality of comprehensive, systematic planning and participative decision-making in the multi-year plans submitted by local divisions to the Virginia Department of Education. The instrument, which allows a rater to perform a content analysis of a multi-year plan, was developed from criteria based on literature reviews of planning and decision-making. In its final form, the rating scale was

> an instrument with five options, ranging from one to five for each item. A rating of five represented the highest possible rating for that particular item and meant that the criterion was present and was in optimum form. It also meant that an extensive amount of attention had been given to this aspect of planning by the planning group. A rating of one represented the absence of the criterion, indicating that no attention was given this aspect of planning by the planning group or that a lack of planning capability in this area of planning existed.[39]

The submission of a multi-year plan by each division to the Department of Education was a requirement of the 1972-1974 Standards of Quality and Objectives. The Five-Year School Improvement Plan Rating Scale, as its name suggests, was specifically designed to rate multi-year plans required by the planning standard.

To determine a plan's total rating, "the ratings on the individual items of the Five-Year School Improvement Plan Rating Scale which related

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[38] Dr. Jean M. Epps, "Five-Year School Improvement Plan Rating Scale" in "An Analysis of Comprehensive Curriculum Planning Processes Employed in the School Division os Virginia" (Ed.D. dissertation, University of Virginia, 1976). Appendix B.

[39] Ibid., p. 103.

to planning activities were summed and the plans were rank-ordered."[40] Categories of high, average, and low for plans were established using the following composite scores:

Categories of Plans and Score Range[41]

Plan Category	Score Range
High	180-144
Average	143-73
Low	72-36

Inter-rater reliability was determined by having three people use the rating scale to analyze plans separately. Two raters each analyzed two plans, and the third rater, Epps, analyzed all four plans. "Ratings were compared and a final rating determined for each item. It was found that only two items showed a variance of more than one on the Likert scale. The Pearson product-moment coefficient formula was used to estimate the reliability of the rating scale. A .95 reliability coefficient was attained."[42]

Population

The population in this study consists of all the school divisions in the Commonwealth of Virginia.

Sample

The sample was drawn from those school divisions in Virginia whose 1975-1980 versions of their Five-Year School Improvement Plans were ranked as high, average, and low in overall quality on Dr. Jean M. Epps'

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[40] Ibid., p. 161.

[41] Ibid., p. 161

[42] Ibid., p. 159-60.

rating instrument. Because so few of the division plans ranked high and low (five and eleven, respectively), all of the divisions whose plans fall in these categories were studied. Most of the plans (114) received an average rating. These were stratified according to Epps' categories of large, medium and small school divisions based on student population. These categories were taken from the Racial-Ethnic Survey of Public School Students and Professional Staff in Virginia, 1973-1974.[43] The population categories are as follows:

Categories	Student Population of School Divisions	Number of School Divisions
Small	0-4,000	77
Medium	5,000-10,000	29
Large	Over 10,000	24

Three small, one medium, and one large division were randomly selected from divisions whose multi-year plans were rated average.

An ethical consideration must be noted here. Epps guaranteed the Virginia State Department of Education that the ratings of the divisions' plans would be reported anonymously. To gain access to her data and to allow Epps to remain true to her pledge, the Department of Education was requested to allow Epps to release the names of the school divisions and the ratings of their plans to this researcher who also pledged to maintain their anonymity. The Department agreed, Epps graciously released her data, and the school divisions in the sample will not be identified by name. The number of divisions in each category is given in Table 1.

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[43]Virginia, Racial-Ethnic Survey of Public School Students and Professional Staff in Virginia, 1973-1974 (Richmond, Virginia: Virginia State Department of Education) in "Curriculum Planning Processes in Virginia" by Jean M. Epps, p. 167.

TABLE 1

NUMBER OF SAMPLE DIVISIONS IN EACH CATEGORY

Size	Score: High	Score: Average	Score: Low
Large	1	1	2
Medium	1	1	2
Small	3	3	7

The Goal to be Evaluated

As in most large-scale programs which are subject to the influences of the political process, the goals of Virginia's statewide educational program, known as the Standards of Quality and Objectives, have always been stated generally and revised frequently. For example, the first set of goals as enacted in 1972 by the General Assembly read as follows:

> The standards and objectives are designed to help each child to develop as fully as possible in the following ways:
>
> To acquire competence in using the fundamental learning skills and to acquire basic knowledge needed for participation in today's society;
> To acquire skills and knowledge needed for education beyond high school or for employment;
> To acquire a sense of personal worth and dignity;
> To develop attitudes and values that lead to responsible participation as a citizen of our republic;
> To develop understanding of one's relationship to his ecological, physical, economic, and social environment;

To understand and appreciate people of different nationalities and ethnic groups and their contributions to the development of our nation and culture;
To develop personal habits for continuing physical and mental health;
To appreciate beauty and to understand its contributions to daily life.[44]

On December 12, 1975, the State Board of Education narrowed these eight goals to the following six:

Public education in Virginia seeks to aid each pupil, consistent with his or her abilities and educational needs to:

1. become competent in the fundamental academic skills;
2. be qualified for further education and/or employment;
3. participate in society as a responsible citizen;
4. develop ethical standards of behavior and a positive and realistic self-image;
5. exhibit a responsibility for the enhancement of beauty in daily life; and
6. practice sound habits of personal health.[45]

The 1976-1978 goals were the same as those for 1974-1976 with the omission of the word "and" in goal 5. For 1978-1980, however, the goals were again modified.

..., the goals of public education in Virginia are to aid each pupil, consistent with his or her abilities and educational needs, to:

1. Develop competence in the basic learning skills,
2. Progress on the basis of achievement,
3. Qualify for further education or employment,
4. Develop ethical standards of behavior and participate in society as a responsible citizen,
5. Develop a positive and realistic concept of self and others,
6. Endeavor to enhance the beauty of the environment and everyday life,

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[44]Virginia, General Assembly, Standards of Quality and Objectives for Public Schools in Virginia: 1972-1974, Introduction by Woodrow W. Wilkerson.

[45]Virginia, Resource Guide for Assessing Current Status of Student Performances (Richmond, Virginia: State Department of Education, 1976),

7. Practice sound habits of personal health;...[46]

The generality of these goal statements and the frequency of their revision pose no small problems for a summative evaluation. Careful reading, however, indicates that several goals, variously stated, have remained relatively constant. They can be paraphrased as follows:

> The goals of the Standards of Quality and Objectives are to enable each student, consistent with his ability to:
>
> 1. become competent in fundamental academic skills,
> 2. be qualified for further education and/or employment,
> 3. participate in society as a responsible student, and
> 4. practice sound habits of personal health.

A fifth goal, which has never been officially listed but appears in almost every political discussion of the program, is the equalization of educational opportunity throughout the Commonwealth. Delegate Alan Diamonstein was chairman of the Joint-House Senate Subcommittee on Education when he was asked what was the legislative intent in writing the standards into the Constitution. He responded that the disparity of educational opportunity has been a concern and the Standards were intended to "equalize opportunity for quality education."[47]

From the outset of the program, the generality of goal statements have made summative evaluation difficult. Moreover, the evaluator is hard-pressed to find provisions within the program for any criteria by which he can assess goals 2 through 5. In 1976, the State Department of Education published the Resource Guide for Assessing Current Status of Student Performance which suggested instruments to measure each goal. This was an attempt to help local divisions assess performance.

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[46]Virginia, General Assembly, Standards of Quality and Objectives for Public Schools in Virginia: 1978-1980, p. 1.

[47]Interview, November 18, 1977.

This study is limited to an evaluation of the goal of individual competence in fundamental academic skills. Variously stated, this has always been the first goal listed which gives some indication of its importance. In addition, the data already on record in the form of standardized test scores, as well as relevant unobtrusive measures, make this goal the most amenable to summative evaluation.

Criteria of the Standards of Quality and Objectives

The Standards of Quality have never specifically delineated the criteria by which one could assess whether individual students are becoming competent in fundamental academic skills. Moreover, those academic skills which should be considered fundamental were not made explicit until the 1976-1978 Standards. The fundamental skills were defined as reading, communications, and mathematics, a modern version of the three r's.

Turning to the Objectives portion of the program, however, one finds some quantifiable data that can be used to make inferences concerning the achievement of this goal. The Objectives found in the years spanning 1972-1974 contained Performance Objectives for both the Commonwealth and for the local divisions.[48] In many instances, state and division Objectives specify the number or percentage of pupils and teachers enrolled in certain programs, possessing specified credentials, or falling into certain categories. For example, State Objective 4 for 1972-1974 was "At least thirty-one thousand, seven hundred fifty five-year-old children in the State should be enrolled in kindergarten." At

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[48]A complete set of Standards of Quality and Objectives are located in the Appendix.

the school division level, Objective 6 said "Teachers shall be assigned to teach only those subjects for which they have certificate endorsements unless exceptions are granted by the Board of Education." However, such objectives are not valid indicators of a student's competence in fundamental academic skills.

Other objectives, however, appear applicable and these will be used as one category of criteria by which the achievement of the goal in question will be assessed. Specifically, the following Performance Objectives will be considered criteria. The original number used to designate the objectives will be used here.

State Performance Objectives for 1972-74

2. The percentage of the school population overage in the elementary grades should not exceed twenty percent of the enrollment in grades K-7.
3. The percentage of the student population achieving at or above grade level norms or the equivalent as measured by approved standardized achievement tests should equal or exceed the mean ability level of the student population as measured by appropriate scholastic aptitude tests.

School Division Performance Objectives for 1972-74

2. The percentage of the school population overage in grades K-7 should be reduced by at least two percent each year or until a level not exceeding twenty percent is reached.
3. The percentage of the student population achieving at least or above grade level norms or the equivalent as measured by approved standardized achievement tests should equal or exceed the mean ability level of the student population as measured by appropriate scholastic aptitude tests.
5. The percentage of attendance of pupils shall not fall below the average of the last three years or ninety percent of school membership.

Thus, for 1972-74, competence in fundamental academic skills at the state level was measured by overageness in grades K-7 and by relating achievement test data to aptitude test data. At the local level, the same data were used with the inclusion of attendance records. The assump-

tions are that attendance is related to performance and that students who are performing at or close to their ability level will progress successfully through the public school system. Competence then becomes performing at a level consistent with one's ability.

Unobtrusive Measures

Rationale for Using Unobtrusive Measures

The criteria mandated in the first two revisions of the Standards of Quality and Objectives provide, by themselves, little data for evaluating the achievement of individual competences in fundamental academic skills. The criteria change too often, are too few in number, and often appear too indirect. The need for a more convincing assessment was, to no small degree, the motivation for abandoning such measures and adopting a minimal competency test. Changing criteria, however, does not necessarily ensure the accomplishment of a goal, and, in fact, the question of the causal influence of the Standards of Quality and Objectives on student achievement remains unresolved.

Traditional research practice in educational administration would attack the question by surveying or interviewing those close to the problem. Such an approach was rejected in this study for several reasons. First, interviewing a sufficient number of people was simply not feasible. Second, the return rate of surveys is notoriously poor. Third, the data resulting from interviews and survey are merely measures of the perceptions of those involved, and a less impressionable measure was sought. Fourth, Musselman's dissertation[49] had already shown

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[49]Don R. Musselman, "The Development of Article VIII of the 1971 Constitution: Its Impact on Educational Programs and the Extent to Which Those Influences are Consistent with the Intent of the Constitution" (Ed.D. dissertation, Virginia Polytechnic and State University, 1978).

that Article VIII of the Virginia Constitution, the new Education Article, met the intent of the legislators who had originally presented it to the citizens of the Commonwealth. Musselman, however, did not examine the stated goals of the program, and the frequency with which subsequent General Assemblies have made substantive changes in the program suggest caution in using his findings. For all these reasons the survey and interview were ruled out, and the use of unobtrusive measures in the time-series research design was adopted.

Perhaps the most convincing proponent for the use of unobtrusive measures - specifically, archival data - in program evaluation is Donald T. Campbell. In at least three different articles published over a period of thirteen years, he has advocated the use of such data in conjunction with the time-series design. In his 1963 article, "Administrative Experimentation, Institutional Records, and Nonreactive Measures,"[50] Campbell argues that the artificiality of laboratory experiments limited the validity of their findings. "What we social scientists must do," he says, "is convince administrators of the necessity of keeping books on the experiments they make and organizing their record systems and publication practices so that they let us know what they have tried and how it came out."[51] Noting the atypical reactions often prompted by typical data-gathering techniques, he suggests the use of measures that are unobtrusive for the given occasion. He recommends that, "...one of the ways of being alert to the possibility of nonreactive measures is to look at

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[50]Donald T. Campbell, "Administrative Experimentation, Institutional Records, and Nonreactive Measures," in Improving Experimental Design and Statistical Analysis, ed. Julian C. Stanley (Chicago: Rand McNally & Co., 1967), pp. 257-301.

[51]Ibid., p. 259.

those things that we are already keeping book on, those institutional records which are already a part of the natural situation into which we wish to generalize." It should not be assumed that he is talking about exotic or anecdotal records, "The type of records I had in mind were things like grades, examination scores, absences, dropout rates, disciplinary infractions, nurses' rates, whatever you have without having to go to the Ford Foundation for a million dollars."[52]

Six years later, Campbell makes the same point in a slightly different way. In "Reforms as Experiments," he suggests that legal or social reforms present great opportunities for collecting unobtrusive data on real situations which can lead to improved decision-making.

> "The United States and other modern nations should be ready for an experimental approach to social reform, an approach in which we try out new programs designed to cure specific social problems, in which we learn whether or not these programs are effective, and in which we retain, imitate, modify, or discard them on the basis of apparent effectiveness on the multiple imperfect criteria available."[53]

By the "multiple imperfect criteria available," he means using as many relevant unobtrusive measures as possible. Relying on a single unobtrusive measure presents most of the weaknesses of the single survey or questionnaire. Using several imperfect measures allows their individual weaknesses to cancel each other out. The clearest explanation of this "triangulation in operationism" is found in Unobtrusive Measures: Nonreactive Research in the Social Sciences, the definitive work to date on the topic, in which Campbell collaborated.

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[52] Ibid., pp. 262-263.

[53] Ibid., p. 266.

> Once a proposition has been confirmed by two or more independent measurement processes, the uncertainty of its interpretation is greatly reduced. The most persuasive evidence comes through triangulation of measurement processes. If a proposition can survive the onslaught of a series of imperfect measures, with all their irrelevant error, confidence should be placed on it. Of course, this confidence is increased by minimizing error in each instrument and by a reasonable belief in the different and divergent effects of the sources of error.[54]

Campbell uses several examples, already mentioned in this chapter, of the time-series research design employing unobtrusive measures to support his position - a speeding crackdown in Connecticut, a change in recording crime in Chicago, and a change in German divorce laws. In each instance, public records are used to assess the effect of the change.

In the most recent of the three articles dealing with unobtrusive measures, Campbell advocates the establishment of data banks of unobtrusive measures for localities so that the effect of programs can be measured by time-series employing non-reactive data. Calling the data "focal local indicators"[55] he argues the differential implementation of programs would allow the important comparisons of the data could be collected and identified for localities. Concerning the questions of cost and intrusion of privacy, he says the benefits would be worth the rather minimal costs and computer procedures already exist for guaranteeing the privacy of individual records.

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[54]Donald T. Campbell, "Reforms as Experiments," in Evaluating Action Programs: Readings in Social Action and Education, ed. Carol H. Weiss (Boston: Allyn and Bacon, Inc., 1972), p. 187.

[55]Donald T. Campbell, "Focal Local Indictors for Social Program Evaluation," in Evaluation Studies Review Annual: Volume 2, ed. Marcia Guttentag with Shalom Saar (Beverly Hills, California: Sage Publications, 1977), p. 125.

To summarize, the arguments for the use of unobtrusive data in a time-series design to conduct program evaluation proved compelling and, therefore, this approach was employed in this study.

The Unobtrusive Measures Used

The following unobtrusive measures will be used in this study to operationalize the goal of individual competence in fundamental academic skills.

1. Age - grade distribution data
2. Retentions, dropouts, and failures
3. Attendance data

The above measures were selected for two reasons. First, they have long been collected and reported yearly by the Department of Education as a matter of record and are unobtrusive measures. Second, it is assumed that if more individual students in Virginia become competent in fundamental academic skills, the change should be reflected in these measures.

Research Hypotheses

The research hypotheses guiding this study fall into two groups. The first category of hypotheses is concerned with the influence of the 1972-1974 Standards of Quality and Objectives on measures specified in the Standards themselves as performance objectives which can be used to assess the achievement of the broad goal of student competence in fundamental academic skills. These measures and the hypotheses regarding them are stated in table 2.

TABLE 2

HYPOTHESES REGARDING PERFORMANCE OBJECTIVES IN THE 1972-74 STANDARDS OF QUALITY AND OBJECTIVES

Performance Objective	Hypothesis
1. Overageness in K-7	1. The level of mean overageness in grades K-7 in the sample divisions, considered by score or size, and in Virginia has not changed since the introduction of the 1972-74 Standards of Quality and Objectives.
2. Attendance in K-12	2. The level of mean attendance in grades K-12 in the sample divisions, considered by score or size, and in Virginia has not changed since the introduction of the 1972-74 Standards of Quality and Objectives.
3. Ability and Achievement Test Scores	3. Mean scores on standardized tests of ability and achievement in the sample divisions, considered by score or size, and in Virginia have not changed since the introduction of the 1972- Standards of Quality and Objectives.

The second group of hypotheses is concerned with the influence of the 1972-74 Standards of Quality and Objectives on unobtrusive measures selected to assess the goal of student competence in fundamental academic skills. These measures and the hypotheses regarding them are stated in table 3.

TABLE 3

HYPOTHESES REGARDING UNOBTRUSIVE MEASURES

Unobtrusive Measure	Hypothesis
1. Retentions	1. The level of mean retentions in the

TABLE 3-Continued

Unobtrusive Measure	Hypothesis
	sample divisions, considered by score or size, and in Virginia has not changed since the introduction of the 1972-74 Standards of Quality and Objectives.
2. Overageness	2. The level of mean overageness in the sample divisions, considered by score or size, and in Virginia has not changed since the introduction of the 1972-74 Standards of Quality and Objectives.
3. Attendance	3. The level of mean attendance in the sample divisions, considered by score or size, and in Virginia has not changed since the introduction of the 1972-74 Standards of Quality and Objectives.
4. High School Graduates	4. The mean number of high school graduates in the sample divisions, considered by score or size, and in Virginia has not changed since the introduction of the 1972-74 Standards of Quality and Objectives.
5. High School Dropouts	5. The mean number of students in grades 8-12 who leave school and do not return has not changed since the introduction of the 1972-74 Standards of Quality and Objectives.

Summary of Chapter III

In Chapter 3, the following methodological issues concerning this study were discussed: the reasons for selecting the research model of evaluation and the time-series quasi-experimental design; the population under consideration and the sample selection procedures; the specific goal of the Standards of Quality and Objectives to be evaluated; the criteria taken from the program used to measure its success; a rationale for using unobtrusive data, as well as program criteria, to operationalize the goals; the specific unobtrusive measures selected; and the research hypotheses.

This study used the time-series quasi-experimental design to build on the work of Musselman and, to a much larger degree, Epps. The legislative intent of the Standards of Quality and Objectives examined by Musselman and as expressed in formal goal statements of the 1972-74 Standards of Quality and Objectives will be compared to a variety of direct and unobtrusive measures of student ability and achievement before and after the introduction of the legislation. Those divisions whose 1975-80 Five-Year Plans ranked high and low in quality on Epps's Five-Year Improvement Plan Rating Scale constitute a portion of the sample in this study. The remainder of the sample was randomly selected from the remaining divisions, stratified by size, whose plans rated average in quality. Data for the entire state were also collected on the same measures used for the divisions.

From 1952[56] to 1977, the means of the direct and unobtrusive

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[56]Because of changes in state programs not all data are available beginning with 1952. For example, the state's standardized testing program did not begin until 1959. Exceptions will be indicated as necessary in the text as well as in charts and tables.

measures are reported annually for the state and for the sample divisions ordered by plan quality and division size. The TSX and CORREL computer programs were used to determine whether any changes in means occur after the introduction of the Standards are of statistical significance.

The chart in figure 11 indicates the types of data used, the grade levels for which they were collected, the years for which it was collected, and the source of the data.

Figure 11

DATA BY TYPE, GRADE LEVEL, YEARS, SOURCE

Criteria from the 1972-74 Standards of Quality and Objectives

1. Overageness in Grades K-12

   Years: 1952-77

   Source: Superintendent's Annual Report

2. Percentage of Attendance in Grades K-12

   Years: 1952-77

   Source: Superintendent's Annual Report

3. Standardized Test Scorces - Grades 11 and 4

   Years: 1959-78

   Source: Division of Research, Evaluation, and Testing, Virginia State Department of Education

Unobtrusive Measures

1. Retentions in Grades K-7; 8-12; K-12; and 11 and 4

   Years: 1952-77

   Source: Superintendent's Annual Report

2. Overageness in Grades K-7; 8-12; K-12; and 11 and 4

   Years: 1952-77

   Source: Superintendent's Annual Report

3. Attendance in Grades K-7 and 8-12

   Years: 1952-77

   Source: Superintendent's Annual Report

4. High School Graduates

   Years: 1952-77

   Source: Superintendent's Annual Report

5. High School Dropouts

   Years: 1959-77

   Source: Facing Up and Final Annual Secondary School Report

CHAPTER IV

PRESENTATION OF THE DATA

Organization of Chapter IV

In this chapter, the data collected are presented and described. The first type of data to be presented are those criteria stipulated by the state and division performance objectives of the 1972-74 Standards of Quality and Objectives which give some measure of competence in fundamental academic skills, the goal under investigation. These performance objectives were:

> State Performance Objectives
> 2. The percentage of the school population average in the elementary grades should not exceed 20% of the enrollment in grade K-7.
> 3. The percentage of the student population achieving at or above grade level norms or the equivalent as measured by approved standardized achievement tests should equal or exceed the mean ability level of the student population as measured by appropriate scholastic aptitude tests[1]
>
> School Divisions Performance Objectives
> 2. The percentage of the school population average in grades K-7 should be reduced by at least two percent each year or until a level not exceeding twenty percent is reached
> 3. The percentage of the student population achieving at or above grade level norms or the equivalent as measured by approved standardized achievement tests should equal or exceed the mean ability level of the student population as

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[1]Virginia, General Assembly, Standards of Quality and Objectives for Public Schools in Virginia: 1972-74 (Richmond, Virginia: Commonwealth of Virginia, 1972), p. 4. Population for overageness refers to total enrollment. For the standardized testing objective, it means those students who were tested.

measured by appropriate scholastic aptitude tests[2]

5. The percentage of attendance of pupils shall not fall below the average of the last three years or ninety percent of school membership.[3]

The second classification of data included will be those unobtrusive measures which can be considered additional indicators of goal achievement. This information has been obtained from existing state records, reports, and publications. These measures are either extensions of the objectives set forth in the 1972-74 Standards of Quality and Objectives or data on variables relevant to the goal. These records, on a variety of characteristics, are the oldest and most comprehensive set of measures which have been kept in Virginia. When considered in combination with the end division performance objective, they provide the triangulation of measures needed to assess the goal of competence in fundamental academic skills.

The data are presented by variables in two forms. In the main body of chapter 4, they appear as time-series figures. The following order is generally used:

Variable

Mean percentage of students in high, average, and low divisions
Mean percentage of students in large, medium, and small divisions
State data by mean percentage

The high, average, and low categories come from the ratings of each of the sample divisions' 1975-78 Five-Year Improvement Plan received on

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[2]Ibid.

[3]Ibid, p. 5.

Epps's rating instrument.[4] The size categories are based on a racial ethnic study also used by Epps to form the basis of the rankings by size. The state data include every division in the Commonwealth. In Appendix B, the data appear in tables, the second format used.

The data for each variable are also presented for the sample divisions and the state by grade level in the following order:

Grades K-7
Grades 8-12
Grades K-12
Grade 11
Grade 4

Grade 11 was chosen for special emphasis because it has the longest history of standardized testing. Standardized tests of ability and achievement have been administered annually to some or all of Virginia's eleventh grade public school students since the beginning of the statewide testing program in 1959, with the exception of the 1977-78 school year. To avoid losing that year's data and to consider a group of students which entered school after the inception of the Standards of Quality and Objectives, the most recent series of test scores on fourth grade students were included.

Computer facilities of the Computer Center of the College of William and Mary were used, and the computer program known as Statistical Analysis System was employed initially to compile and analyze the data. The SAS/GRAPH computer program was used to draw and label plots of the data. This program selected the scale for the y axis by examining the

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[4]Jean M. Epps, "An Analysis of Comprehensive Curriculum Planning Processes Employed in the School Divisions of Virginia" (Ed. D. dissertation, University of Virginia, 1976), pp. 230-46. Dr. Epps granted permission to use her unreported raw data regarding the subscores and total scores divisions received on her rating instrument in the study.

range of y values and dividing it into equal segments.

All the data relating directly or indirectly to the goals of the Standards of Quality and Objectives were found to be collected annually. Thus, too few time points existed after 1972, the beginning of the Standards of Quality and Objectives, to employ the CORREL and TSX computer programs to test for significance. Figures will be presented and described in this chapter. Conclusions, recommendations and implications will be presented in chapter 5.

Tables 4 and 5 present, in summary fashion, the findings of this study with regard to the performance objectives of the 1972-74 Standards of Quality and Objectives as well as the unobtrusive measures used to assess the achievement of the goal of competence in fundamental academic skills. Following these tables, the data are presented in a series of figures and each figure is discussed in detail. The data are also presented in tabular form in Appendix B.

Division and State Performance Objectives of the 1972-74 Standards of Quality and Objectives

Description of Overageness in Grade K-7

Sample Divisions by Score

Figure 12. The mean percentage of students one or more years overage declined from 1953 when overageness was at its highest levels for all types of sample divisions (high 36.05%; average 33.58%; low 43.74%) to its lowest level in the 1973-75 time period (high-16.90% in 1974; average-17.75% in 1975; low-22.8% in 1973.) Divisions with plans receiving a low rating on the Multi-Year Improvement Plan Rating Scale had the highest percentage of overageness throughout the twenty-six year period under consideration. From 1952 to 1965, divisions with plans having an average rating had the lowest

TABLE 4

SUMMARY OF FINDINGS-PERFORMANCE OBJECTIVES

(A) Measure	(B) Hypothesis	(C) Conclusion	(D) Historical Trend	(E) Influenced by Score	(F) Influenced by Size	(G) Figures	(H) Tables	(I) Pre SOQ Pattern	(J) Post SOQ[2] Pattern
Overageness in K-7	No change in mean level since introduction of SOQ[1]	Hypothesis rejected	Yes	Yes	Yes	12-14	7-8	- -	+
Attendance in K-12	No change in mean level since introduction of SOQ	Hypothesis rejected	Yes	Yes	Yes	15-17	9-10	0	0
Ability and Achievement Test Scores	No change in mean level since introduction of SOQ	Hypothesis rejected	Yes	Yes	Yes	18-42	11-31	-	+

[1]SOQ - Standards of Quality and Objectives

[2]A plus (+) means the measure was increasing. A minus (-) means the measure was decreasing. A zero (0) means the measure was stable. The repeated use of a symbol indicates the relative strength of the change.

TABLE 5

SUMMARY OF FINDINGS-UNOBTRUSIVE MEASURES

(A) Measure	(B) Hypothesis	(C) Conclusion	(D) Historical Trend	(E) Influenced by Score	(F) Influenced by Size	(G) Figures	(H) Tables	Pre SOQ Pattern	Post SOQ Pattern
Retentions	No change in mean level since introduction of SOQ	Hypothesis rejected	Yes	Yes	Yes	43-57	32-41	--	+
Overageness	No change in mean level since introduction of SOQ	Hypothesis rejected	Yes	Yes	Yes	58-69	42-49	-	++
Attendance	No change in mean level since introduction of SOQ	Hypothesis rejected	Yes	Yes	Yes	70-75	50-53	0	0
High School Graduates	No change in mean level since introduction of SOQ	Hypothesis rejected	Yes	Yes	Yes	76-78	54-55	+	+
High School Dropouts	No change in mean level since introduction of SOQ	Hypothesis rejected	Yes	Yes	Yes	79-81	56-57	0	0

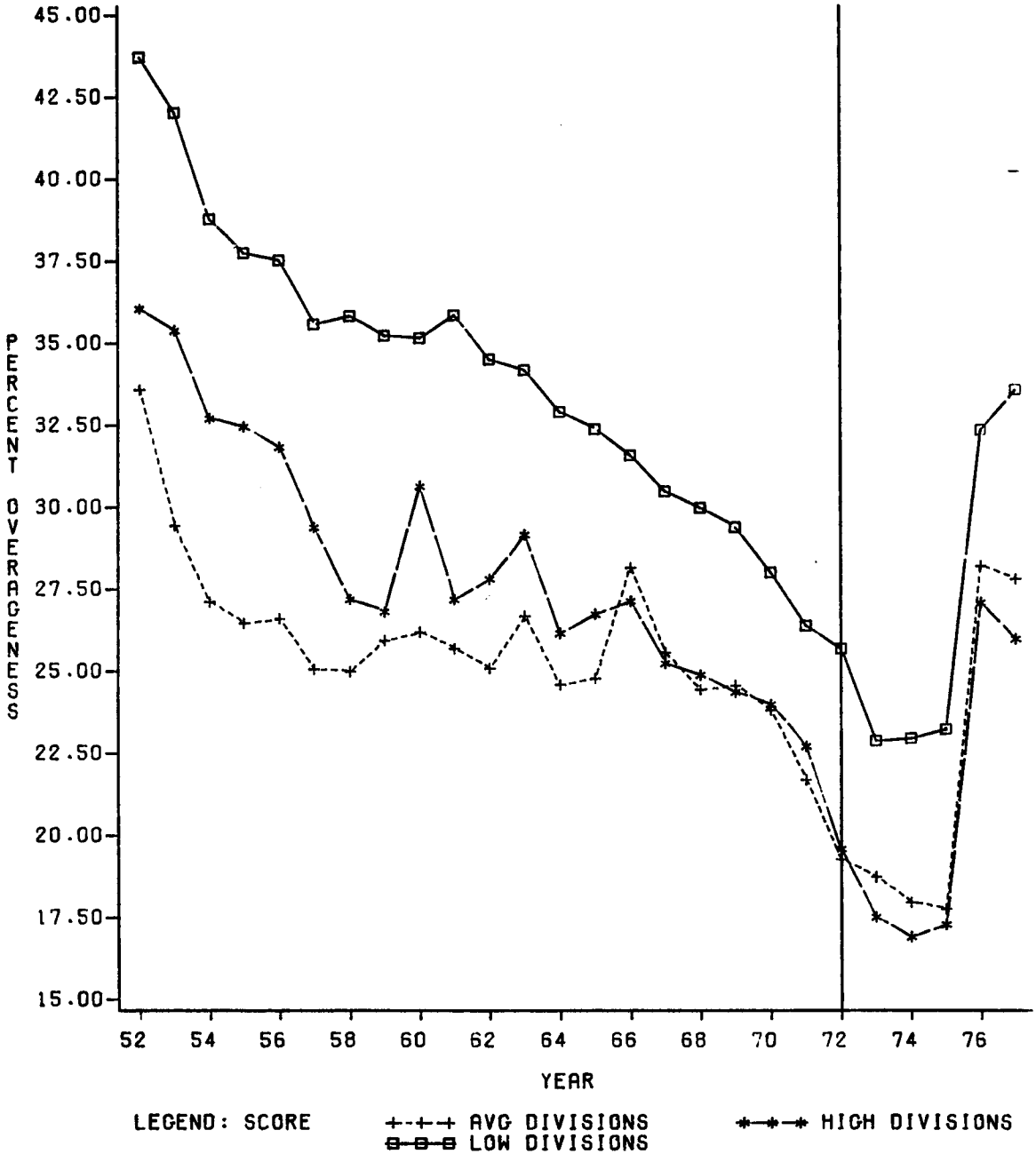
mean percentage of overageness. From 1965 to 1977, there was less than a 2% difference in the mean percentages of overageness between average and high divisions, although the high divisions' percentage tended to be smaller. Mean percentage of overageness for all divisions increased by at least 10% in 1976. The increasing trend appeared to continue in 1977 for low divisions. Overageness in divisions with Improvement Plans rated high decreased 1.10%. In divisions with plans rated average, it decreased by .4%.

Sample Divisions by Size

Figure 13. Large, medium, and small divisions had trends of declining percentages of overageness in K-7 from 1952 to the 1972-74 period. Large divisions consistently had the lowest mean percentage of overage students.

Large divisions also had the smallest decline in overageness. In no year from 1952 to 1975 was the mean percentage of overageness in large divisions greater than 22.78%. Medium and small divisions did not reach that level until 1973. Medium and small divisions had similar percentages of overageness for 11 years, and they declined by about the same amount each year. From 1952 to 1966, small divisions had the highest mean percentage of overageness. From 1967 to 1975, medium divisions had a higher mean percentage of overageness than small divisions except for 1973. In 1976 and 1977, small divisions had the highest mean percentage of overageness. In 1976, all divisions had increases in the mean percentage of overageness; large divisions - from 18.18% to 24.90%; medium divisions - from 20.96% to 27.30%; small divisions - from 21.15% to 32.70%. The trend of increasing overageness continued through 1977 for medium divisions. In both large and medium

FIGURE 12:
MEAN PERCENTAGE OF OVERAGENESS IN GRADES K-7 IN SAMPLE DIVISIONS BY SCORE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

divisions, the mean percentage of overageness decreased by less than one percent (.8% and .29%, respectively).

State

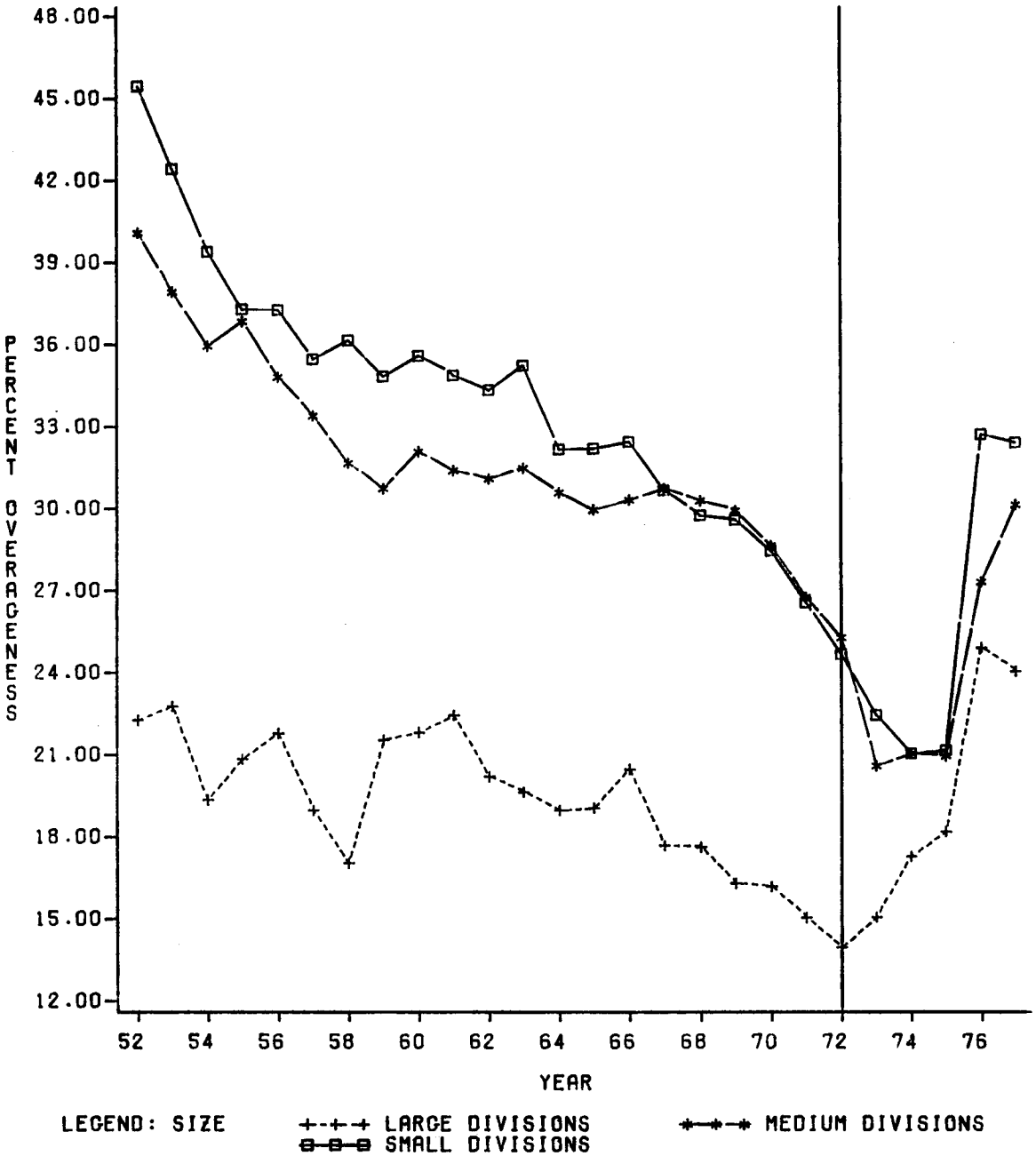
Figure 14. Statewide data indicate a decline in the mean percentage of overageness in K-7 from 35.93% in 1952 to 19.77% in 1973. An 8% increase raised the level in 1974 to 19.21%. This declined in 1975 to 18.81%, and increased again in 1976 to 27.3. This increase persisted in 1977 to reach 27.07%.

Description of Attendance in Grades K-12

Sample Divisions by Score

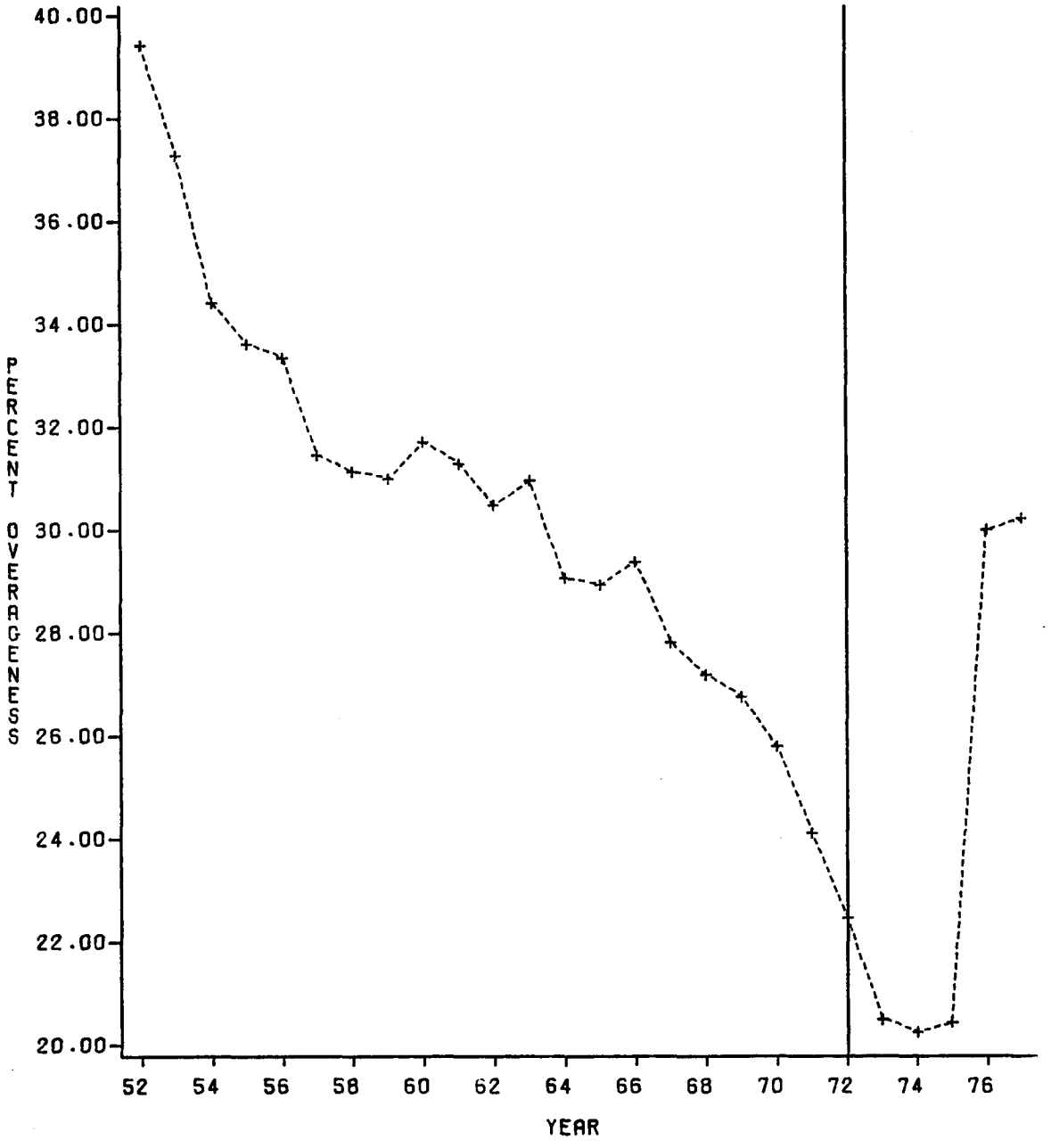
Figure 15. At no time from 1952 to 1977 was mean attendance in K-12 lower than 90.73% when divisions are considered by score. For all years, with the exception of 1952, 1957 and 1975, mean attendance in K-12 was greater than 92%. Attendance rates were highest from 1960 to 1967 and slightly lower in the 1950s, late 1960s, and 1970s. Divisions with Improvement Plans having high ratings had the highest mean in twenty of the twenty-six years studied. Low divisions had the lowest mean percentages of attendance in fourteen years and the highest in only one (1969). Average divisions fell in thirteen years between the highs and lows. Because the range of this data was narrow, from 90.73% to 95.25%, the figure tends to exaggerate differences. Attendance data for the sample were in a slight but steady decline from 1967 to 1977. Differences among all school divisions were slight but persistent. From 1972 to 1977, high, average, and low divisions' mean attendance rates tended to rank 1, 2, 3, respectively. In 1972, high and average divisions had identical percentages of attendance, and in 1975 low divisions had a higher attendance rates than average divisions.

FIGURE 13:
MEAN PERCENTAGE OF OVERAGENESS IN GRADES K-7 IN SAMPLE DIVISIONS BY SIZE



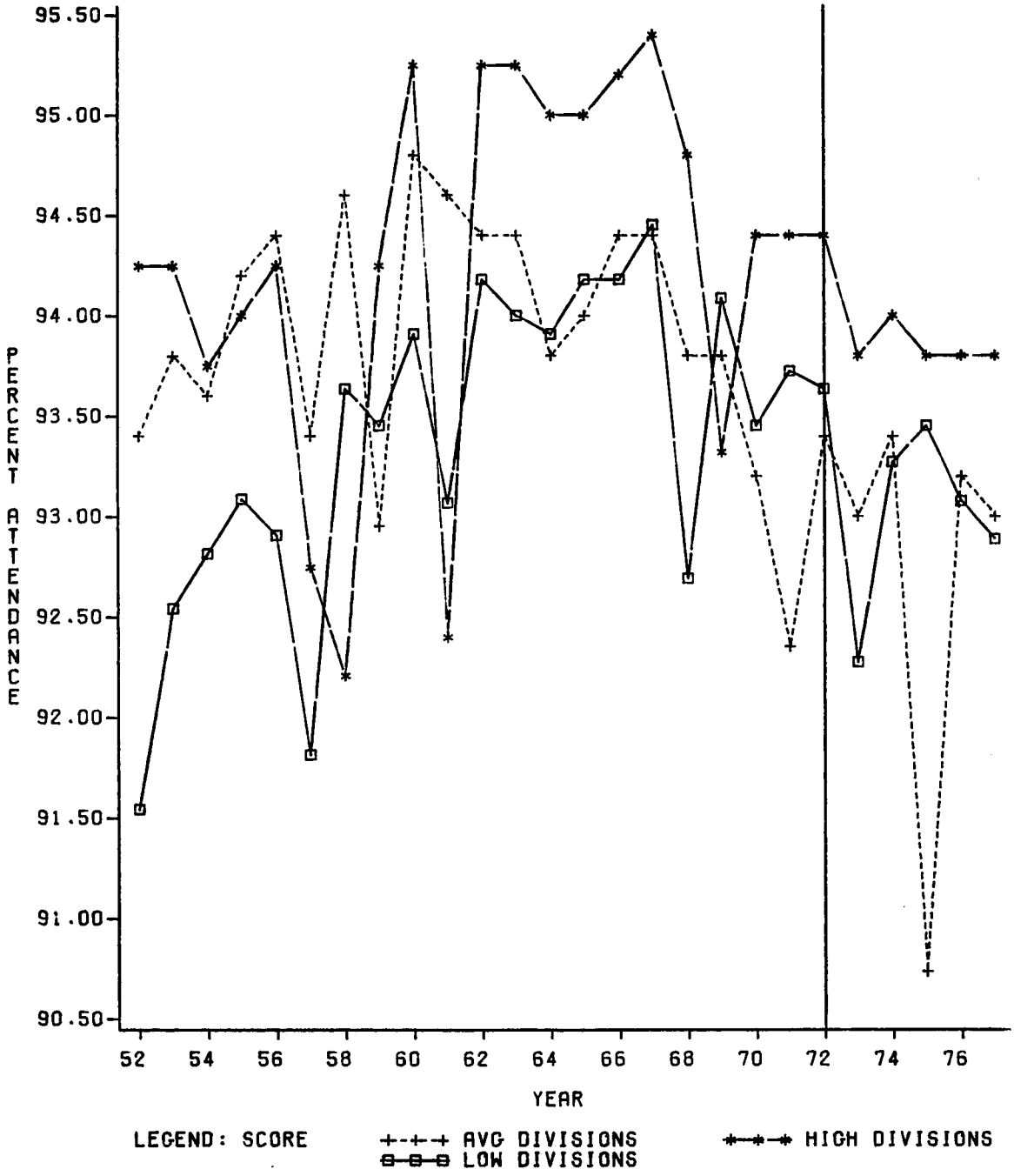
LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 14:
MEAN PERCENTAGE OF OVERAGENESS IN GRADES K-7 IN VIRGINIA



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 15:
MEAN PERCENTAGE OF ATTENDANCE IN GRADES K-12 IN SAMPLE DIVISIONS BY SCORE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

Sample Divisions by Size

Figure 16. At no time from 1952 to 1977 was mean attendance in K-12 lower than about 91% (90.26% in 1975 in large divisions) when divisions are considered by size. Attendance tended to rise from 1952 to the mid-sixties, although there was some fluctuation in the late fifties and early sixties. A decline set in at this period which continued to 1973. A slight increase occurred in 1974 for large, medium, and small divisions. This was followed by declines in large and medium divisions in 1975 and 1976, respectively. From 1963 to 1975, medium divisions had the highest mean rates of attendance, large divisions the lowest, and small divisions were in between. Differences, which were slight but persistent, are exaggerated in the figure because of the small range (95.00% to 90.96%). In 1976 and 1977, small divisions had the highest mean rates of attendance followed by large divisions, then medium ones.

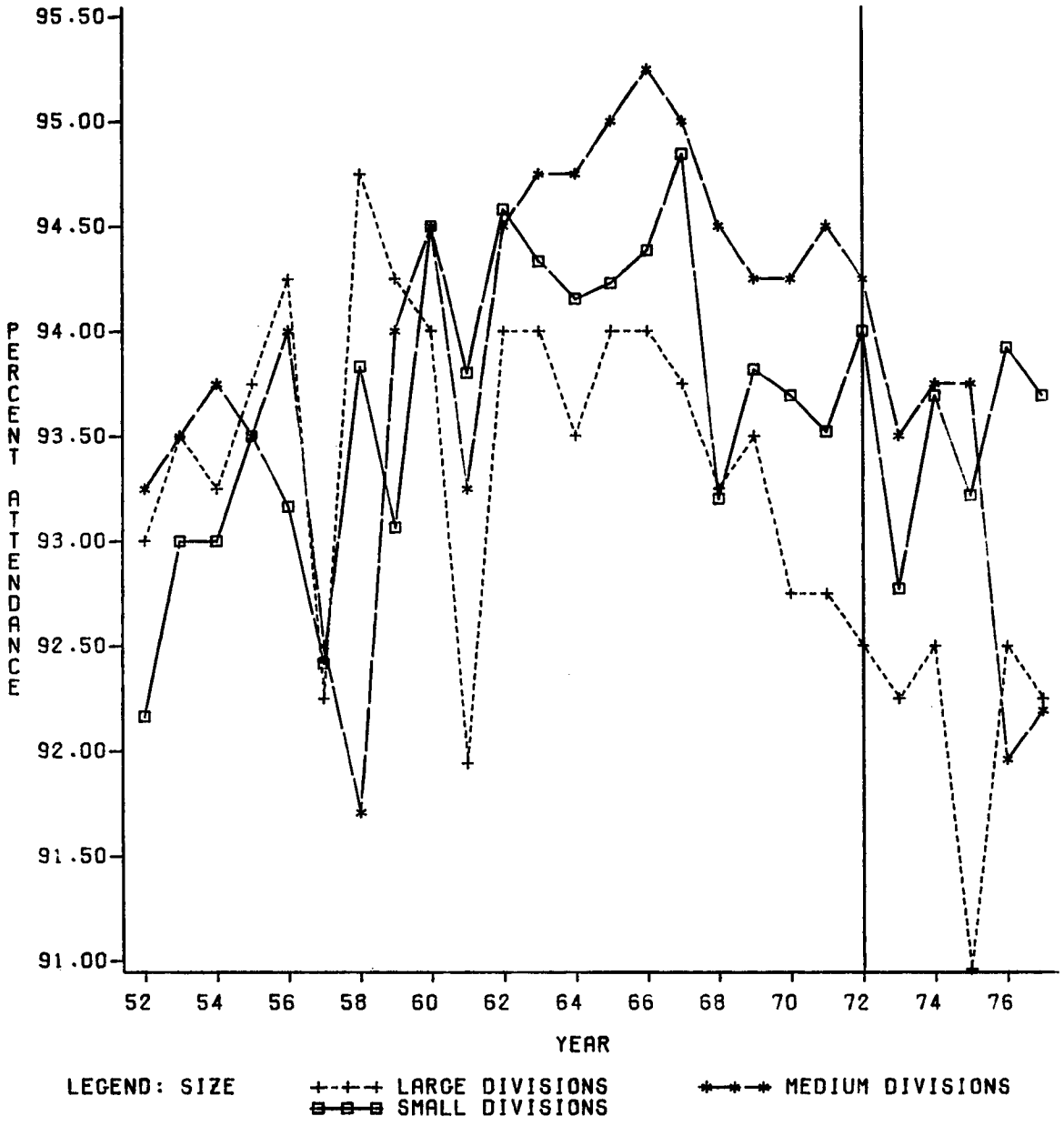
State

Figure 17. Attendance rates rounded off, for the state ranged from 93% to 95%. At no time since 1952, was it less than 93%. From 1952 to 1954 and 1957 the attendance rate was 93%. From the mid-fifties to 1969, the typical rate was 94%. In 1960, 1963, and 1965, attendance was 95%. Throughout the 1970s attendance was 93%. The overall pattern approximated that of the sample with attendance being highest in the 1960s, and lower, at about the same levels, in the 1950s and 1970s.

Test Data

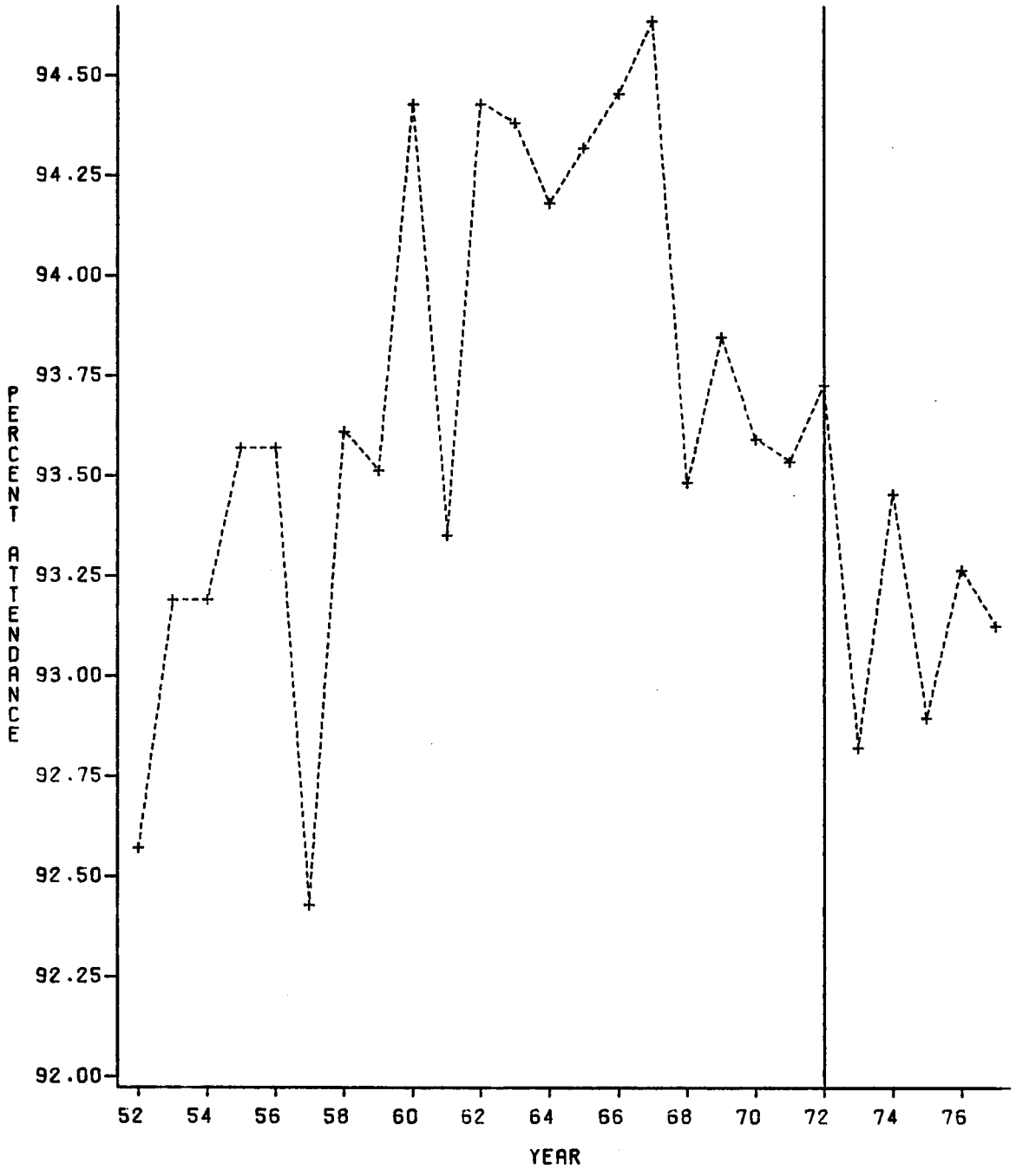
Both state and division performance objectives for the 1972-74 Standards of Quality and Objectives specify that the percentage of Virginia's students scoring at or above grade level norms on achievement

FIGURE 16:
MEAN PERCENTAGE OF ATTENDANCE IN GRADES K-12 IN SAMPLE DIVISIONS BY SIZE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 17:
MEAN PERCENTAGE OF ATTENDANCE IN GRADES K-12 IN VIRGINIA



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

tests should equal or exceed the mean ability level of students on aptitude tests. At first glance, this appears to be a mandate for the data needed to assess whether the Commonwealth's public school students are becoming competent in fundamental academic skills, but several obstacles mitigate against a rigorous time series design. Each obstacle decreased the amount of useful data available.

Virginia's statewide standardized testing program began in 1959 and has been revised frequently. Among the modifications were changes in the tests used, renorming, and rewriting of the tests. Changes have been made in the number of students tested, in the grades tested, in testing dates, and at the local and state level in the personnel responsible for administering and interpreting standardized tests. Consequently, some data are no longer available. Moreover, no group of students in Virginia has been given the same standardized tests of ability and achievement since 1959.

For this study, that group of students which had the longest history of standardized testing of ability and achievement was identified and adjustments were made for any changes in the tests or their administration. A thorough examination of standardized test records in the Division of Research, Evaluation, and Testing of the Virginia Department of Education indicated that grade 11, with the exception of one year, had been administered standardized tests of ability and achievement since 1959. From 1959-60 to 1971-72, most of Virginia's eleventh grade students were administered both the School and College Ability Tests (SCAT, Original Series) and the Sequential Tests of Educational Progress (STEP, Original Series). From 1971-72 to 1973-74, eleventh grade students were administered revised and renormed forms of the

preceding tests, the School and College Ability Tests: Series II (SCAT II), and the Sequential Tests of Educational Progress: Series II (STEP II). In 1971-72, both sets of tests were administered. Most students were administered the Original Series. For the next two years, only the Series II tests were given. In 1974-75, SCAT II and STEP II were replaced with SRA's Short Test of Educational Ability: Level 5 and the Iowa Test of Educational Development: Form X. While state scores are available from 1959, test data for divisions only go back to the 1973-74 school year.

During the 1977-78 session, the eleventh grade was not tested. Test results for fourth grade students on the Short Test of Educational Ability: Level 3 and the SRA Achievement Series: Form E have been included to provide comparative data on test scores. Virginia began using these tests in the 1973-74 school year. Test data for fourth grade students prior to that year was not included because large portions of the data are unavailable, not comparable, or nonexistent.

All scores have been converted to Z scores to provide comparability. The following formula was used:

$$\frac{\text{score-national mean}}{\text{national standard deviation}} = \text{Z score}$$

Scores for both Original and Series II versions of SCAT and STEP are reported in converted score units. For the STEA: Levels 3 and 5, SRA Achievement Series, and Iowa Test of Educational Development scores are reported as Growth Scale Values, a standardized score devised by SRA specifically for these tests. Thus, Z scores are expressed in standard deviation units of the national tests.

TABLE 6

NATIONAL NORMS USED TO COMPUTE Z SCORES

Grade 11

	N	M	SD
SCAT Original Form 2A[6]			
Verbal	4772	279	15
Quantitative	4772	292	17
Total	4772	285	13
STEP Original Form 2A[7]			
Reading	971	289.5	17
Writing	937	283.2	17
Math	933	273.1	16
SCAT SERIES II Form 2A[8]			
Verbal	9713	458	16
Quantitative	9713	471	18
Total	9713	464	15
STEP SERIES II Form 2A			
Computation[9]	2484	463	18
Reading[10]	2450	460	15
Total Writing[11]	2658	462	16

[6]Educational Testing Service, Cooperative School and College Ability Tests: Technical Report (Princeton, New Jersey: Educational Testing Service, 1957), p.17.

[7]Educational Testing Service, Cooperative Sequential Tests of Educational Progress: Technical Report: Reading, Writing, Listening, Social Studies, Science, Mathematics (Princeton, New Jersey: Educational Testing Service, 1957), pp. 23-24.

[8]Educational Testing Service, School and College Ability Tests: SCAT Series II: Handbook: 1973 Revision (Princeton, New Jersey: Educational Testing Service, 1973), p. 29.

[9]Educational Testing Service, Sequential Tests of Educational Progress: STEP: Series II: Handbook (Princeton, New Jersey: Educational Testing Service, 1971), p. 81.

[10]Ibid, p. 33.

[11]Ibid, p. 47.

TABLE - 6 Continued

ITED FORM X[12]			
Composite	7728	517.49	98.89
Total Reading	7728	424.98	65.13
Total Language Arts	7728	424.63	66.22
Mathematics	7728	445.31	93.88
STEA Level 5[13]	-	104	16
SRA Achievement Series Form E[14]			
Composite	113999	282.85	62.32
Total Reading	11399	270.03	62.30
Total Language Arts	11399	270.49	58.81
Total Math	11399	273.54	49.67
STEA Level 3[15]	-	102	16

Description of Test Data

State-Grade 11

Figure 18. With the exception of 1966, a clear pattern of performance on achievement tests emerged. There was an increase from 1959 to 1963, at which point most scores reached their highest level, and then began a decline marked by a sudden drop in scores in 1966, which continued through 1972 and 1973. Scores rose in 1974 from the previous two years, but taken as a group, they evidenced a very slight decline

[12]Science Research Associate, Inc., SRA Assessment Survey: Technical Report: Achievement Series E and F: Iowa Tests of Educational Development: Forms X-5 and Y-5 (Chicago, Illinois: Science Research Associates, Inc.,1974), p. 53.

[13]Telephone conversation with Joe Fergerson, SRA Regional Representative, November 13, 1979.

[14]Science Research Associates, Inc. SRA Assessment Survey: Technical Report, p. 49.

[15]Telephone Conversation with Joe Ferguson, SRA Regional Representative, November 13, 1979.

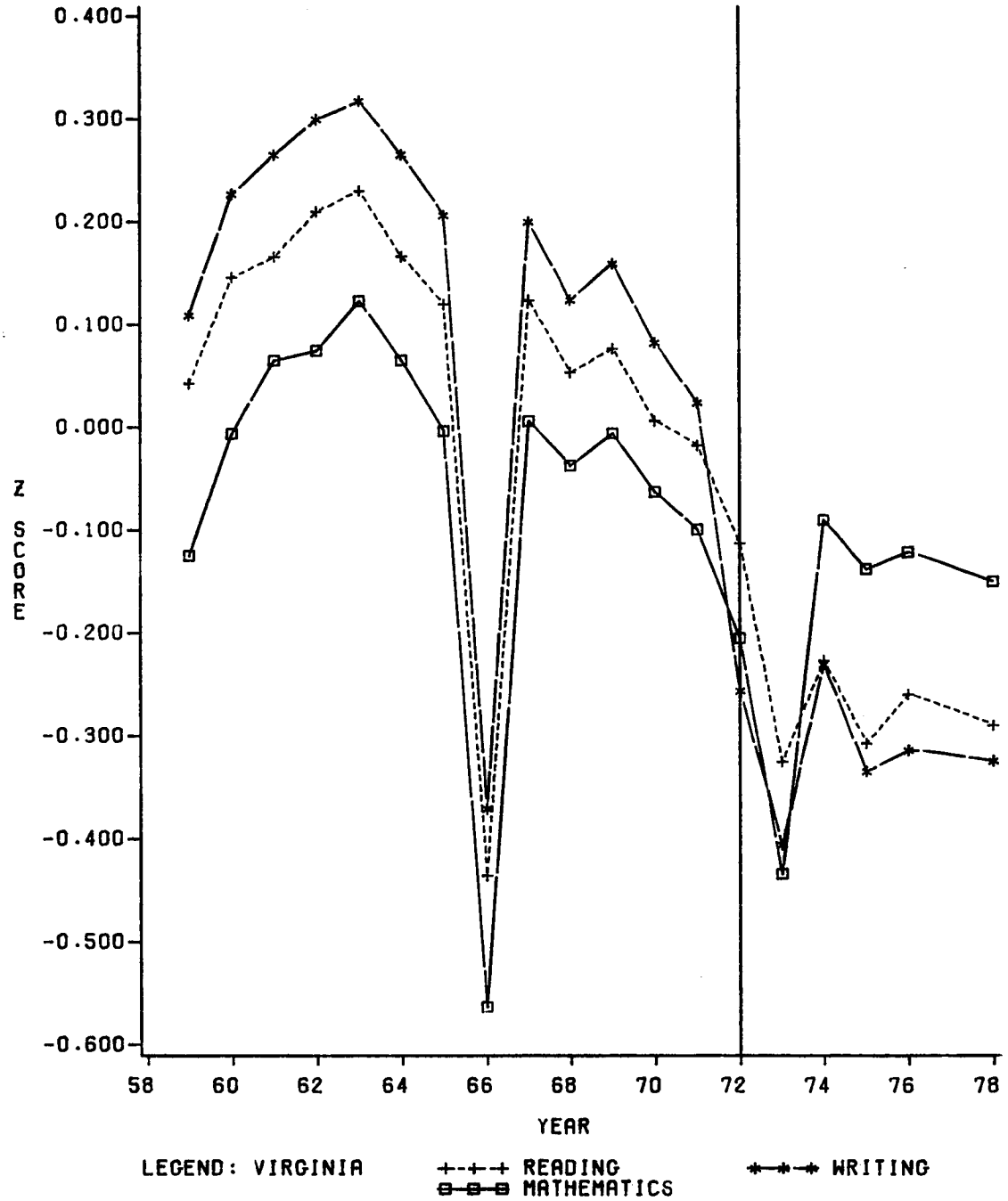
from 1974 to 1975 and appeared to hold steady from 1976 to 1978. From 1959 to 1971, writing/language achievement was consistently highest while math achievement was consistently the lowest. Reading fell between these two. From 1972 to 1978, math and writing/language reversed positions. Reading achievement remained in second position. With the exception of low achievement scores in 1966, achievement scores reached their lowest levels in the first two years of the Standards of Quality and Objectives, 1972-73.

Figure 19. Ability scores for all years, with the notable exception of 1966, tended to parallel, at a higher level, achievement scores. In 1966, ability scores declined much less than achievement scores. The decline of ability scores from 1963 to 1973 was persistent. From 1974 through 1978, only one measure of ability was available because of changes in the tests which were administered.

For approximately 10 years preceeding the Standards of Quality and Objectives, ability scores on standardized tests declined. After 1973, the mid-point of the first set of standards, ability scores tended to rise.

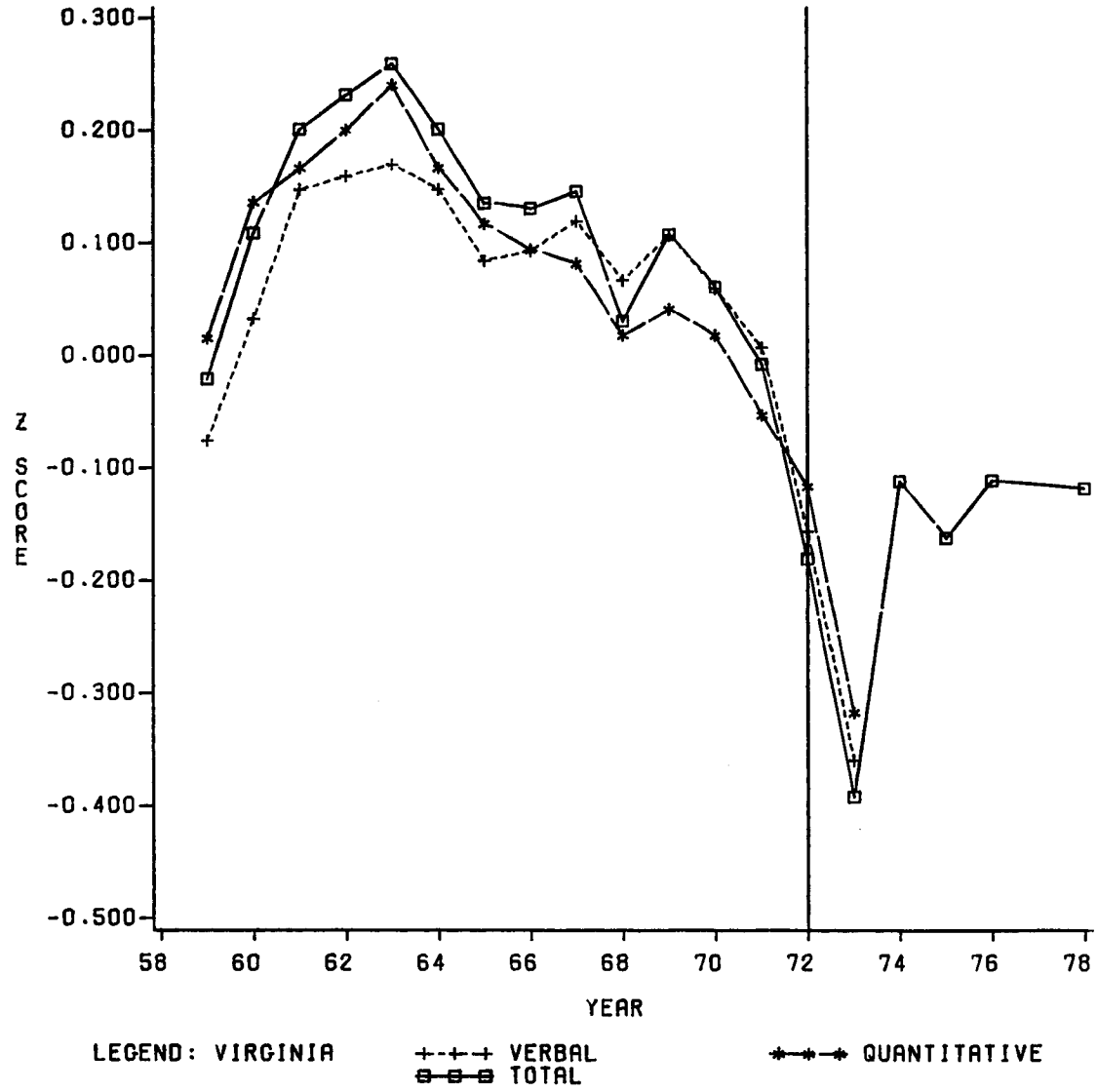
Figure 20. The figure, indicating the relationship between reading achievement, on one hand, and verbal and total ability, on the other, separates these data from the total set of scores presented in figure 18. An increase occurred from 1959 to 1963, followed by a decline which reached its lowest level in 1972-73, followed again by an increase. From 1959 to 1965, reading achievement scores were consistently greater than verbal ability. This pattern reversed itself in 1969, after which ability was consistently higher than reading achievement. The achievement data for 1966 digressed sharply from the general trend, and the

FIGURE 18:
GRADE 11 ACHIEVEMENT SCORES REPORTED AS Z SCORES - VIRGINIA



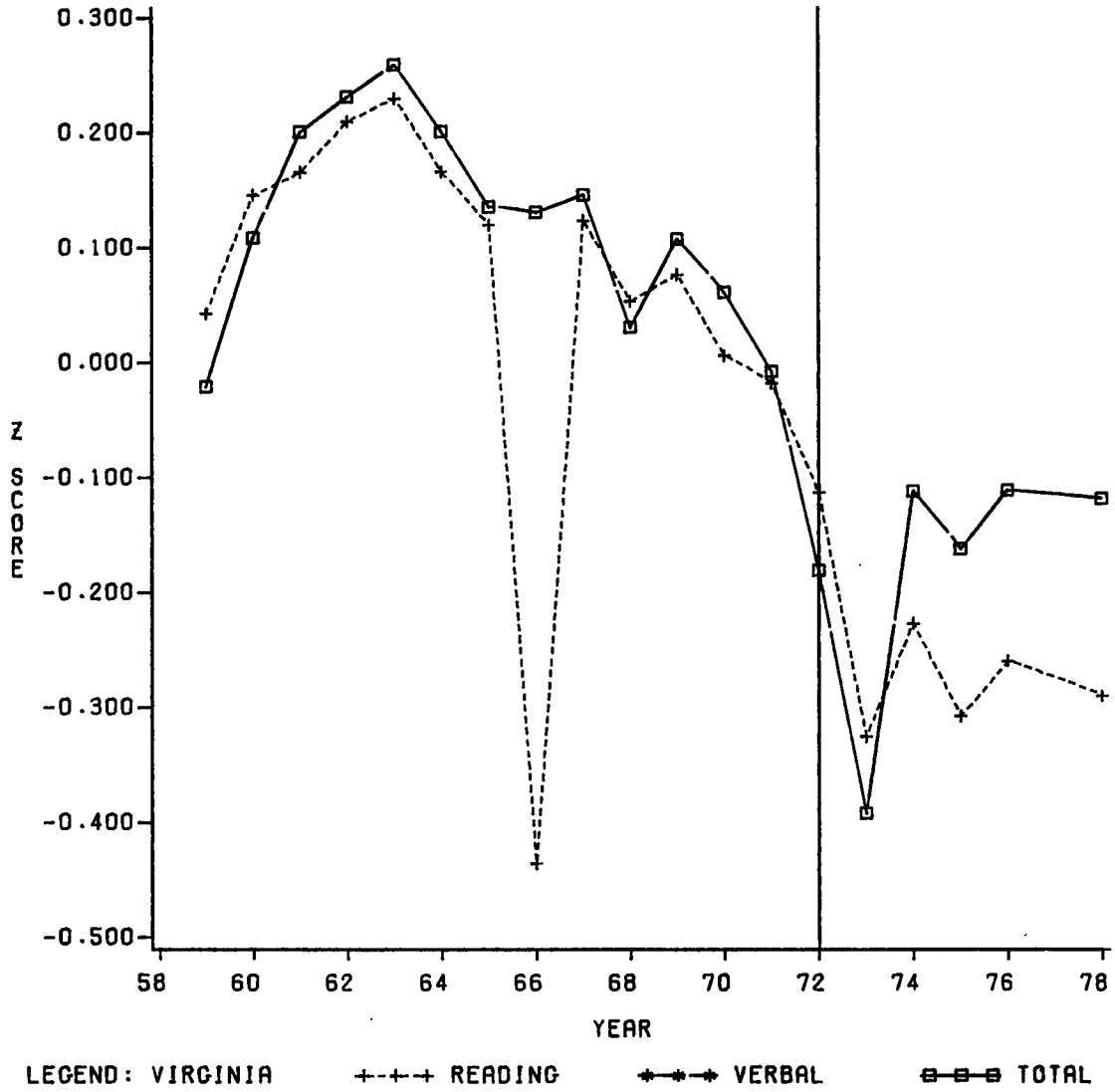
LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 19:
GRADE 11 ABILITY SCORES REPORTED AS Z SCORES – VIRGINIA



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 20:
GRADE 11 ACHIEVEMENT (READING) AND ABILITY (VERBAL AND TOTAL)
REPORTED AS Z SCORES – VIRGINIA



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

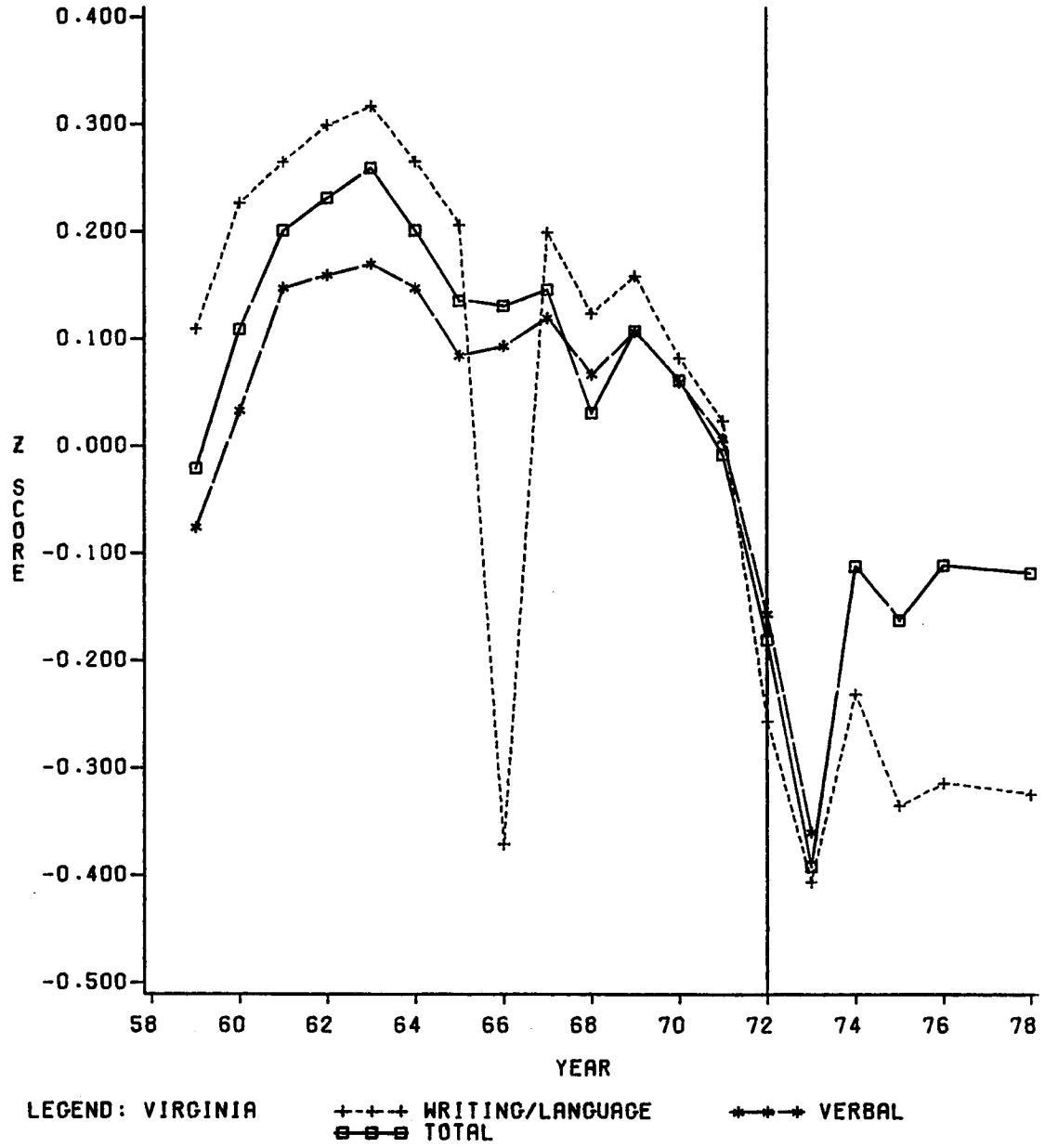
years 1972 and 1973 continued to be the low points, of the overall trend with 1966 excluded.

Z scores ranged from greater than .2 in 1963 in reading achievement to less than -.4 in 1973. The scores reached their lowest level in the first two years of the Standards of Quality and Objectives.

Figure 21. The figure, indicating the relationship between writing/language achievement, on one hand, and verbal and total ability, on the other, separates these data from the total set of data presented in figure 19. The same pattern found in figure 19 is seen here. Again achievement scores were consistently higher than ability scores in a portion of the time series, from 1959 to 1971 with the marked exception of 1966. In 1972, however, the pattern was reversed, and ability scores were consistently higher than achievement scores through 1978. The difference between ability and achievement was between .1 and .2 units from 1959 to 1965. From 1967 to 1971, there was little difference between two kinds of scores. In 1972 and 1973, the gap opened to almost .5 units. From 1974 to 1978, both scores rose but a difference of about .3 remained. The scores reached their lowest point in the first two years of the Standards of Quality and Objectives, 1972-74, than at any other time from 1959 to 1978.

Figure 22. The figure, indicating the relationship between math achievement, on the one hand, and quantitive and total ability, on the other, separates these data from the total set of data presented in figure 19. The same pattern found in figure 19 is found here. Unlike the relationships between reading achievement and ability and writing/ language achievement and ability, ability scores were consistently higher than math achievement scores from 1959 to 1973. From 1974 to

FIGURE 21:
GRADE 11 ACHIEVEMENT (WRITING/LANGUAGE) AND ABILITY (VERBAL AND TOTAL)
REPORTED AS Z SCORES – VIRGINIA



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

to 1978, math achievement was higher than ability.

The difference between ability and achievement remained about .1 from 1959 to 1965. In 1966, a .7 difference existed. From 1966 to 1971, the gap gradually narrowed. In 1972 and 1973, the gap opened to .3. From 1974 to 1978 math achievement and ability, unlike reading, writing/language, and their respective ability tests, were close together.

The scores, with the exception of 1966, reached their lowest level in 1972 and 1973, the first two years of the Standards of Quality and Objectives.

Grade 4

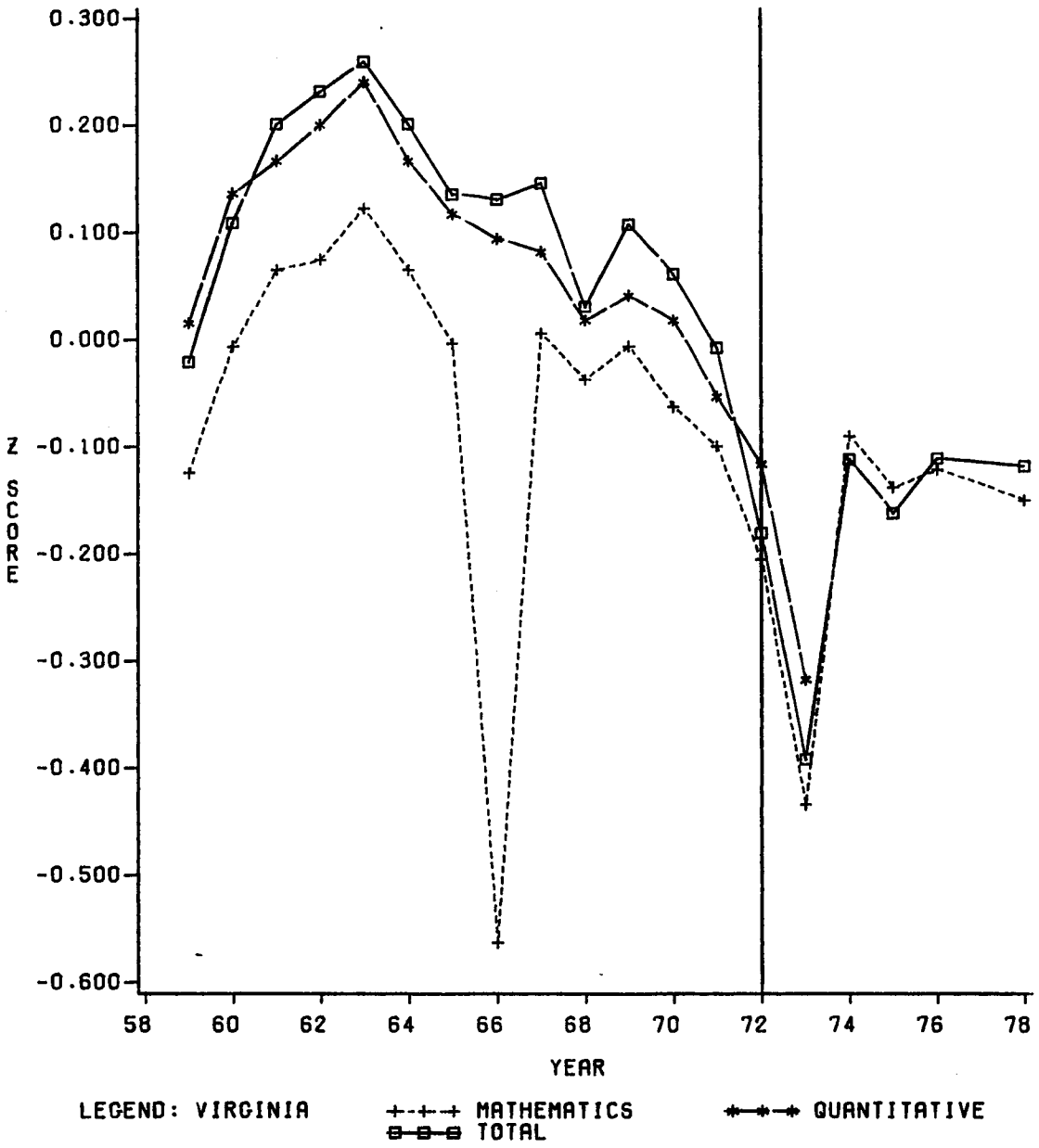
Figure 23. The figure indicates the relationship between reading, language, and math achievement scores. Figure 23 shows an increase in scores from a low point in all areas in 1973 to the highest score for each test in 1978. A large increase occurred in 1974, after which the increase continued but became more gradual. The 1974 increase was approximately .3 for each score, while the later increases were only about .1 each. The descending order of scores was ability, reading, language, and math. Reading and language scores were closer to each other than any other combination of test scores.

The lowest scores for all tests occurred in 1973, the second year of the Standards of Quality and Objectives.

Figure 24. The plot of grade 4 ability scores indicates increases taking place each year from 1973 to 1978,

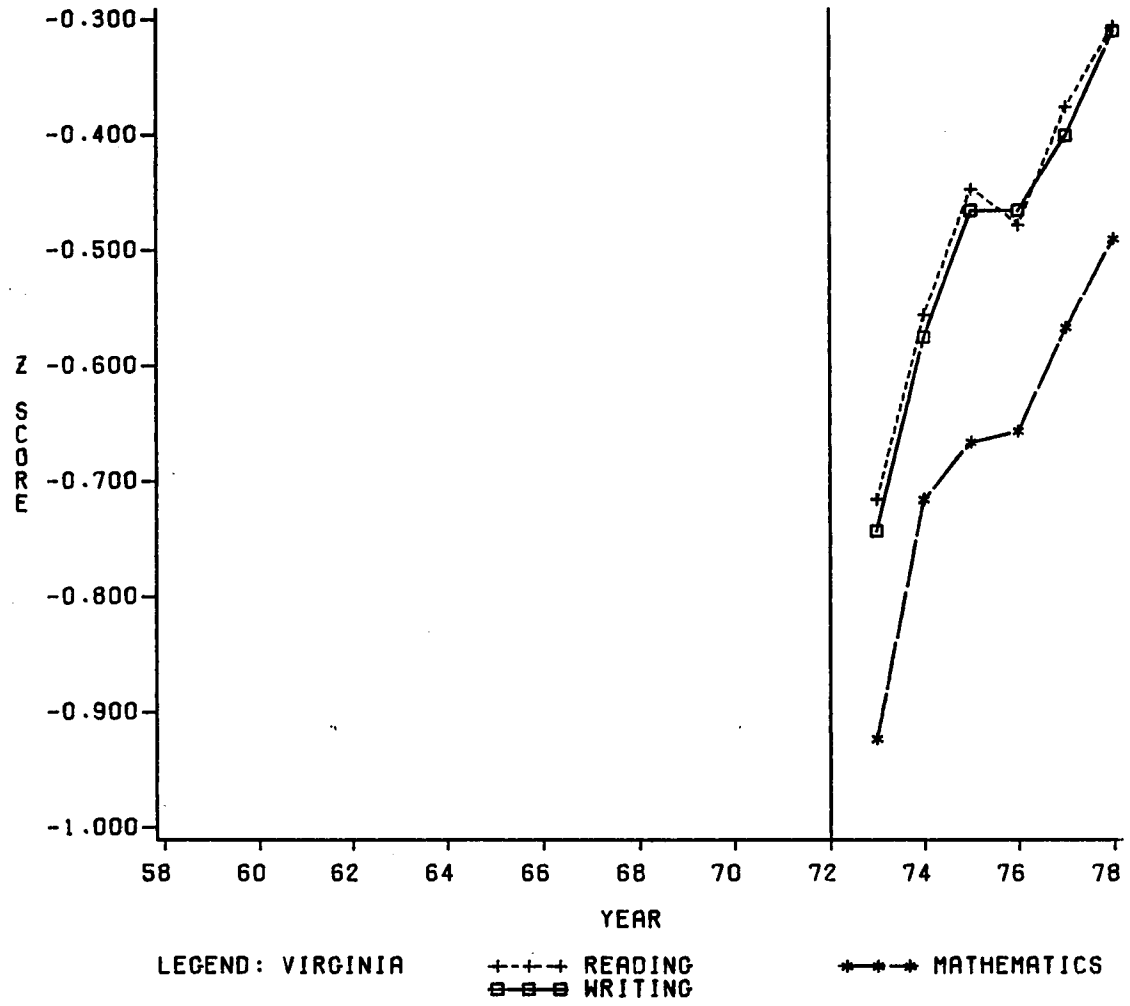
Figure 25. The figure, indicating the relationship between ability and reading achievement, separates these data from the total set presented in figure 22. Except for the sharp rise in 1974 from the low

FIGURE 22:
GRADE 11 ACHIEVEMENT (MATHEMATICS) AND ABILITY (QUANTITATIVE AND TOTAL) REPORTED AS Z SCORES – VIRGINIA



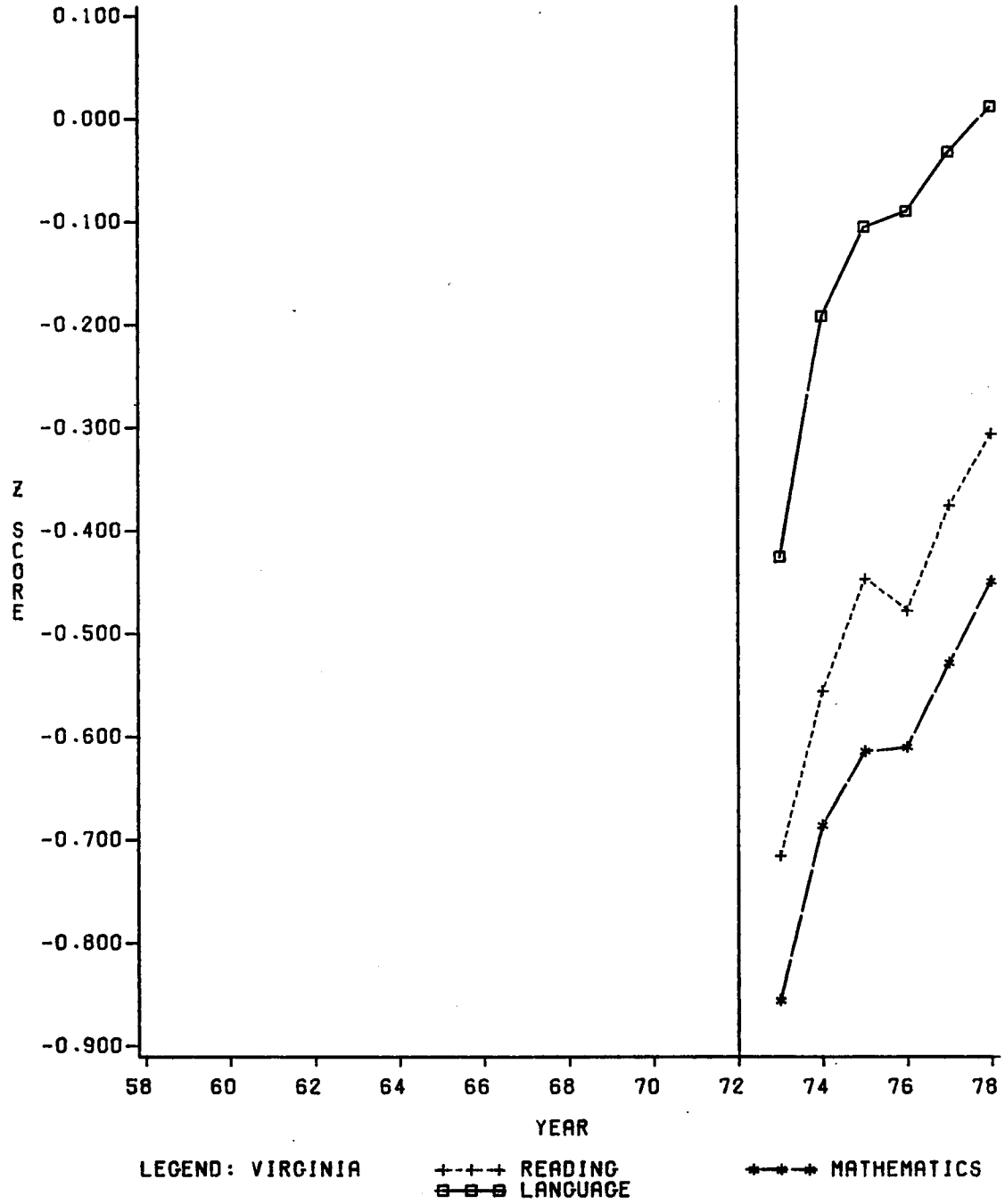
LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 23:
GRADE 4 ACHIEVEMENT SCORES REPORTED AS Z SCORES -VIRGINIA



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 24:
GRADE 4 ABILITY SCORES REPORTED AS Z SCORES – VIRGINIA



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

point in 1973, the figure shows a steady increase. Ability increased from approximately -.4 to +.1, while reading achievement increased from approximately -.7 to -.2. The low point occurred in 1973, the second year of the Standards of Quality and Objectives.

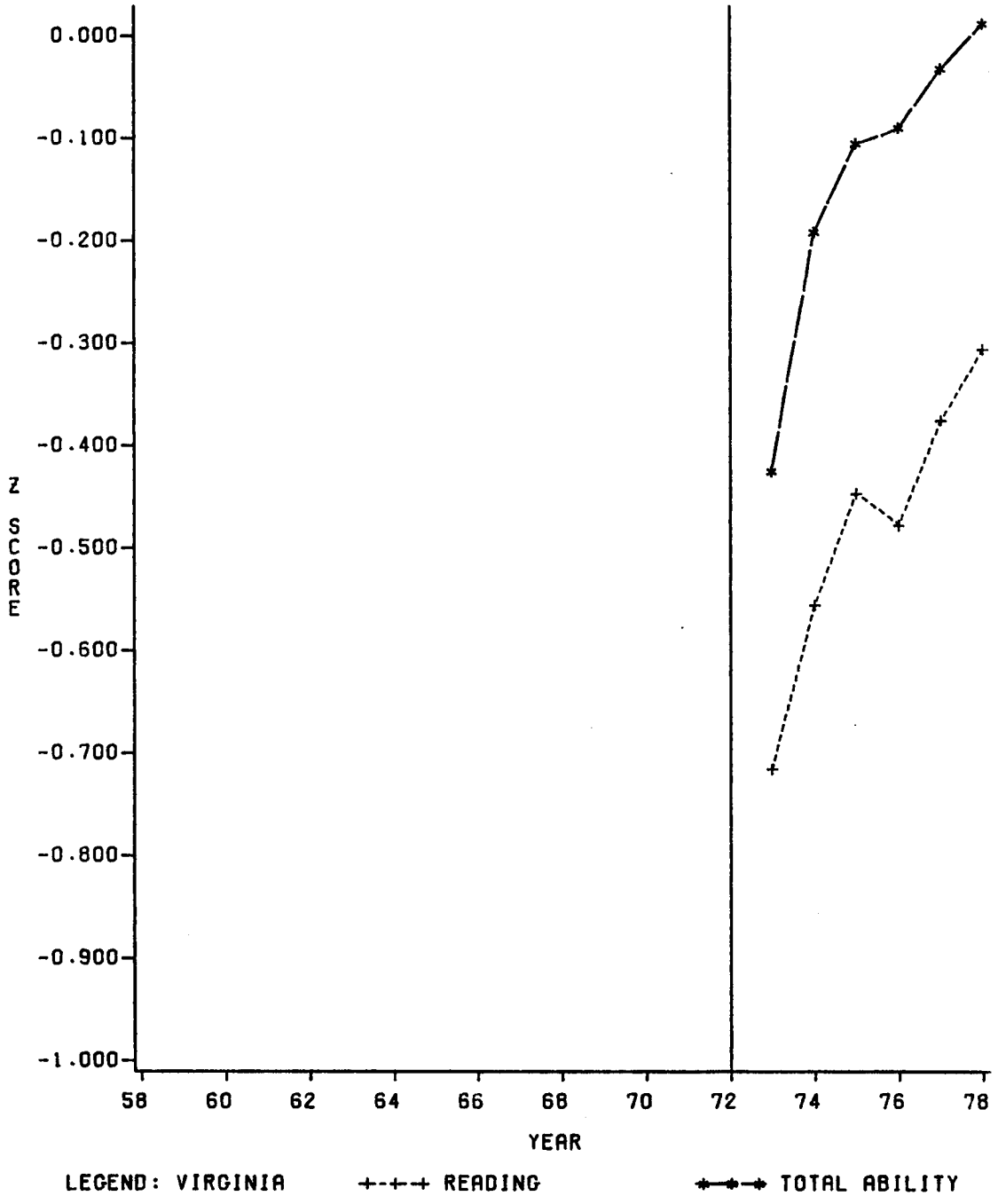
Figure 26. The figure, indicating the relationship between ability and math achievement, separates these data from the total set presented in figure 23. Specifically, math achievement began at less than -.9 and increased to almost -.5. Ability increased from -.4 to almost +.1. The greatest increase occurred in 1974. The low point occurred in 1973, the second year of the Standards of Quality and Objectives.

Figure 27. The figure, indicating the relationship between ability and language achievement, separates these data from the total set presented in figure 23. Specifically, language achievement began at almost -.8 and rose to -.3, while ability began at -.4 and reached approximately +.1. The largest increase (.3) occurred in 1974, the third year of the Standards of Quality and Objectives.

Figure 28. The figure compares eleventh grade reading achievement with fourth grade reading achievement. Only 1966 was a year of lower achievement than 1973 for both groups. In addition, achievement scores made their largest increases in 1974. From 1974 onward, scores for eleventh grade students declined, while scores of fourth grade students increased until they coincide in 1978.

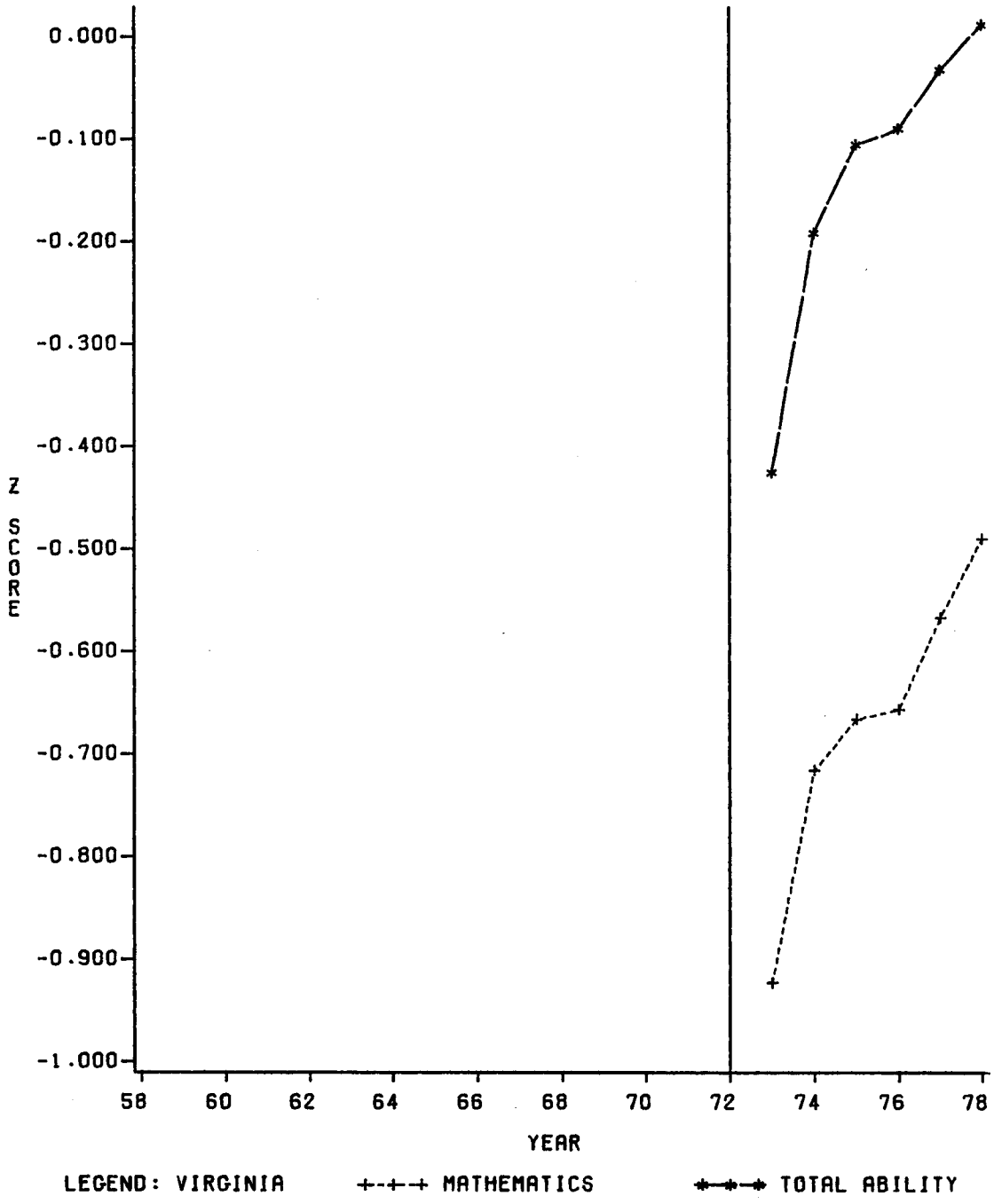
Figure 29. The figure compares eleventh grade math achievement with fourth grade math achievement. Eleventh grade achievement scores in math generally rose from 1959 to 1963 when they reached their highest levels. From 1964 to 1971 there was with the exception of 1966, a gradual decline. In 1972, there was a sharp drop which was followed

FIGURE 25:
GRADE 4 ACHIEVEMENT (READING) AND ABILITY (TOTAL) REPORTED AS Z SCORES – VIRGINIA



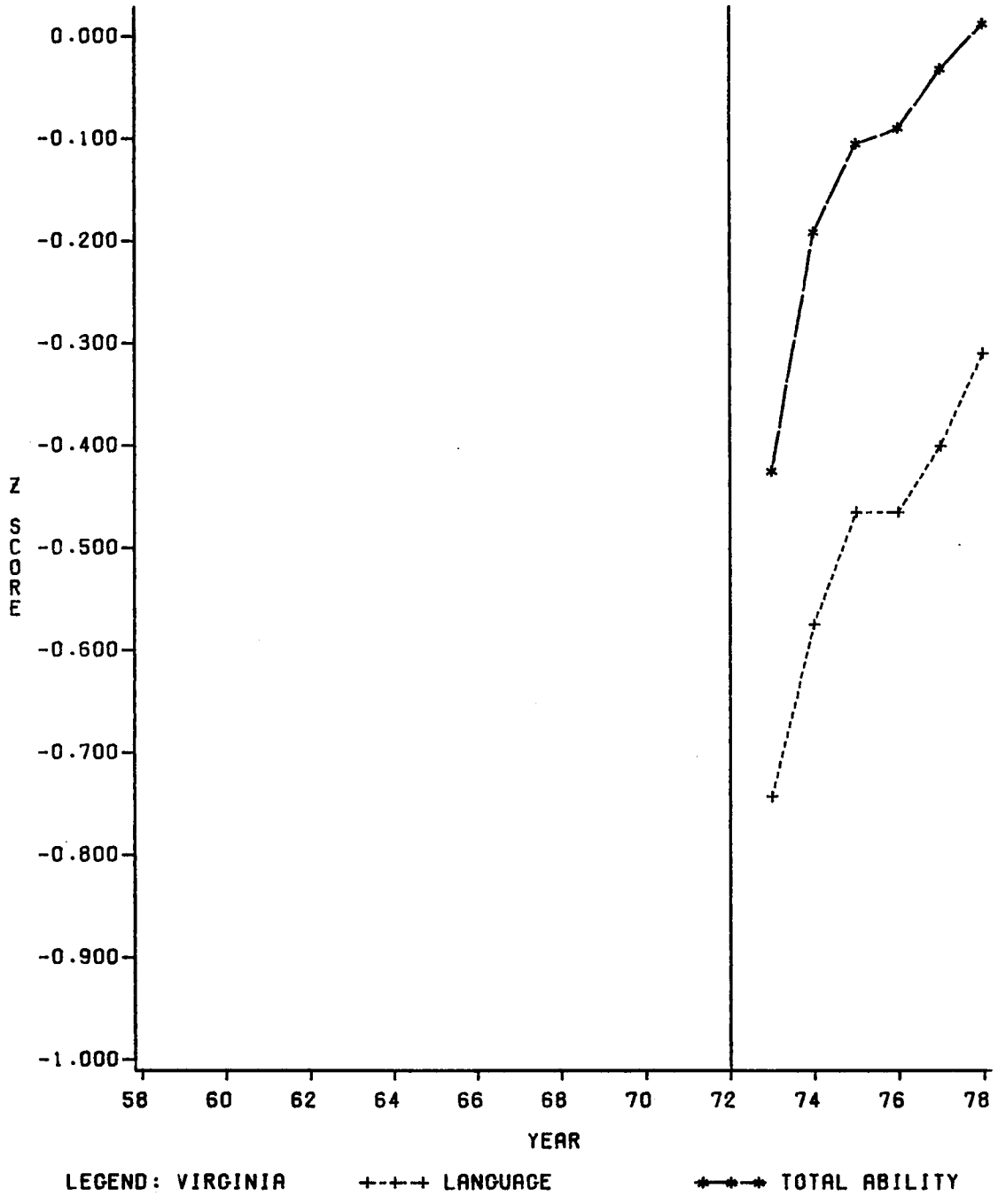
LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 26:
GRADE 4 ACHIEVEMENT (MATHEMATICS) AND ABILITY (TOTAL) REPORTED AS Z SCORES – VIRGINIA



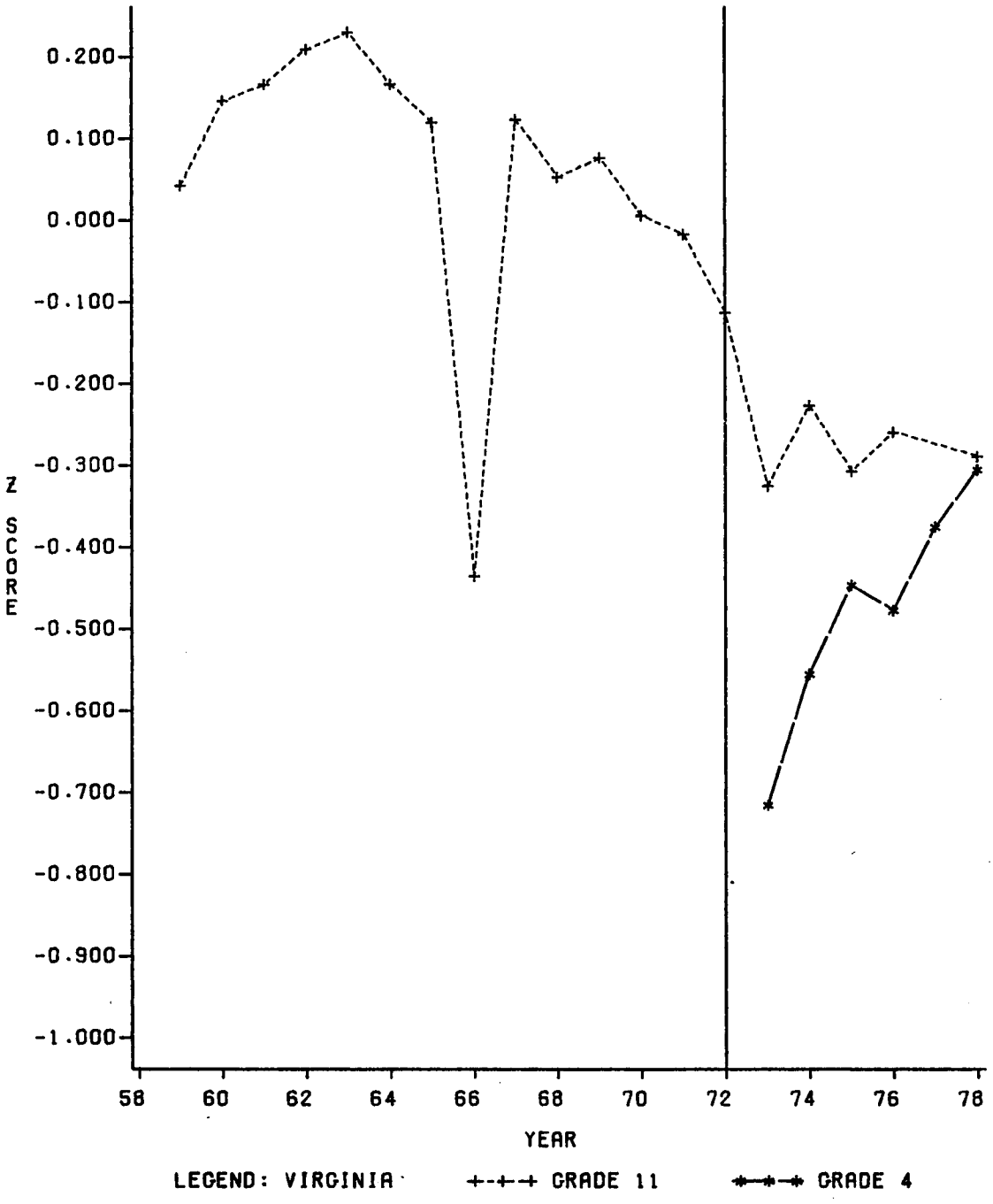
LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 27:
GRADE 4 ACHIEVEMENT (LANGUAGE) AND ABILITY (TOTAL) REPORTED AS Z SCORES – VIRGINIA



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 28:
READING ACHIEVEMENT REPORTED AS Z SCORES IN GRADES 11 AND 4 - VIRGINIA



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

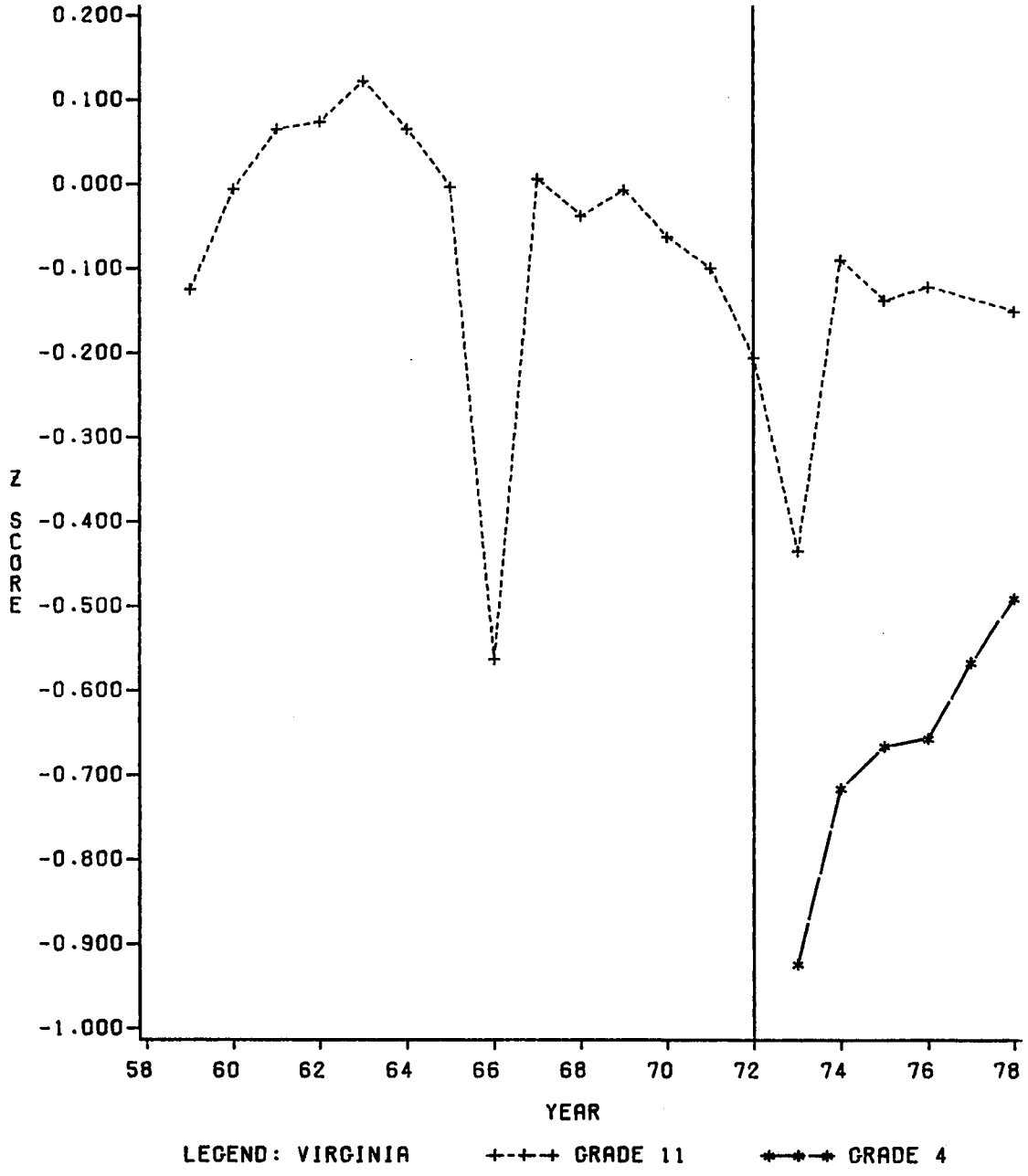
by another drop in 1973. In 1974, eleventh grade math achievement scores increased from -.4 to 0.0. From 1974 to 1978 there was a drift downward to about -.1. Fourth grade math achievement rose steadily from almost -1.0 to more than -.5 in a steady path upward from 1973 to 1978.

Figure 30. The figure compares eleventh grade writing/language achievement with fourth grade writing/language achievement. Eleventh grade scores rose steadily from .1 to slightly more than .3 in 1963. From that point, they declined through 1971, again with the exception of a drop in 1966. In 1972, another drop occurred which was followed in 1973 by a decline. In 1974, an increase occurred which tapered off through 1978. Fourth grade achievement again increased steadily from its low point in 1973 through 1978.

Figure 31. The figure compares total ability scores for the eleventh grade with the single ability measure available for the fourth grade. The figure tends to parallel the preceding figures from 1959 to 1973. Eleventh grade scores peaked in 1963 and declined to a low point in 1973. The eleventh grade scores for 1966 did not evidence the plunge seen in achievement scores.

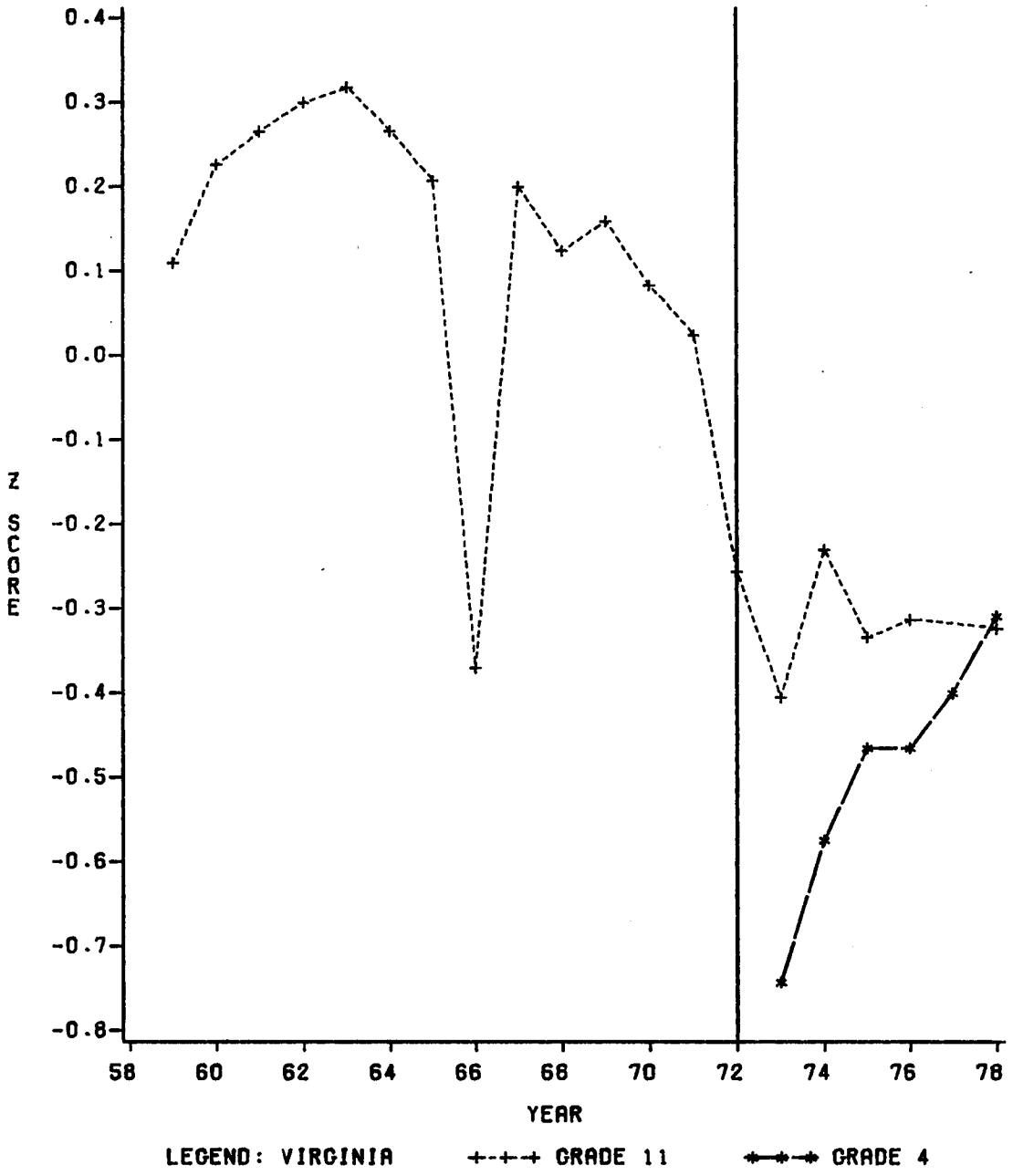
In 1974, ability scores for both grades increased. In 1975, the scores were approximately the same. (From 1974 through 1978, there was only one ability score for the eleventh grade.) From 1976 through 1978, fourth grade ability scores continued their rise and were higher than eleventh grade scores which declined.

FIGURE 29:
MATHEMATICS ACHIEVEMENT REPORTED AS Z SCORES IN GRADES 11 AND 4 – VIRGINIA



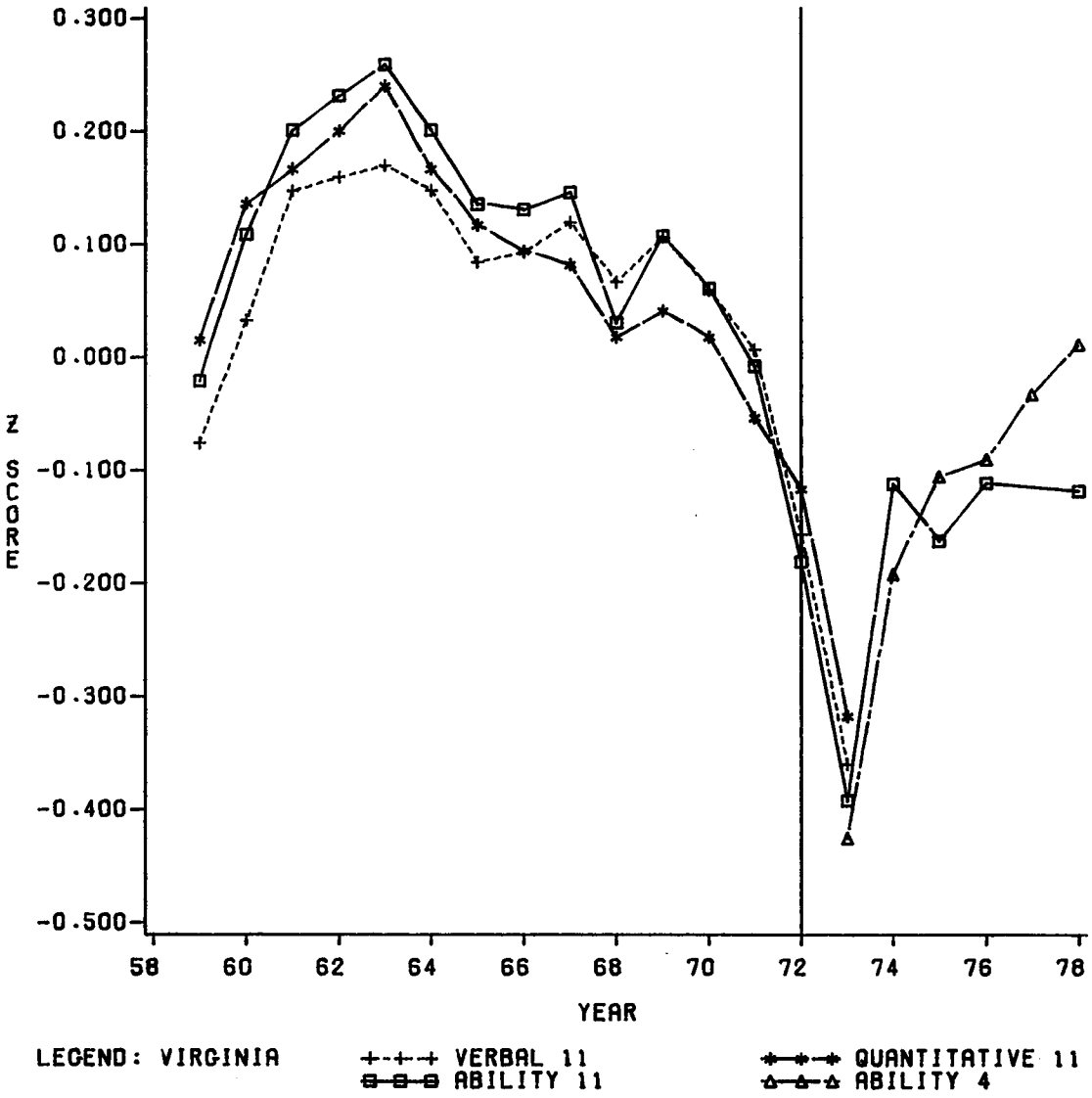
LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 30:
WRITING/LANGUAGE ACHIEVEMENT REPORTED AS Z SCORES IN GRADES 11 AND 4 – VIRGINIA



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 31:
ABILITY REPORTED AS Z SCORES IN GRADES 11 (VERBAL, QUANTITATIVE, AND TOTAL) AND 4 (TOTAL) – VIRGINIA



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

Test Data by Division

Caution must be exercised throughout this section in applying names to apparent trends because of the number of years considered.

Sample by Score-Grade 11 Composite Achievement Scores

Figure 32. While differences among divisions, considered by score, on composite achievement were small (the range is about .225), they were persistent. Low divisions had the lowest scores. From 1974 through 1976, they were considerably lower. Average divisions had the highest scores in 1974, 1975, and 1978. In 1976, scores for divisions were close to those of the top ranked high divisions. The scores of high divisions showed the most fluctuation. At times, they were near or at the top (1974 and 1976), and at one point they were low (1975). In 1978, they occupied a middle position.

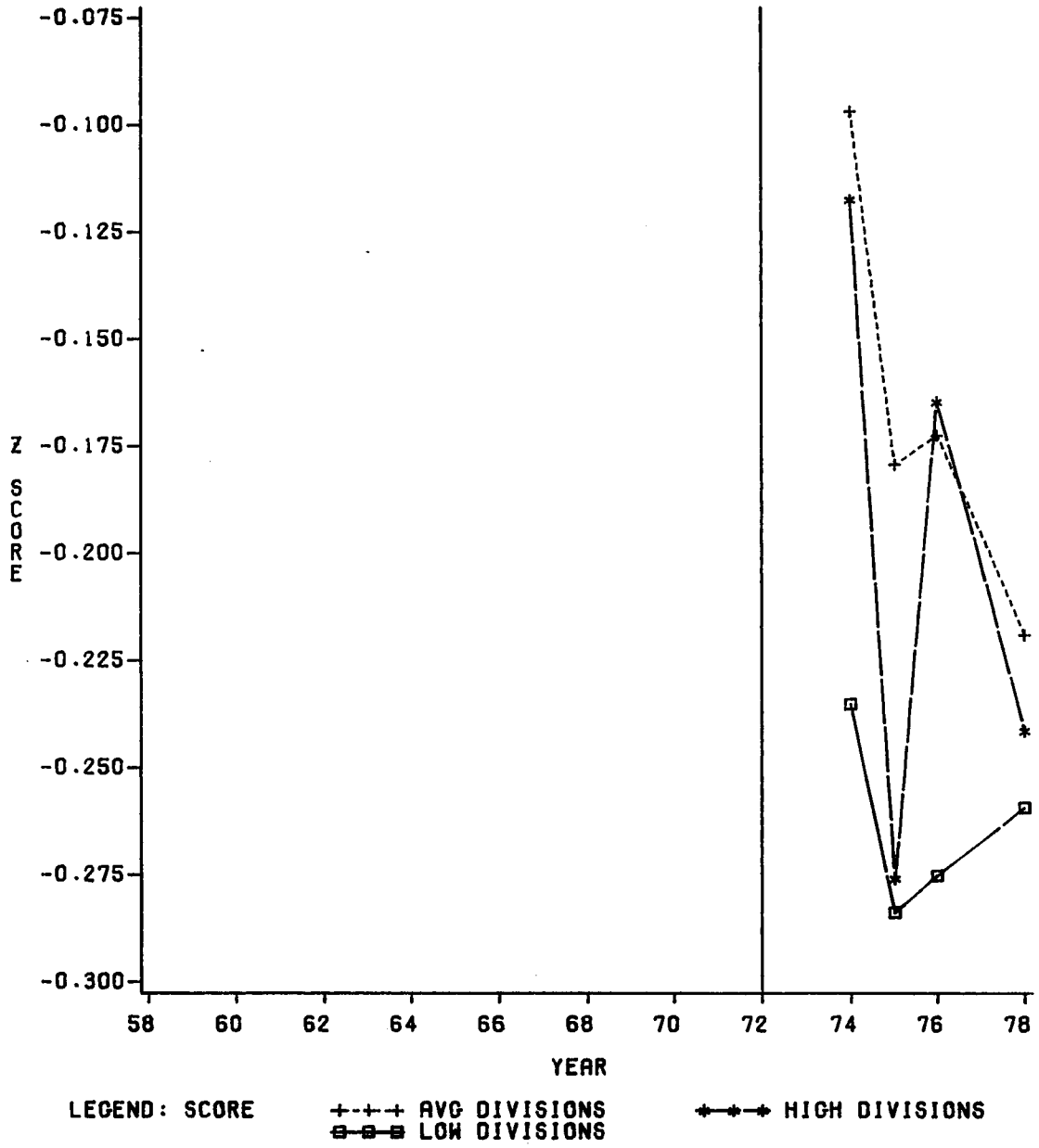
Sample by Size-Grade 11 Composite Achievement Scores

Figure 33. Trends were more stable in regard to composite achievement scores when the sample divisions are considered by size. Medium divisions had the highest scores. Large divisions had scores in the middle position. Their scores were closer to those of the medium divisions than to the small ones. Small divisions had scores that were not only much below those of medium and large divisions but also much below those of the state. Once again there was a small but persistent overall downward movement.

Grade 11 Composite Achievement Scores in Virginia

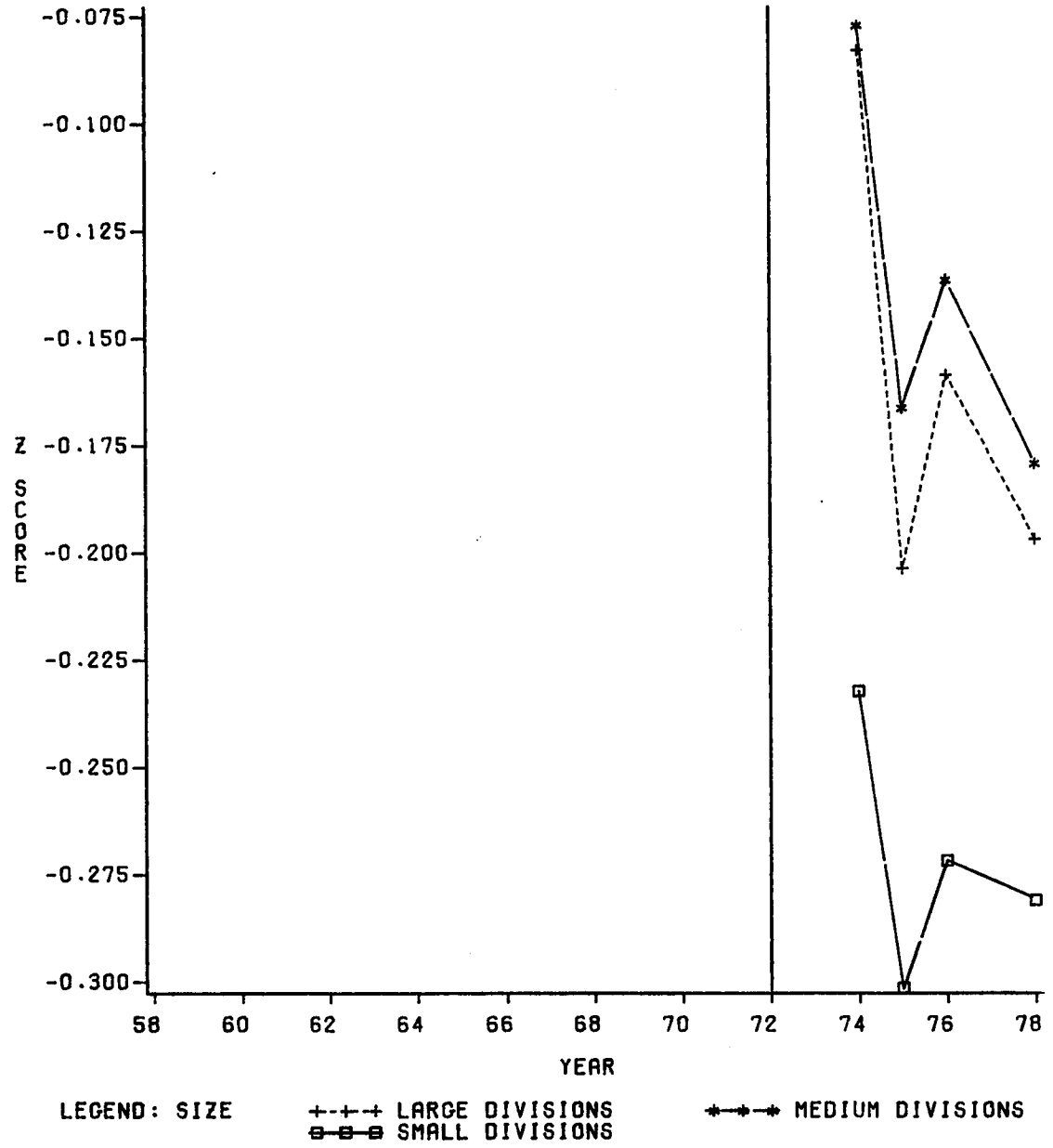
Figure 34. State scores tended to be high. In 1975 and 1978, state scores were higher than the scores for the sample divisions. The overall trend for composite achievement scores in the eleventh grade was downward.

FIGURE 32:
GRADE 11 COMPOSITE ACHIEVEMENT REPORTED AS Z SCORES IN SAMPLE DIVISIONS BY SCORE



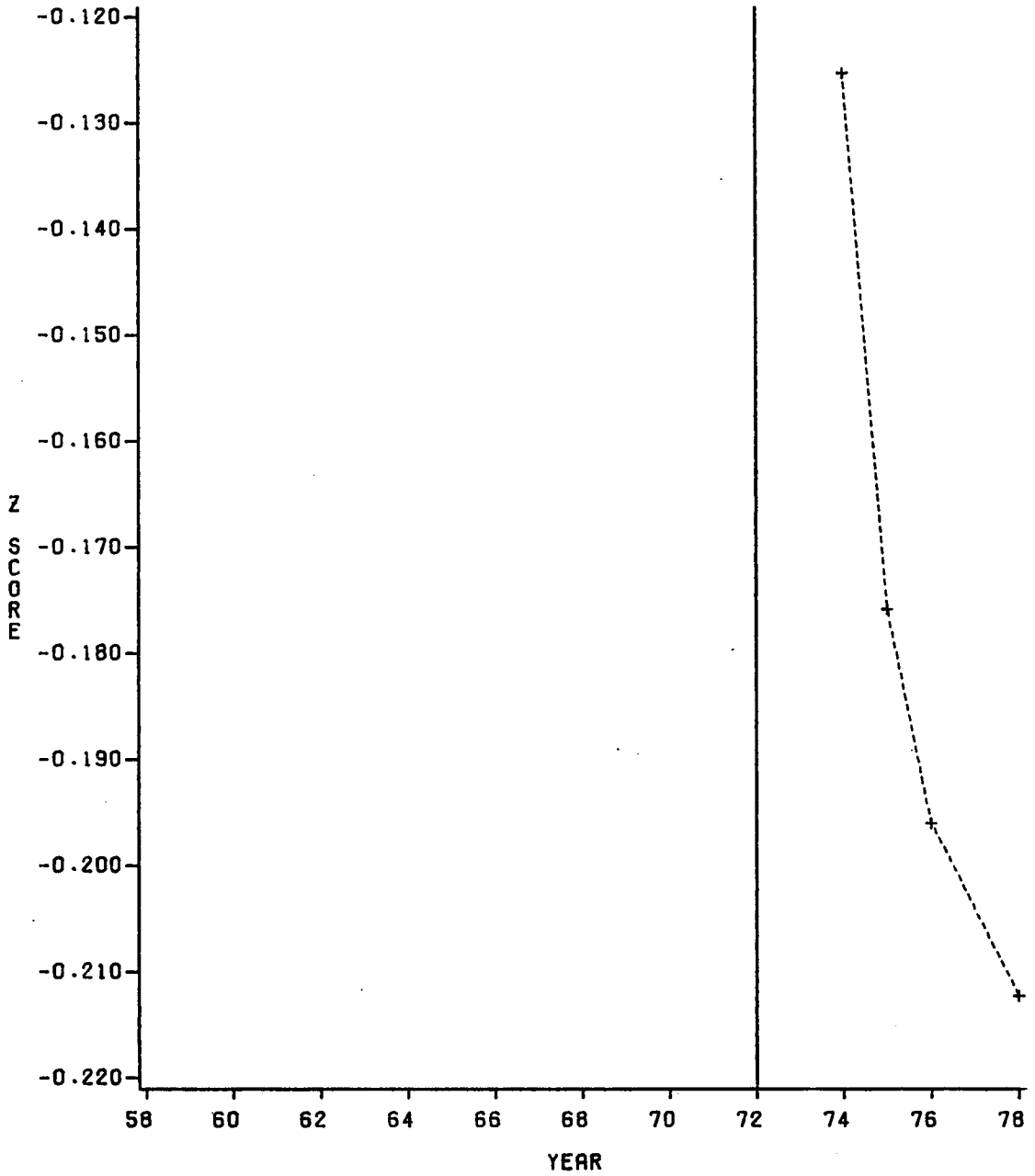
LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 33:
GRADE 11 COMPOSITE ACHIEVEMENT REPORTED AS Z SCORES IN SAMPLE DIVISIONS BY SIZE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 34:
GRADE 11 COMPOSITE ACHIEVEMENT REPORTED AS Z SCORES – VIRGINIA



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

Sample by Score-Grade 4 Composite Achievement Scores

Figure 35. Several persistent trends can be noted. The overall trend for all divisions was upward from a low point in 1973. Except for 1973, average divisions had the highest Composite Achievement Scores. High and low divisions reversed positions in regard to second and third position.

Sample by Size-Grade 4 Composite Achievement Scores

Figure 36. Once again, trends appear to be more consistent when divisions are considered by size. Furthermore, the overall trend was upward from 1973. Medium divisions tended to have the highest Composite Achievement Scores, and small divisions had the lowest scores. Differences among scores were not as great in the fourth grade as they were in the eleventh. In 1974, the movement upward was larger than in any other year.

Grade 4 Composite Achievement Scores-Virginia

Figure 37. The mean for statewide scores fell within the range of the sample scores. It, too, rose from 1973 to 1978. In 1974, the increase for all divisions was larger than in any other year in the 1973 to 1978 period.

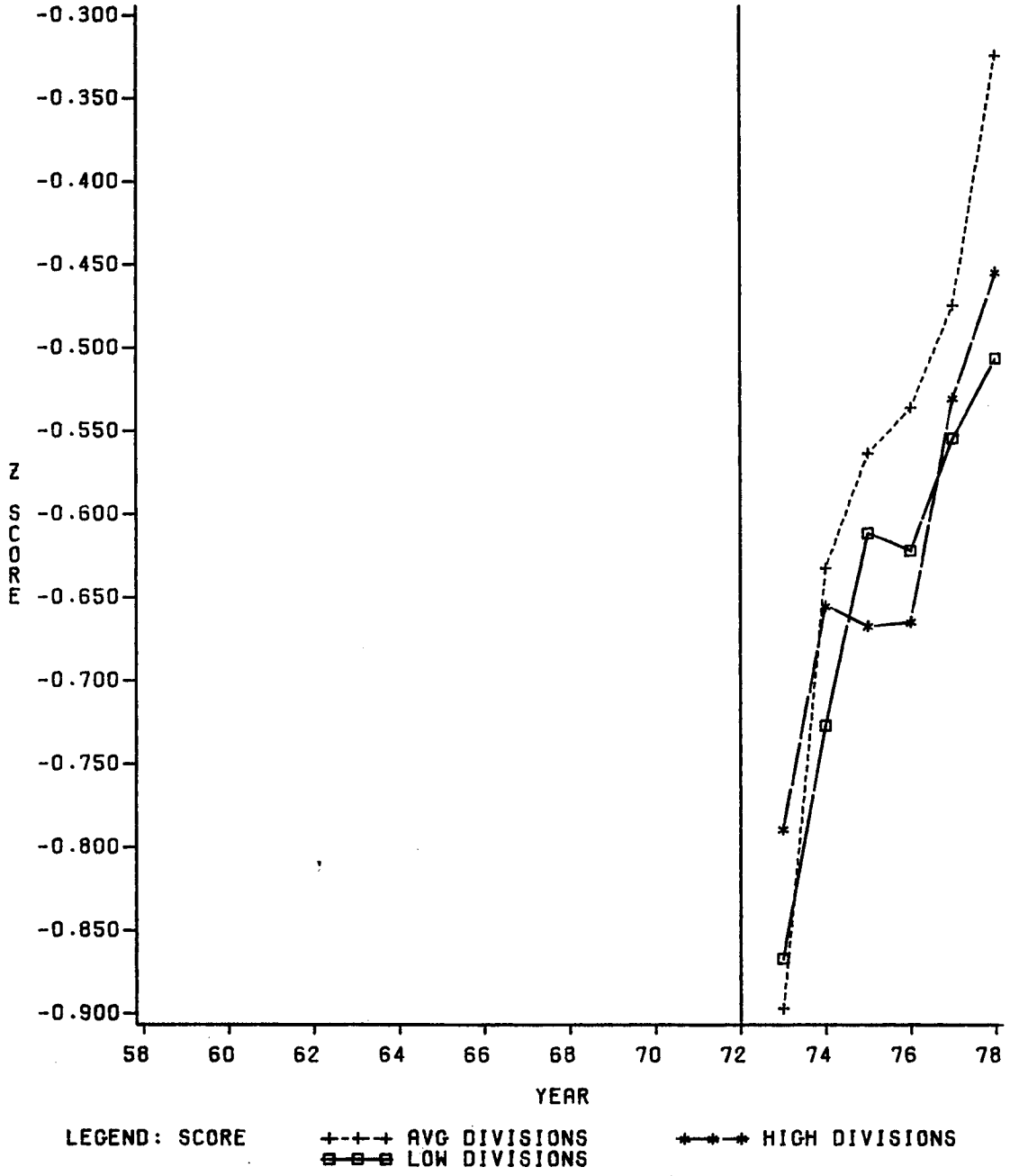
Sample by Score-Grade 11 Ability Scores

Figure 38. Divisions having plans rated low consistently had the lowest mean ability scores for the eleventh grade. In 1974 and 1975 average divisions had the highest mean ability scores, while in 1976 and 1978, high divisions had the highest mean ability scores. Mean scores for all types of divisions were lowest in 1973.

Sample by Size-Grade 11 Ability Scores

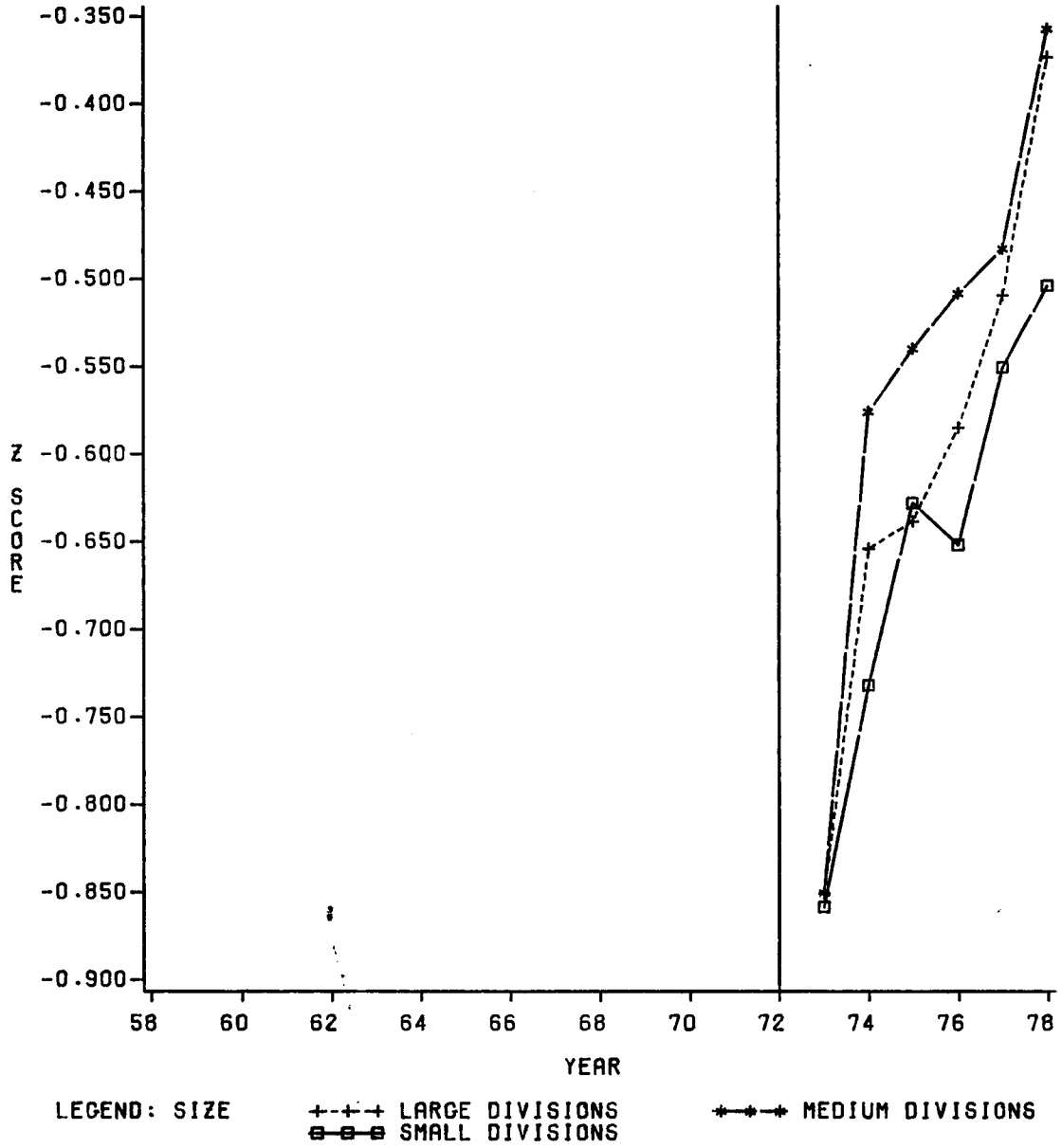
Figure 39. When ranked by size, medium divisions had the highest mean ability scores, followed by large divisions, and the small divisions. In 1973, mean ability scores were lowest for all types of divisions.

FIGURE 35:
GRADE 4 COMPOSITE ACHIEVEMENT REPORTED AS Z SCORES IN SAMPLE DIVISIONS BY SCORE



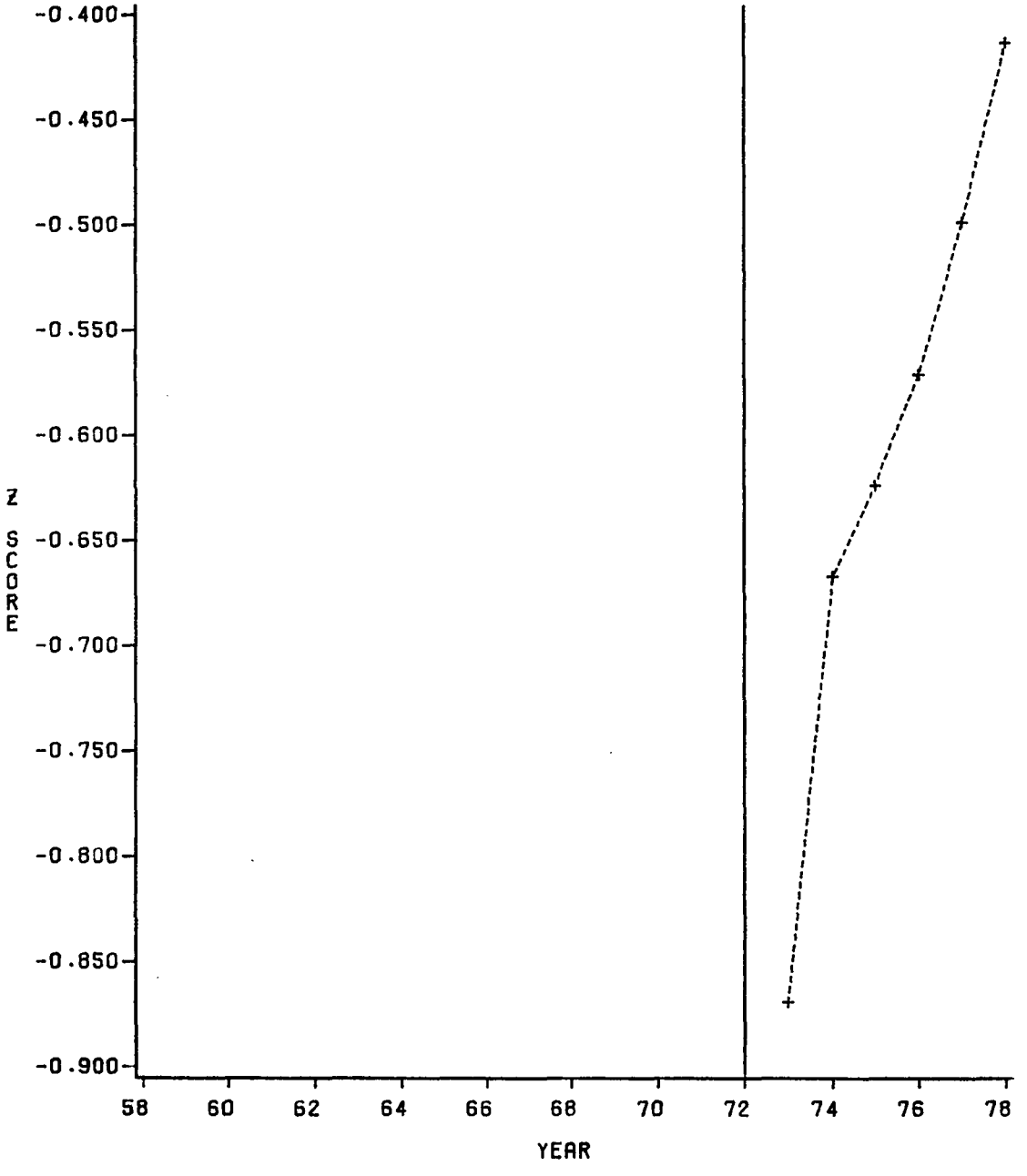
LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 36:
GRADE 4 COMPOSITE ACHIEVEMENT REPORTED AS Z SCORES IN SAMPLE DIVISIONS BY SIZE



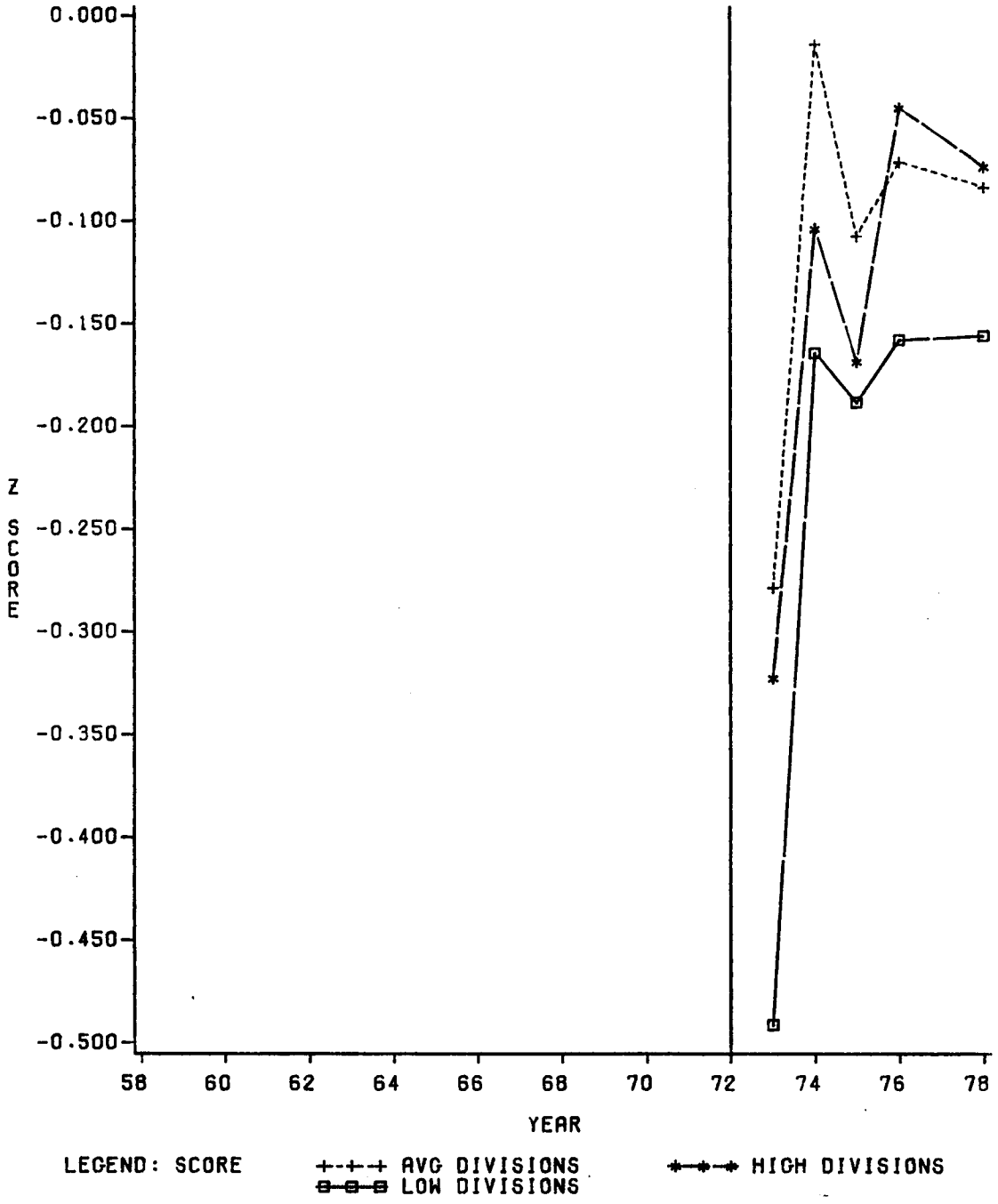
LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 37:
GRADE 4 COMPOSITE ACHIEVEMENT REPORTED AS Z SCORES – VIRGINIA



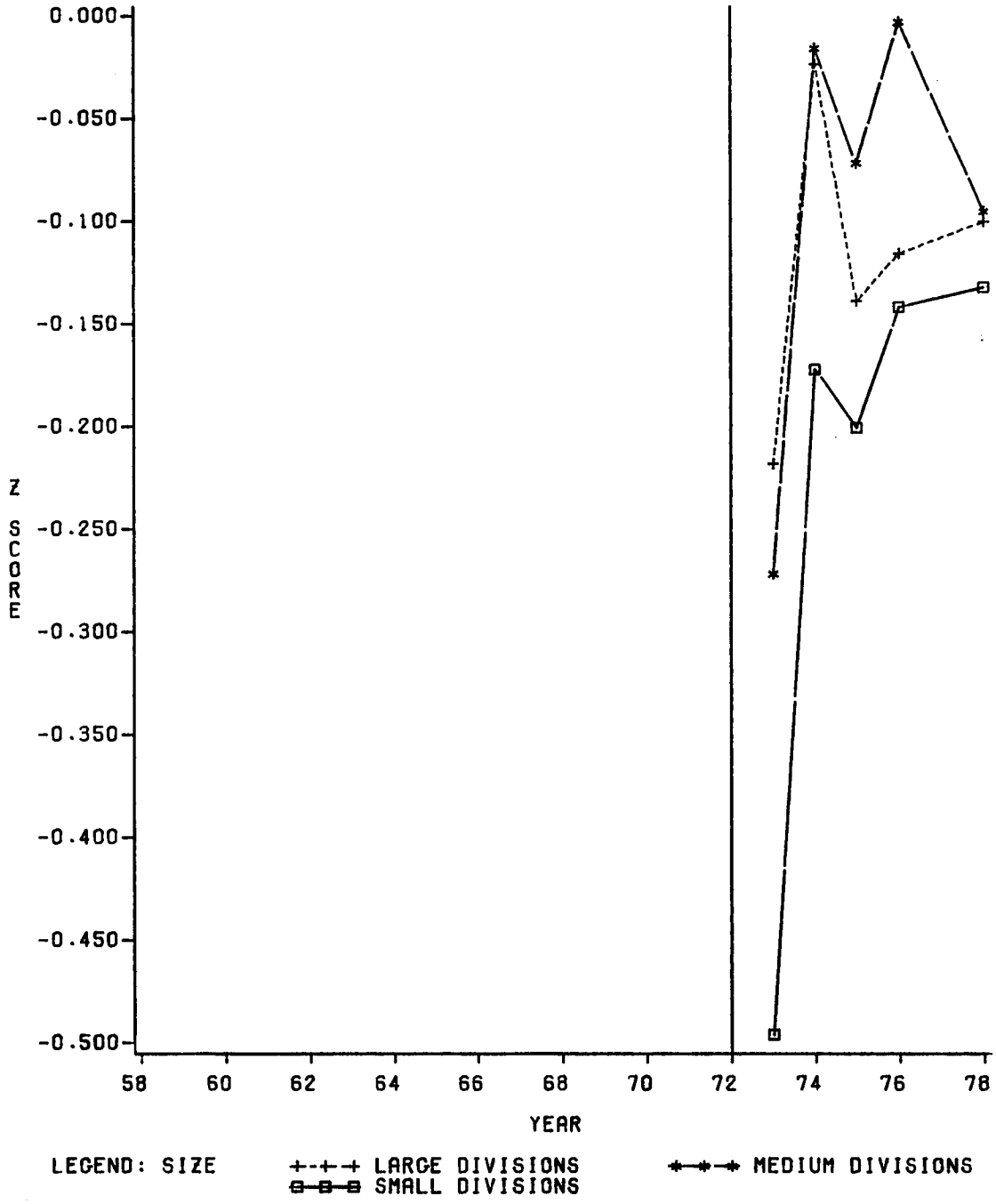
LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 38:
GRADE 11 ABILITY REPORTED AS Z SCORES IN SAMPLE DIVISIONS BY SCORE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 39:
GRADE 11 ABILITY REPORTED AS Z SCORES IN SAMPLE DIVISIONS BY SIZE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

Grade 11 Ability Scores-Virginia

Figure 40. State scores fell within the sample scores. Eleventh grade students were not tested in 1977.

Sample by Score-Grade 4 Ability Scores

Figure 41. Differences among the divisions were slight, but they were persistent. Average divisions tended to have the highest ability scores. High and low divisions frequently switched positions in second and third place. State ability scores tended to be higher than those in the sample. Virginia scores rose above the national mean. There was a strong overall trend upward from a low point in 1973, with the highest one-year increase appearing in 1974.

Sample by Size-Grade 4 Ability Scores

Figure 42. Differences among the divisions were small. Trends were more consistent than when divisions are considered by score. Medium divisions tended to have the highest ability scores. Small divisions tended to have the lowest scores. Scores for large divisions tended to be closer to those of medium divisions.

Grade 4 Ability Scores-Virginia

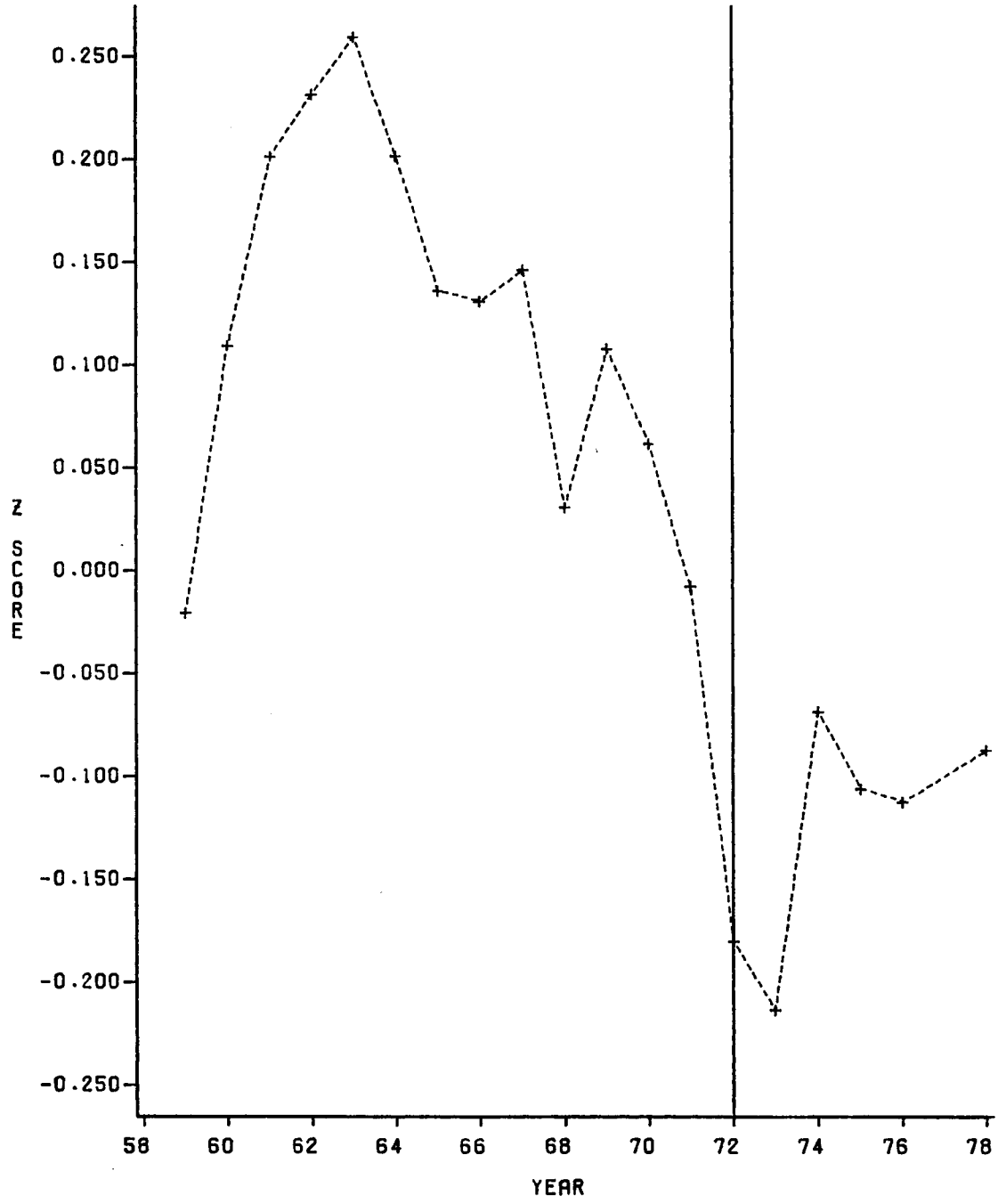
Figure 43. State scores tended to fall within the sample scores. Virginia scores rose above the national mean. There was a strong overall trend upward from a low point in 1973. The highest one-year gain appeared in 1974.

Unobtrusive Measures Relating to the Goal of Competence in Fundamental Academic Skills in the 1972-1974 Standards of Quality and Objectives

Sample Divisions by Score-Grades K-7

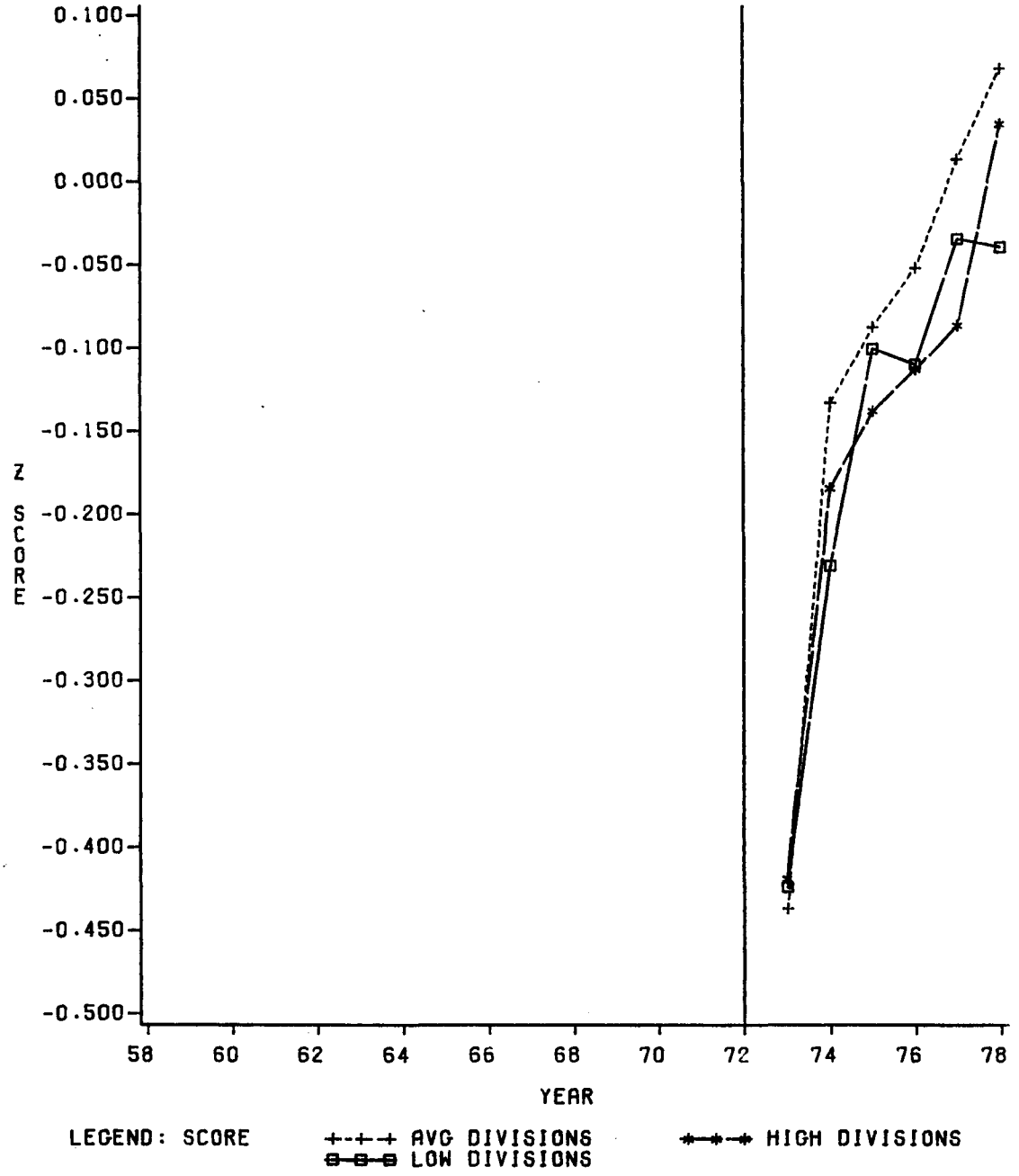
Figure 44. Divisions with multi-year plans rated low had the highest mean percentage of retentions for each year but one (1965). Divisions with plans rated average tended to have the lowest mean percentages of retentions. From 1952 to 1964, the mean percentage of

FIGURE 40:
GRADE 11 ABILITY REPORTED AS Z SCORES – VIRGINIA



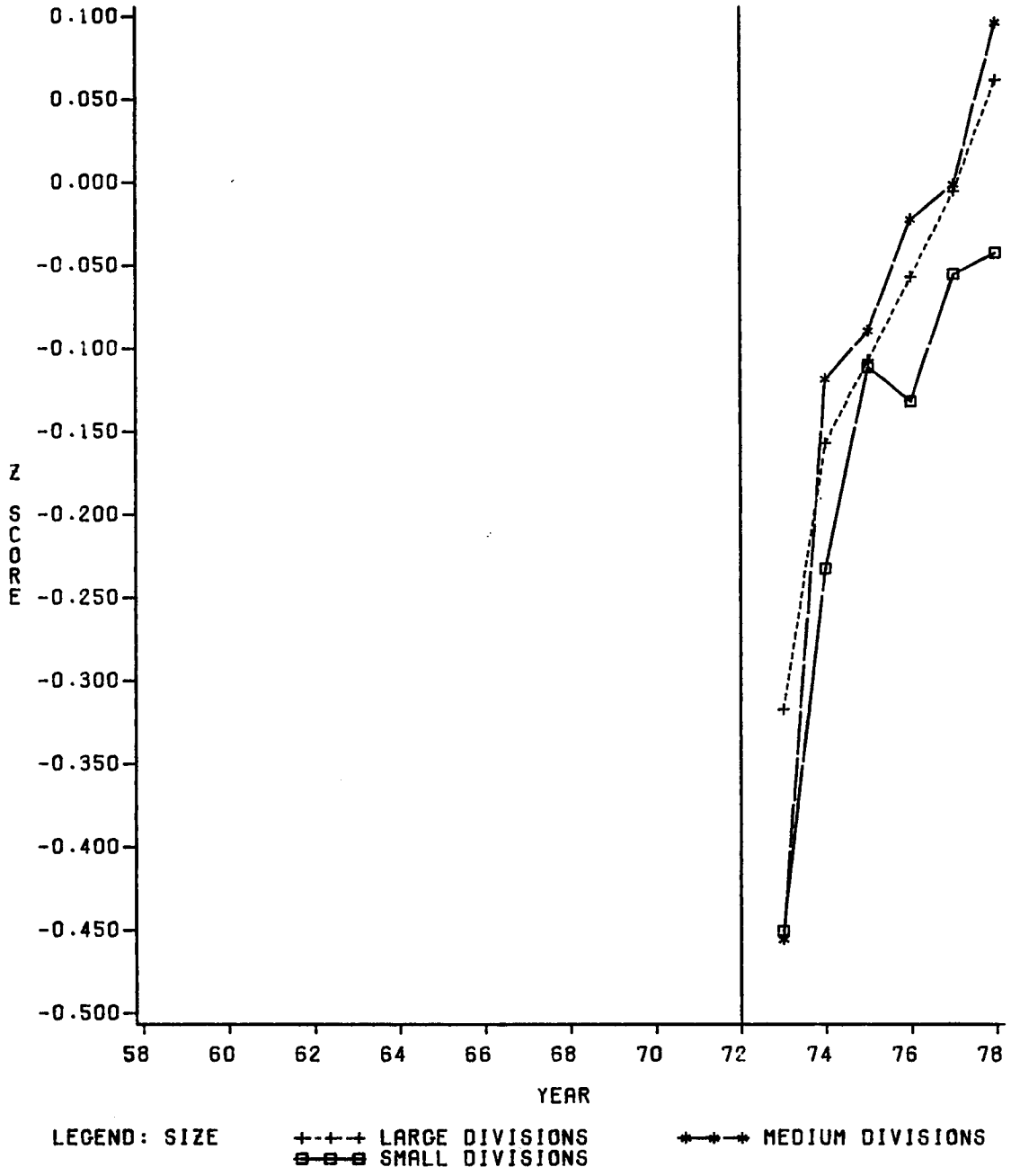
LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 41:
GRADE 4 ABILITY REPORTED AS Z SCORES IN SAMPLE DIVISIONS BY SCORE



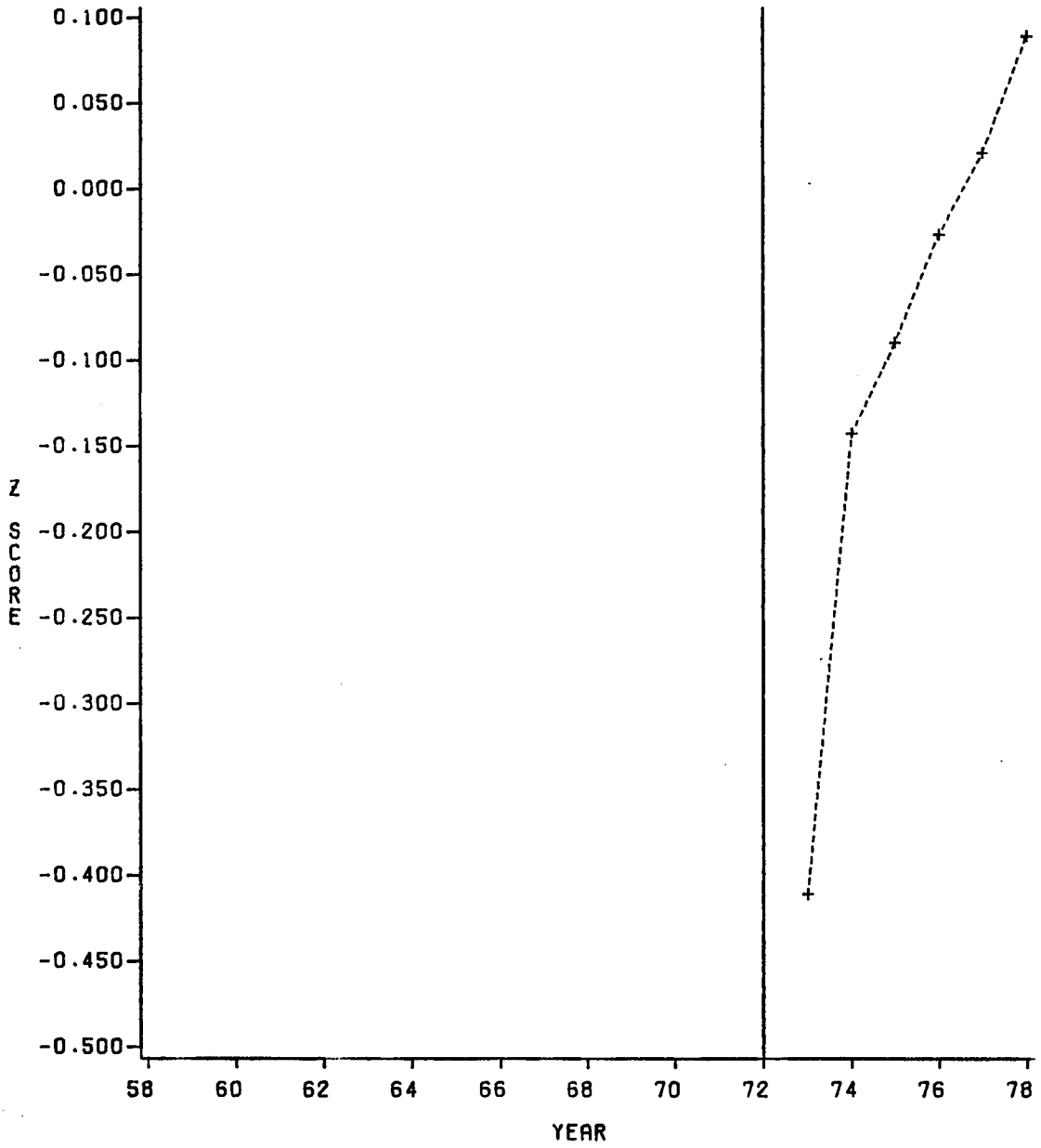
LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 42:
GRADE 4 ABILITY REPORTED AS Z SCORES IN SAMPLE DIVISIONS BY SIZE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 43:
GRADE 4 ABILITY REPORTED AS Z SCORES - VIRGINIA



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

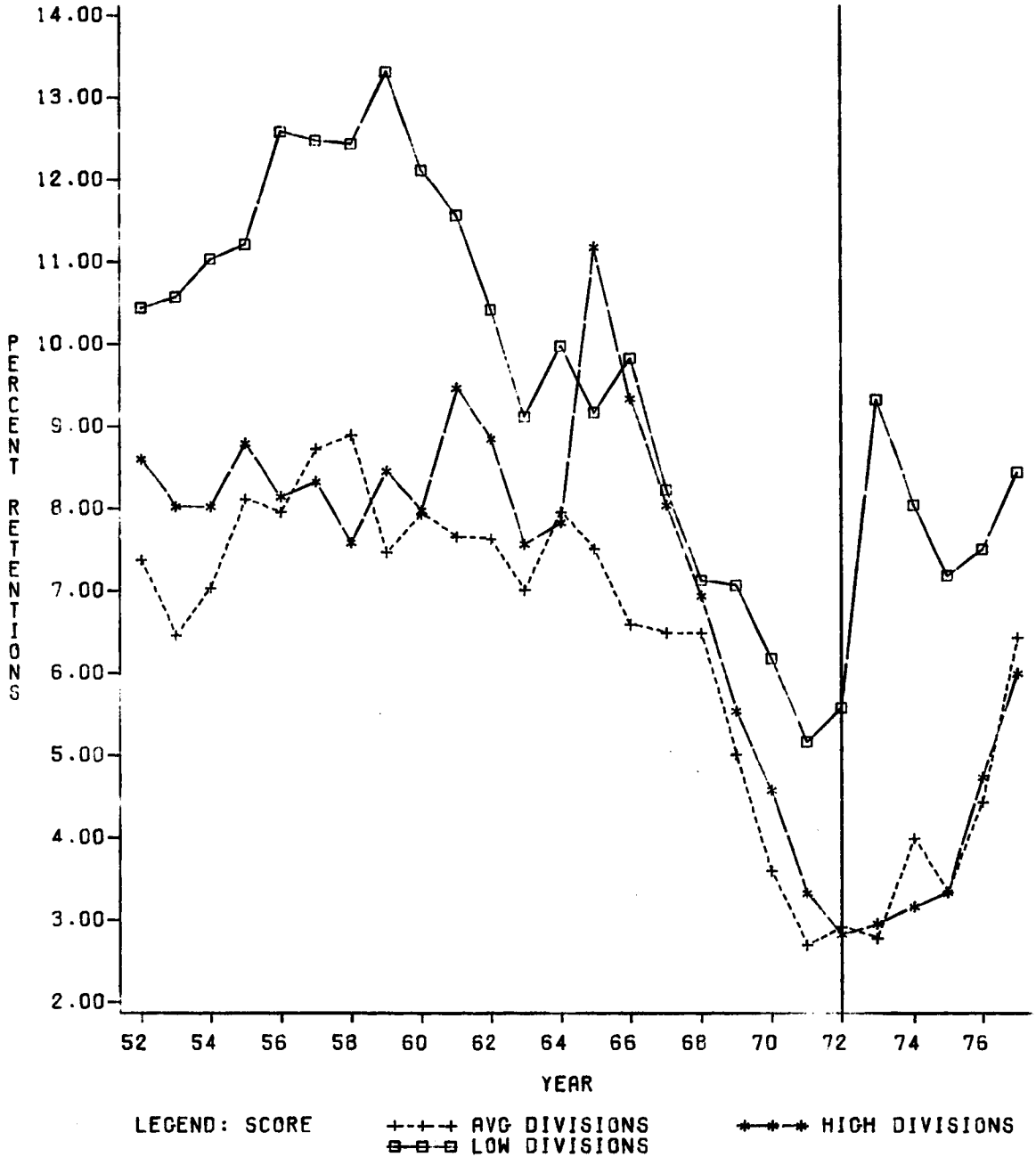
retentions for divisions with plans rated high was close to that of average divisions. From 1965 through 1968, it rose to the levels found in low divisions, while still exhibiting an overall decline. From 1969 through 1978, mean percentage of retentions in high divisions continued to decrease to match more closely the levels found in average divisions.

The mean percentage of retentions in low divisions rose gradually from 1952 to 1959 when it reached 13.31. From that point, its decline was interrupted only slightly from 1964 to 1966, through 1971 (5.16). After an increase in 1972 (5.77), it increased in 1973 to 9.23. After two years of small decreases, it rose in 1976 and again in 1977.

The mean percentage of retentions in high and average divisions remained stable from 1952 through 1965. Only in 1966, did the decrease begin to appear in these divisions. For high divisions, the downward trend was more than one percentage point each year. For average divisions, the decrease was much slower. It remained at about six percent for three years (1966 through 1968) and only then declined. Both in high and average divisions, the percentage of retentions began to move upward.

During the 1972-74 period, the mean percentage of retentions for high, average, and low divisions appeared to reach the bottom of a decline begun several years earlier and then began to rise. The increase observed was initially much stronger in low divisions. High and average divisions experienced increases that were smaller in any single year but, nevertheless, showed a steady trend upward.

FIGURE 44:
MEAN PERCENTAGE OF RETENTIONS IN GRADES K–7 IN SAMPLE DIVISIONS BY SCORE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

Sample by Size - Grade K-7

Figure 45. The figure, which indicates the mean percentage of retentions in large, medium, and small divisions, shows all divisions exhibiting the same approximate trend at two levels.

Large divisions had the smallest mean percentage of retentions throughout. It was less than eight percent for the entire period and less than five percent from 1963 through 1977.

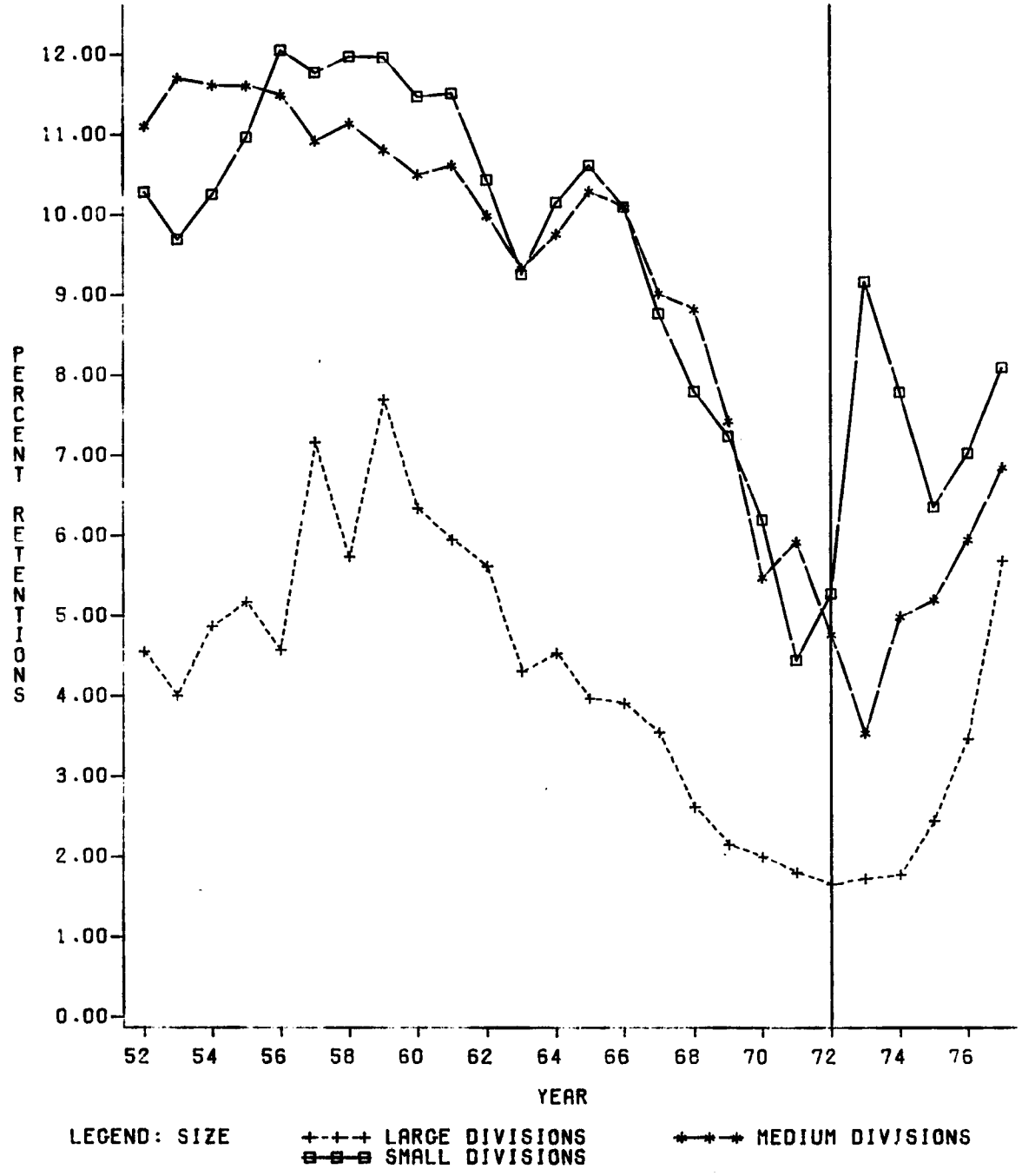
Medium and small divisions had mean percentages of retentions that approximated each other. It was not until 1969 that mean retentions dropped below eight percent in medium and small divisions.

The 1972-74 period was the lowest point in a decline in mean retention percentage for large, medium, and small divisions. Increases in retention rates began also in this period or shortly thereafter. Large divisions evidenced a gradual but steady turn upward that picked up momentum in 1975. Medium divisions' mean retention percentages moved upward from 1974 to 1977 at about the rate at which they declined in the previous four to five years. Samll divisions' retention rates (4.44 in 1971) never got as low as those of large divisions (1.65 in 1972) or of medium divisions (3.53 in 1973). In addition, they registered the largest increase observed. (From 5.27 in 1972 to 9.16 in 1973). They declined immediately through 1975 but 1976 and 1977 were characterized by an upward turn.

State Grade - K-7

Figure 46. The figure indicating the statewide mean percentage of retentions in grades K-7 shows a gradual increase in retentions from 1952 to 1958. From 1959 to 1963, the mean percentage of retentions declines, rises from 1963 to 1966, and falls steadily to its lowest level in 1971.

FIGURE 45:
MEAN PERCENTAGE OF RETENTIONS IN GRADES K-7 IN SAMPLE DIVISIONS BY SIZE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

The 1972-74 period contains the change in direction of retention rates in grades K-7 in Virginia.

Sample by Score - Grades 8-12

Figure 47. The plot of mean percentage of retentions in grades 8-12 for the sample, considered by score, shows that for all divisions, the mean percentage of retention rose throughout the fifties and peaked in the late fifties. A general decline set in which lasted through the sixties, reached its lowest level in the early seventies, and began to rise again.

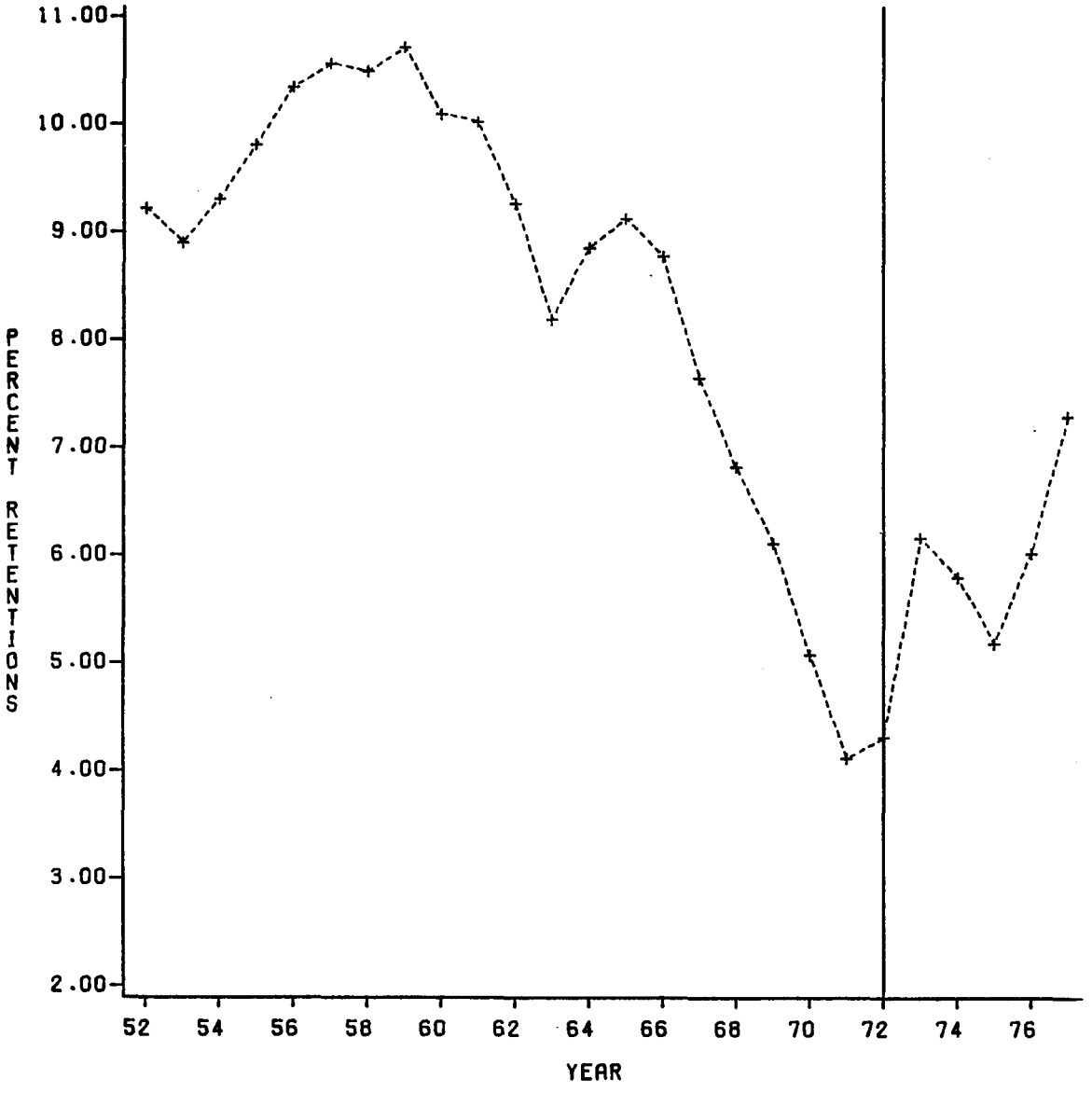
High divisions had the lowest retention rates through the mid-fifties while average divisions generally had the highest rates. From 1960 through 1963, low divisions had the lowest mean percentage of retentions. They took the middle position regarding retention rates for the next three years and in 1968, they had the highest mean percentage of retentions and continued to do so through 1977. From 1964, average divisions tended to have the smallest retention rates. High divisions' retention rates fell in between, though they were usually closer to the average divisions than to the low divisions.

The 1972-74 period ends the long period decline begun in the late fifties. Retention rates for all divisions began to rise in this period. Low divisions evidenced a steady trend upward. High divisions moved upward a bit more slowly except in 1977 (7.1 in 1976 to 9.4 in 1977). Average divisions' retention rate increased the least. It was three percentage points less than that of high and low divisions in 1977.

Sample by Size - Grades 8-12

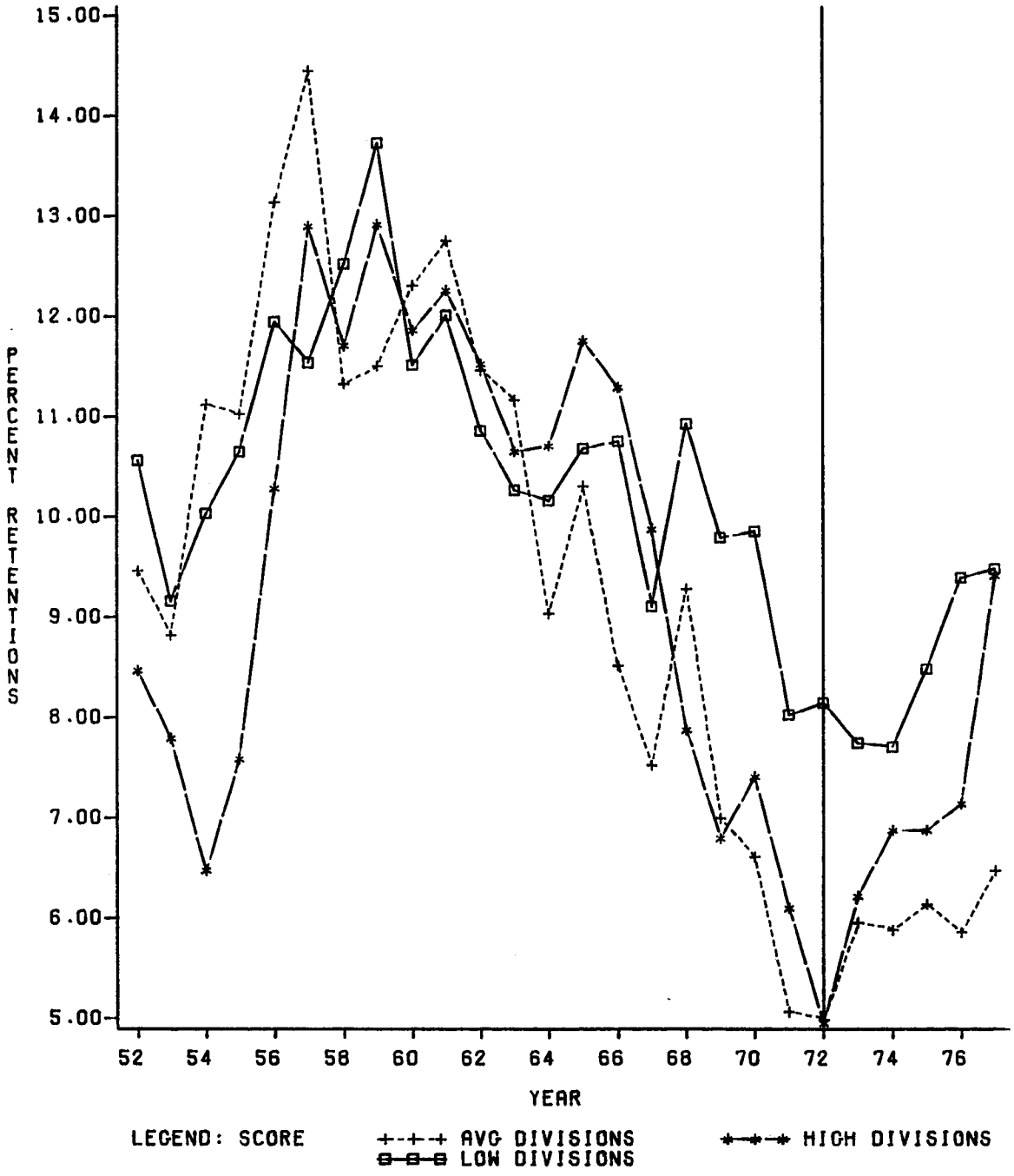
Figure 48. The figure which represents the mean percentage of retentions in grades 8-12 of the sample divisions, according to size,

FIGURE 46:
MEAN PERCENTAGE OF RETENTIONS IN GRADES K-7 IN VIRGINIA



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 47:
MEAN PERCENTAGE OF RETENTIONS IN GRADES 8–12 IN SAMPLE DIVISIONS BY SCORE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

shows that in nineteen of the twenty-six years large divisions had the lowest retention rate. Medium divisions had the lowest rate seven times. Small divisions never had the lowest rate, but they had the highest rate twenty times.

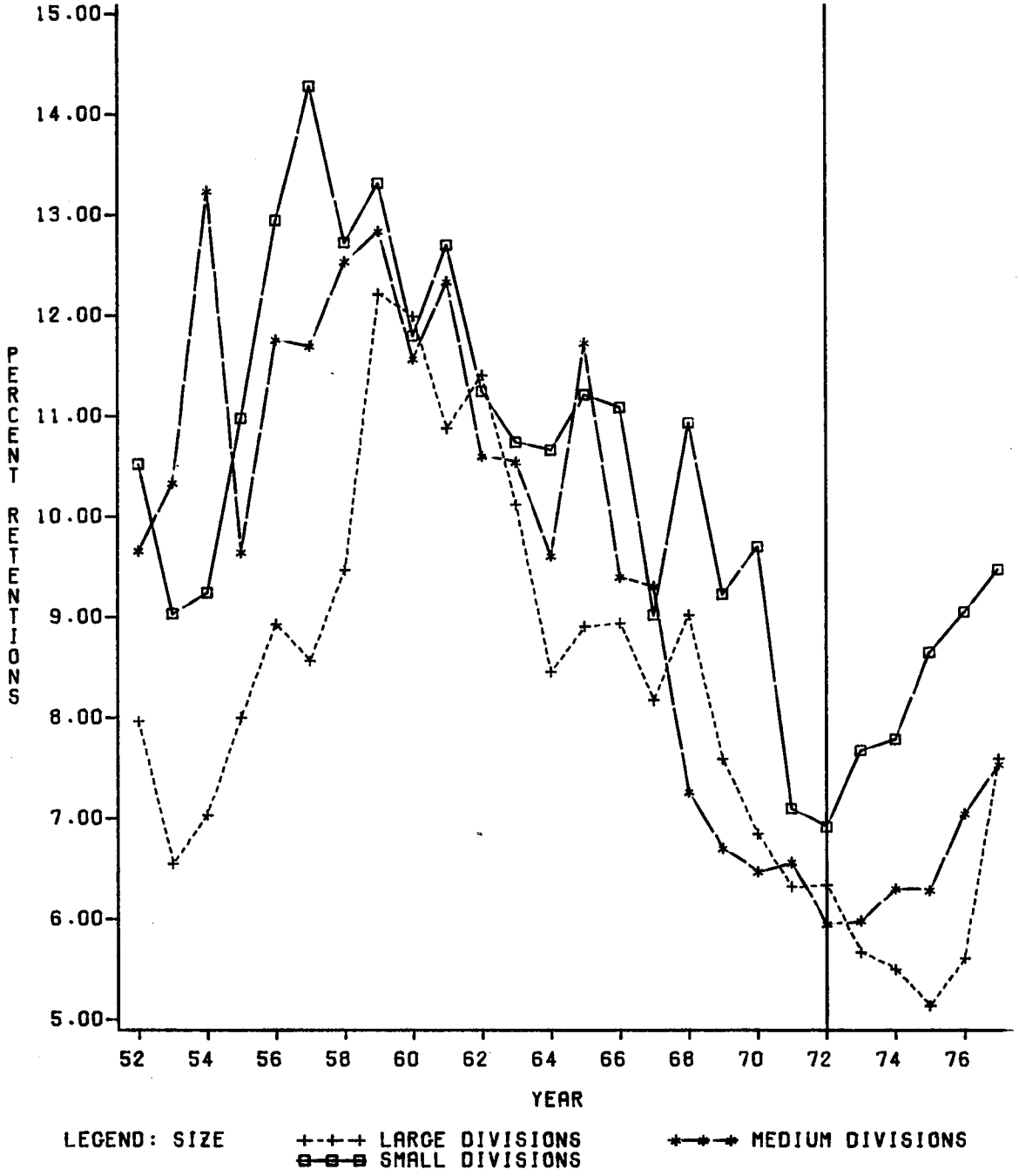
The general trend shows the mean percentage of retentions rising for large, medium, and small divisions through the late fifties. With the opening of the sixties, a steady decline began and continued throughout the decade. The decline ended for medium and small divisions in the 1972-74 period and in 1975 for large divisions. Retention rates then began to climb - first in small divisions, then in medium divisions, and last in large divisions. The increasing trend was gradual. Sometimes it was even less than one percent. The exception occurred in 1977 in large divisions when the retention rate increased from 5.60 in 1976 to, 7.59 in 1977.

The 1972-74 period was characterized by the end of more than a decade of declining retention rates and the beginning of a steady increase in them for medium and small divisions. One year later, in 1975, the same things happened in large divisions.

State Grade 8-12

Figure 49. The statewide data in grades 8-12 shows that beginning with 1953, the state's mean percentage of retention increased almost a complete percentage point each year until it reached a three-year plateau from 1957 through 1959. Then a period of almost unbroken decline set in through 1973 when the state's mean retention rate was 5.41. In 1974, the trend began to climb upward. It moved slowly at first, but in 1977 a substantial increase took the mean retention rate almost back to its 1952 level.

FIGURE 48:
MEAN PERCENTAGE OF RETENTIONS IN GRADES 8-12 IN SAMPLE DIVISIONS BY SIZE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

In 1972-74, the decline in the state's mean retention rate ended its more than decade long trend and turned upward.

Sample by Score - Grades K-12

Figure 50. The plot of mean percentage of retentions in grades K-12 for the sample divisions, considered by score, increased through the fifties, reached its highest level in the late sixties, declined through the early seventies, and then started to climb again.

Average divisions tended to have the lowest retention rates, and low divisions tended to have the highest.

The period betweeen 1972-74 was the time in which the decline in rates ended and a turn upward began. The upturn occurred in larger increments for low divisions than in high or average divisions. Between 1972 and 1973, low divisions increased from 6.6 to 8.6 while high divisions rose from 3.7 to 4.3 and average divisions increased from 3.8 to 4.1.

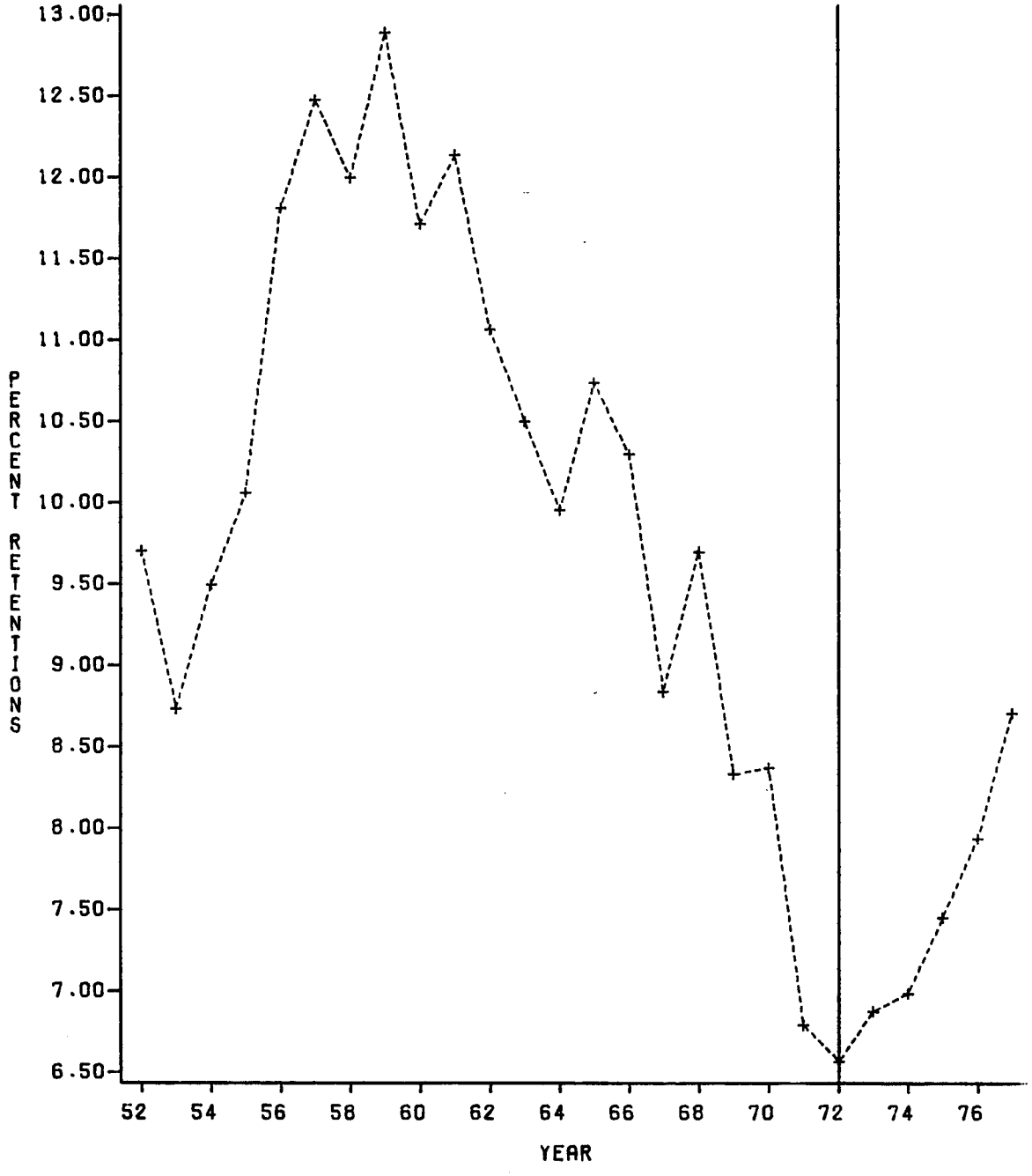
Sample by Size - Grades K-12

Figure 51. The figure shows that large divisions have the lowest mean percentage of retentions for the entire twenty-six years being studied. In no year did the mean retention rate rise ten percent or above and in only two years did it ever get higher than eight percent.

Not until 1969, did the mean retention rate for medium divisions drop below eight percent. It did not happen in small divisions until 1970. Small divisions tended to have the highest mean percentage of retentions for the period under review.

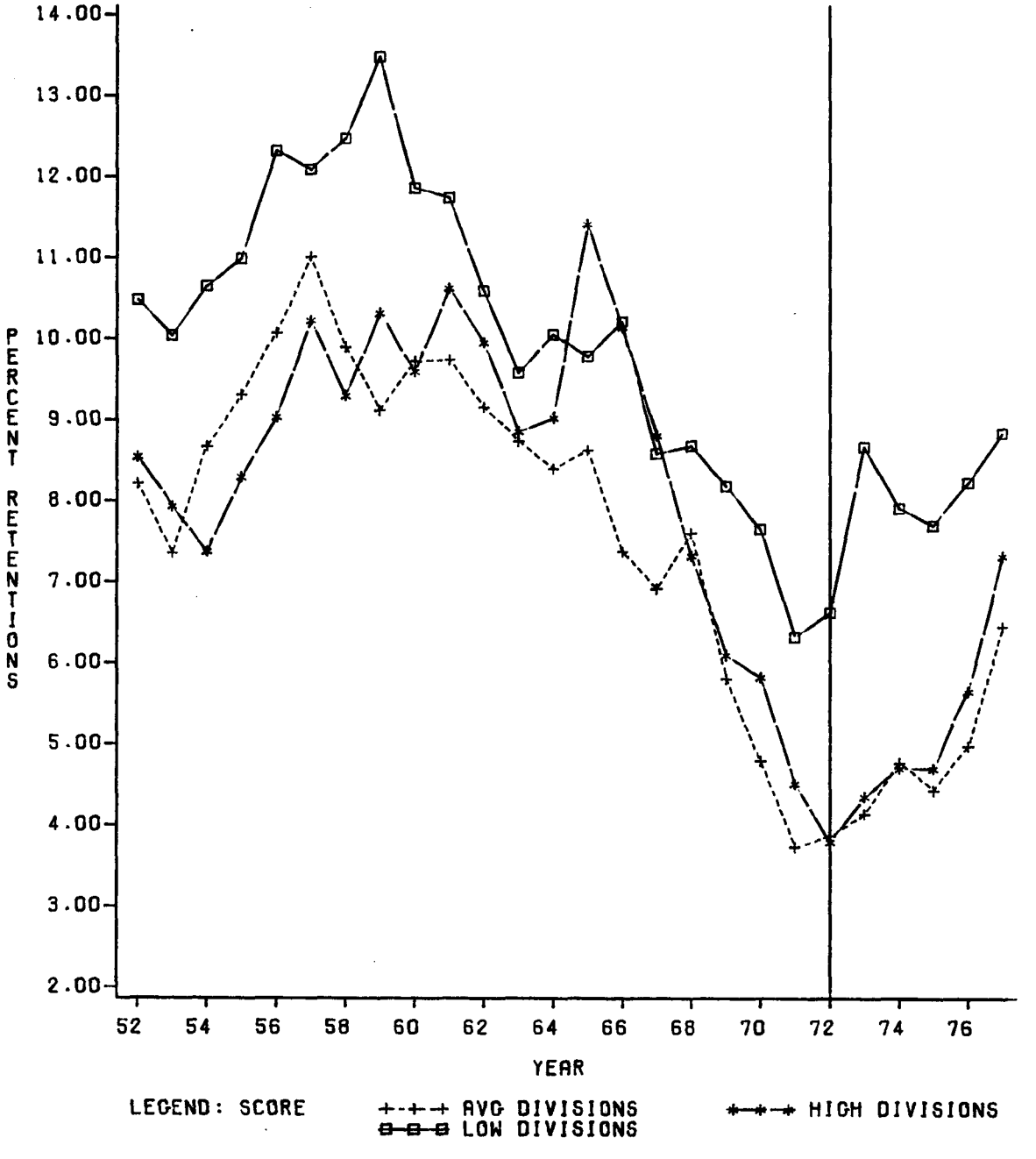
For all types of divisions, however, mean retention rates increased through the late fifties. Then they went into a long period of decline through the 1972-74 period. After reaching their lowest levels, the

FIGURE 49:
MEAN PERCENTAGE OF RETENTIONS IN GRADES 8-12 IN VIRGINIA



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 50:
MEAN PERCENTAGE OF RETENTIONS IN GRADES K-12 IN SAMPLE DIVISIONS BY SCORE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

mean retention rates turned upward. In large divisions the increase began gradually and then picked up speed. A jump from 4.26 to 6.42 occurred from 1967 to 1977. Medium size divisions experienced a more sudden increase (from 4.4 in 1973 to 5.5 in 1974). This was followed by a brief plateau in 1975, and then two more increases of more than one percent each. The mean retention rate in small divisions increased more than 2.5 percent in 1973. A two-year decline occurred but in 1976 the rate began to climb once again.

As in grades K-7 and grades 8-12, the general pattern of mean retention rates in grades K-7 for large, medium, and small divisions was an increase through the late fifties which was followed by a decline through the 1972-74 period in which the decline ended and an upward trend began.

State Grade K-12

Figure 52. The plot of the mean percentage of retentions in grades K-12 for the state indicates an increasing retention rate through 1958. From 1959 through 1971, the overall pattern shows an almost continuous decline.

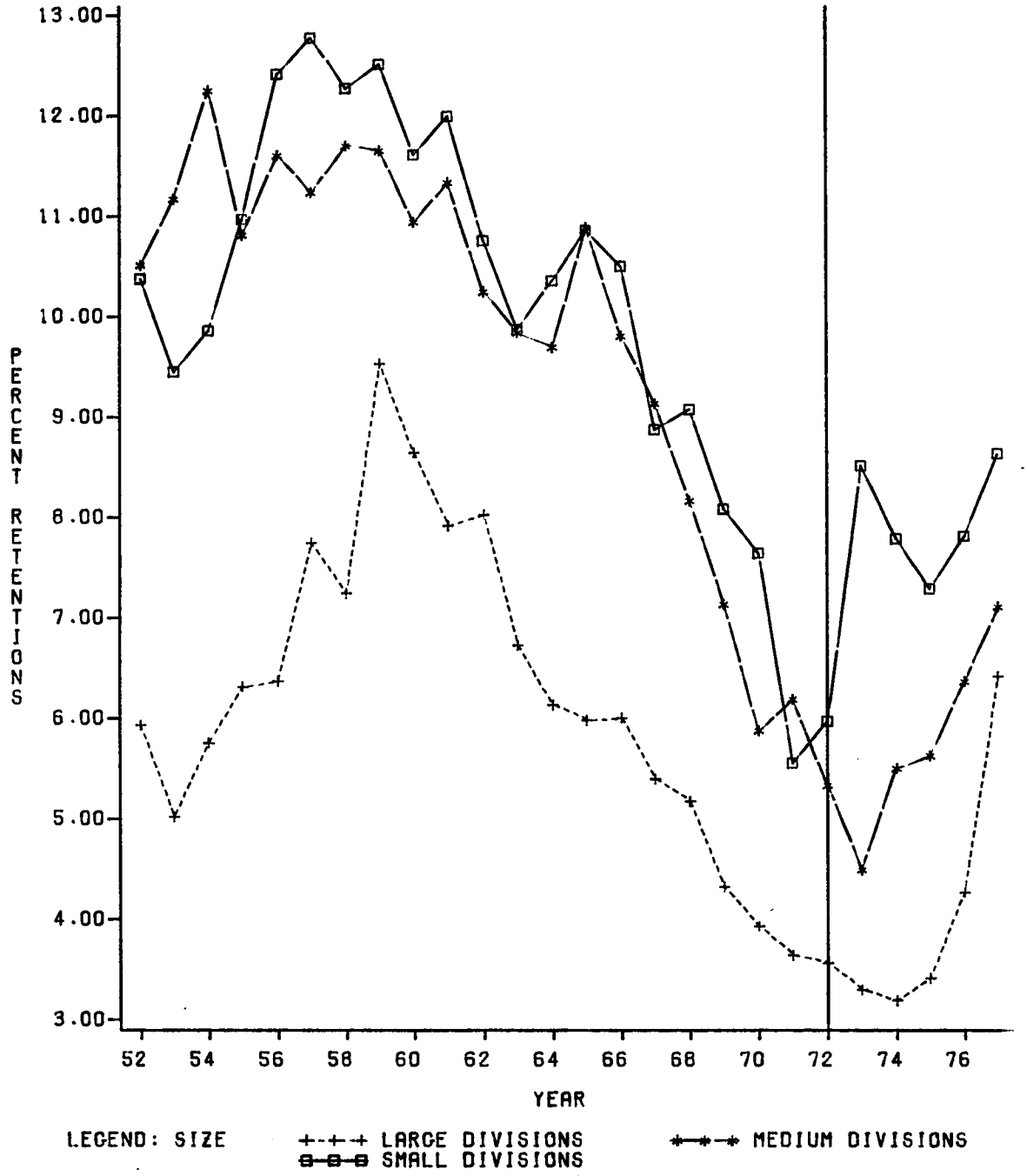
In the 1972-74 period, the mean percentage of retentions in grades K-12 for the state reached its lowest level after a long decline and then began to turn upward.

Changes in statewide data were small. Increases or decreases were always less than one percentage point throughout the twenty-six year period.

Sample by Score - Grade 11

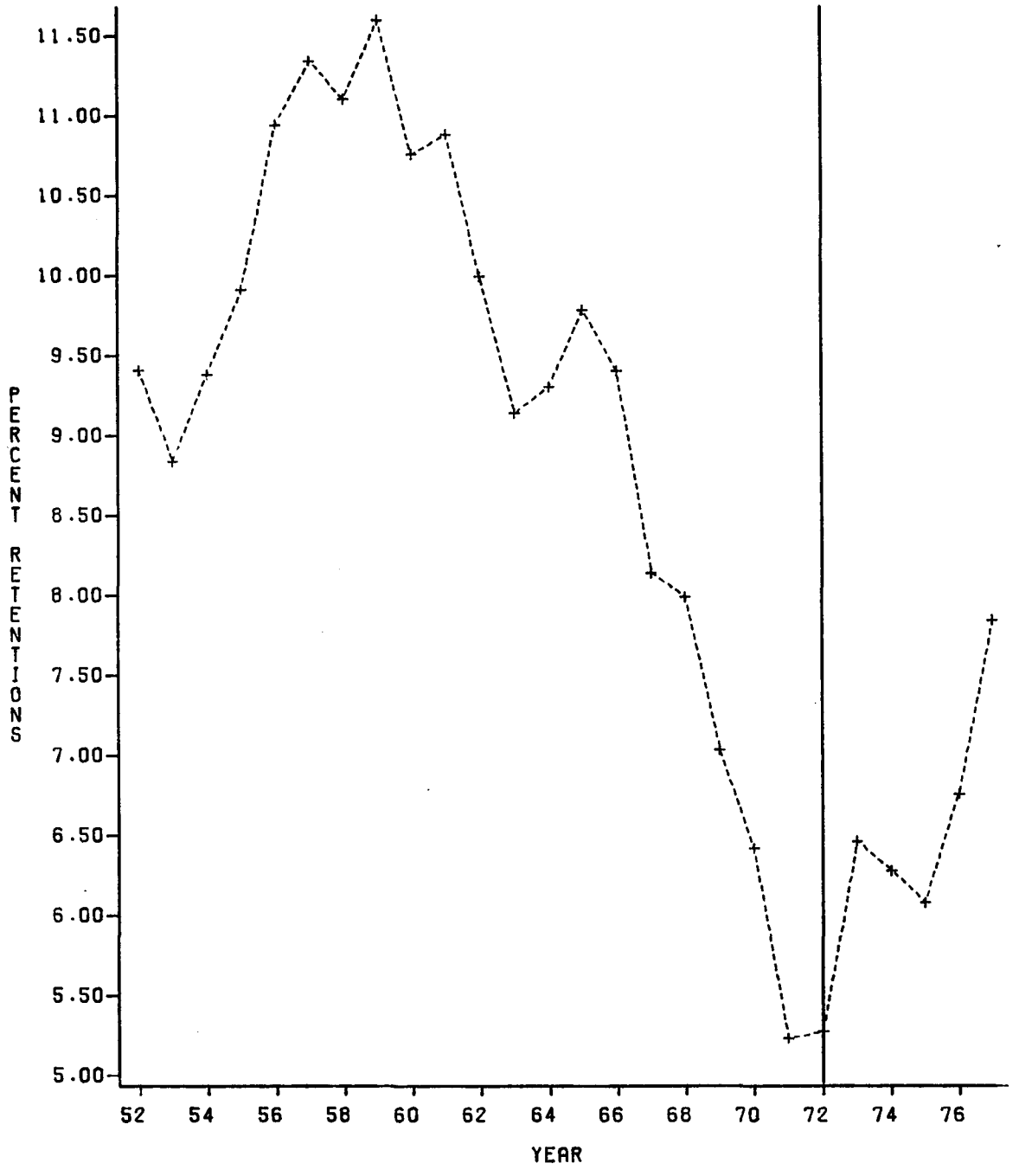
Figure 53. Viewing the mean percentage of retentions within the sample divisions, considered by score, few consistent trends relating

FIGURE 51:
MEAN PERCENTAGE OF RETENTIONS IN GRADES K-12 IN SAMPLE DIVISIONS BY SIZE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 52:
MEAN PERCENTAGE OF RETENTIONS IN GRADES K-12 IN VIRGINIA



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

to score can be seen. The overall pattern appeared to be marked by a gradual decline from 1972 through the early seventies, which was followed by an upward trend.

Average divisions tended to exhibit the most variation. In 1958 for example, they had the highest mean percentage (10.95) and in the next year, 1959, they had the lowest (6.5). High divisions demonstrated almost as much variation as average divisions (10.3 in 1958 and 7.9 in 1959). Low divisions were the most stable with regard to mean retention rates which did not go above 8.77 or below 5.27.

In the 1972-74 period and beyond, the abrupt changes descreased somewhat, but they did not disappear. For example, between 1972 and 1973 the percentage of retentions in high divisions increased from 2.4 to 9.2. This is a change from the lowest number of retentions to the highest number.

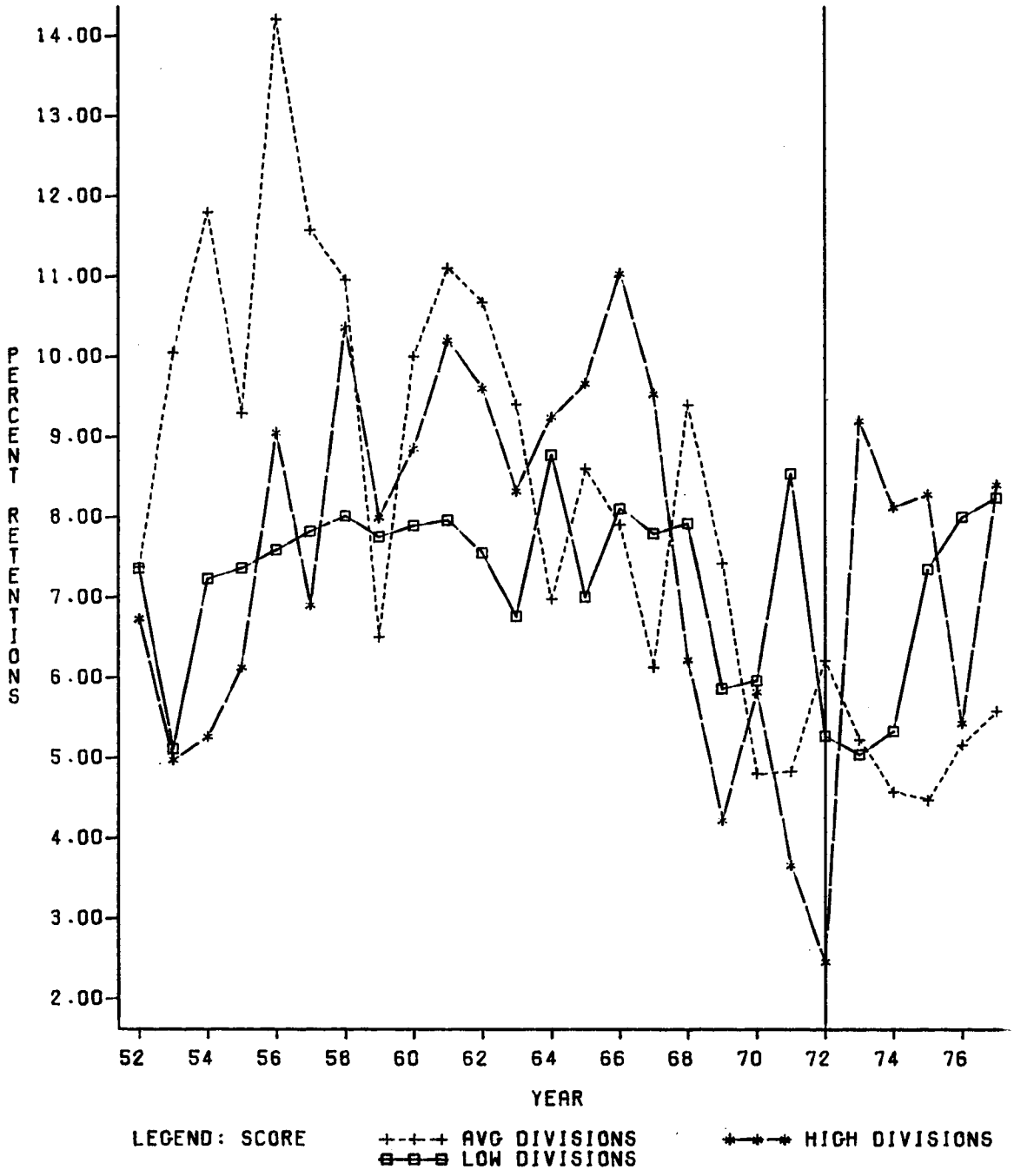
Sample by Size - Grade 11

Figure 54. The overall trend in the mean percentage of retentions for large, medium, and small divisions is a slight rise through the late fifties which is followed by a downward trend through 1972-74. This is, in turn, followed by an upward turn.

Relative positions regarding the mean percentage of attendance of large, medium, and small divisions changed, although not as abruptly or frequently as in figure 52. From 1973 through 1977, small divisions consistently had the highest mean percentage of retentions. Medium divisions had the next highest mean percentage, and large divisions had the smallest mean percentage of retentions.

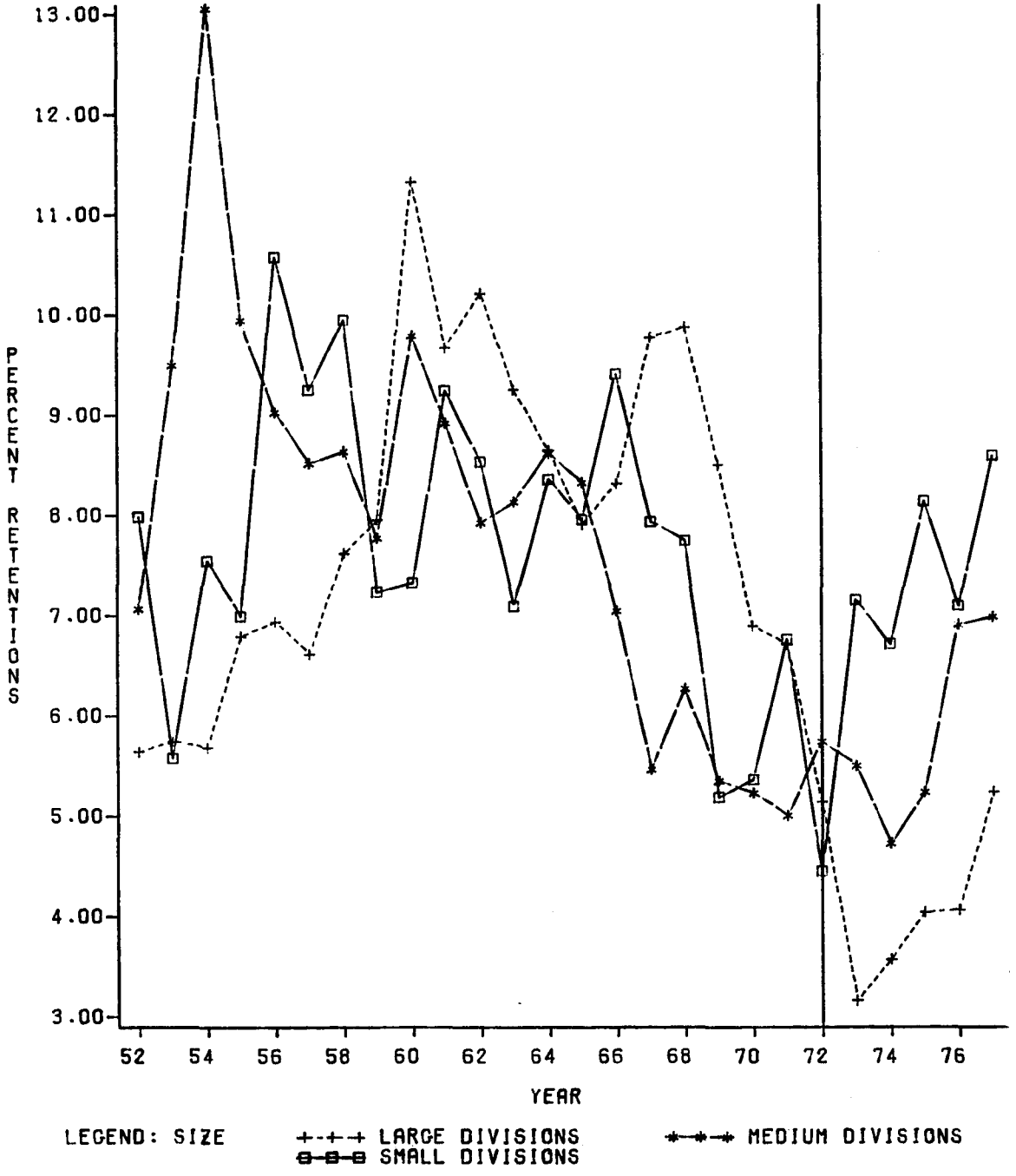
The years 1972-74, were characterized by the end of a period of declining retention rates and the beginning of a period of increases.

FIGURE 53:
MEAN PERCENTAGE OF RETENTIONS IN GRADE 11 IN SAMPLE DIVISIONS BY SCORE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 54:
MEAN PERCENTAGE OF RETENTIONS IN GRADE 11 IN SAMPLE DIVISIONS BY SIZE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

State - Grade 11

Figure 55. The mean percentage of grade 11 retentions throughout the state rose from 6.05 in 1952 to 9.03 in 1957. Shortly thereafter a sixteen-year decline followed (a perfectly descending order is interrupted by only one year, 1965). After reaching bottom in 1973, the percentage of retentions began a steady climb upward.

The 1972-74 period was the turning point for the decline and upward swing of the retention rate for eleventh grade students in Virginia. The lowest point reached was 4.43 in 1973.

Sample by Score - Grade 4

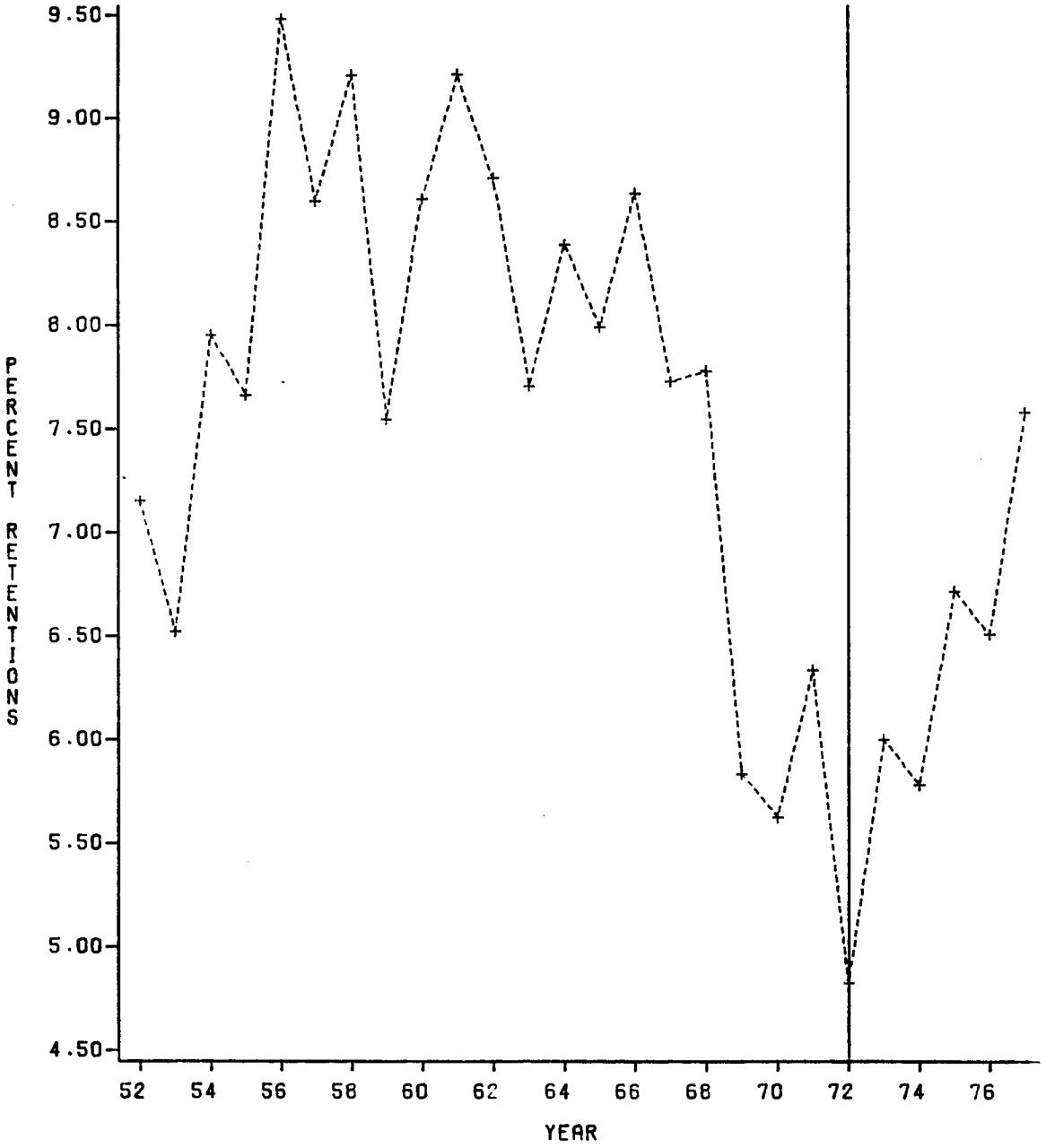
Figure 56. The mean percentage of retentions in grade 4 in the sample divisions, considered by score, shows an overall rise through the late fifties. This was followed by a decline through the early seventies when it reached its lowest level and then turned upward.

Low divisions always had the highest mean retention rates while average divisions almost always had the lowest. Mean retention rates for high divisions tend to be closer to the latter than to the former.

The period from 1962 to 1972 showed the least variation in mean retention rates. Before and after this decade, low divisions tended to have mean retention rates about twice as large as average divisions.

In the 1972-74 period, low and high divisions reached the end of their respective downward trends and began to increase. Between 1972 and 1974, low divisions' retention rates grew from 4.0 to 9.1. Rates for average divisions reached their lowest level in 1971 at 1.29, remained stable through 1973, and rose in 1972 to 3.79. The retention rate for average divisions remained below two percent for four years (1970 through 1973). Similarly the rate for high divisions remained at

FIGURE 55:
MEAN PERCENTAGE OF RETENTIONS IN GRADE 11 IN VIRGINIA



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

about two percent from 1971 through 1974. In 1975, it rose to 3.45 percent.

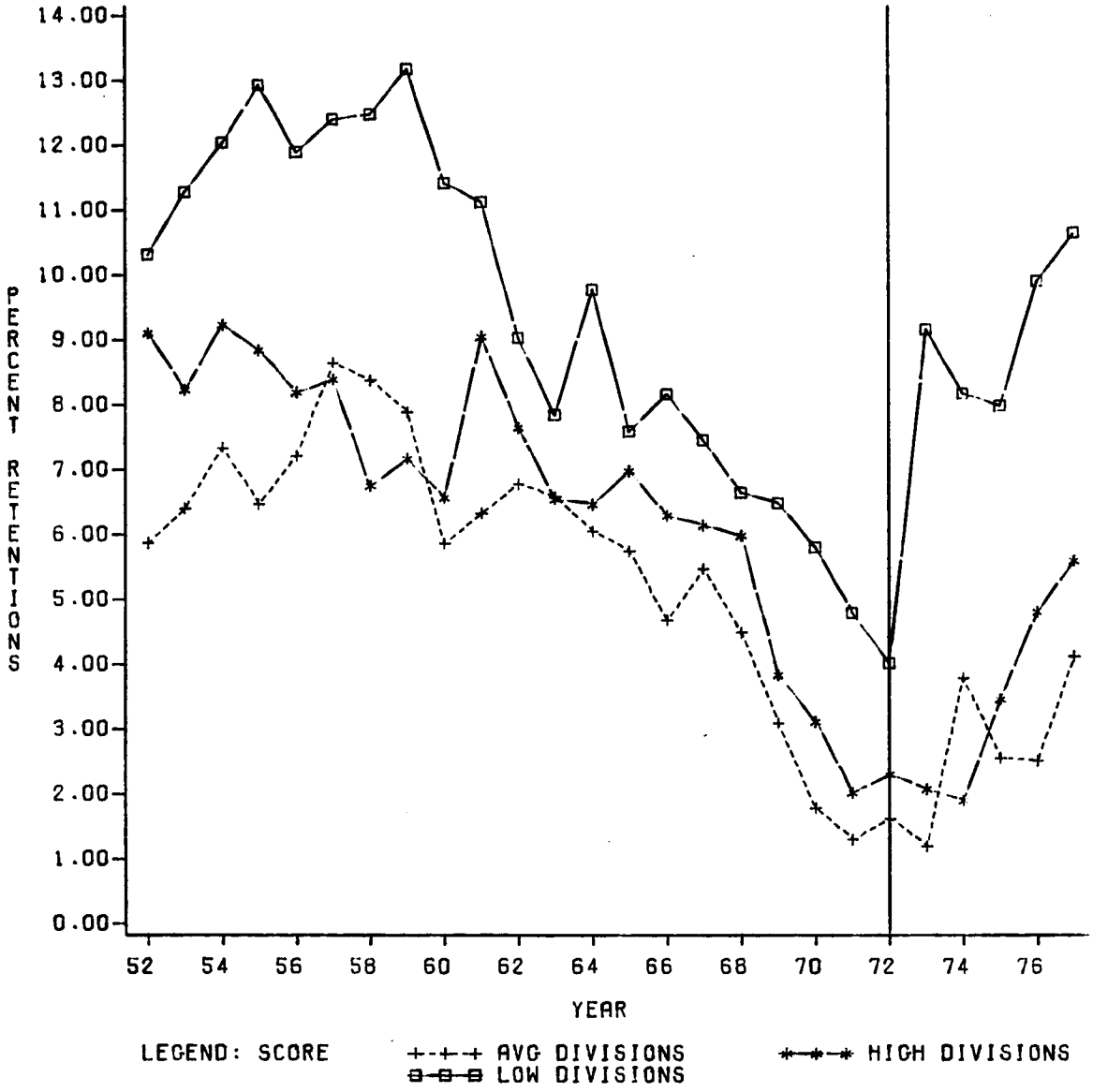
Sample by Size - Grade 4

Figure 57. The figure, illustrating mean percentage of retentions in grade 4 in the sample divisions, considered by size, shows that large divisions always had the lowest retention rates for fourth graders. In only five years, did their mean rate rise above five percent (1955-6.51; 1957-6.69; 1959-7.36; 1960-5.81; and 1961-6.26). From 1962 to 1976, it never rose much beyond four percent.

The mean retention rate fell below four percent in only two years (1972-2.85 and 1973-3.63) in medium divisions and, similarly, in only two years in small divisions (1974-3.40 and 1972-3.93).

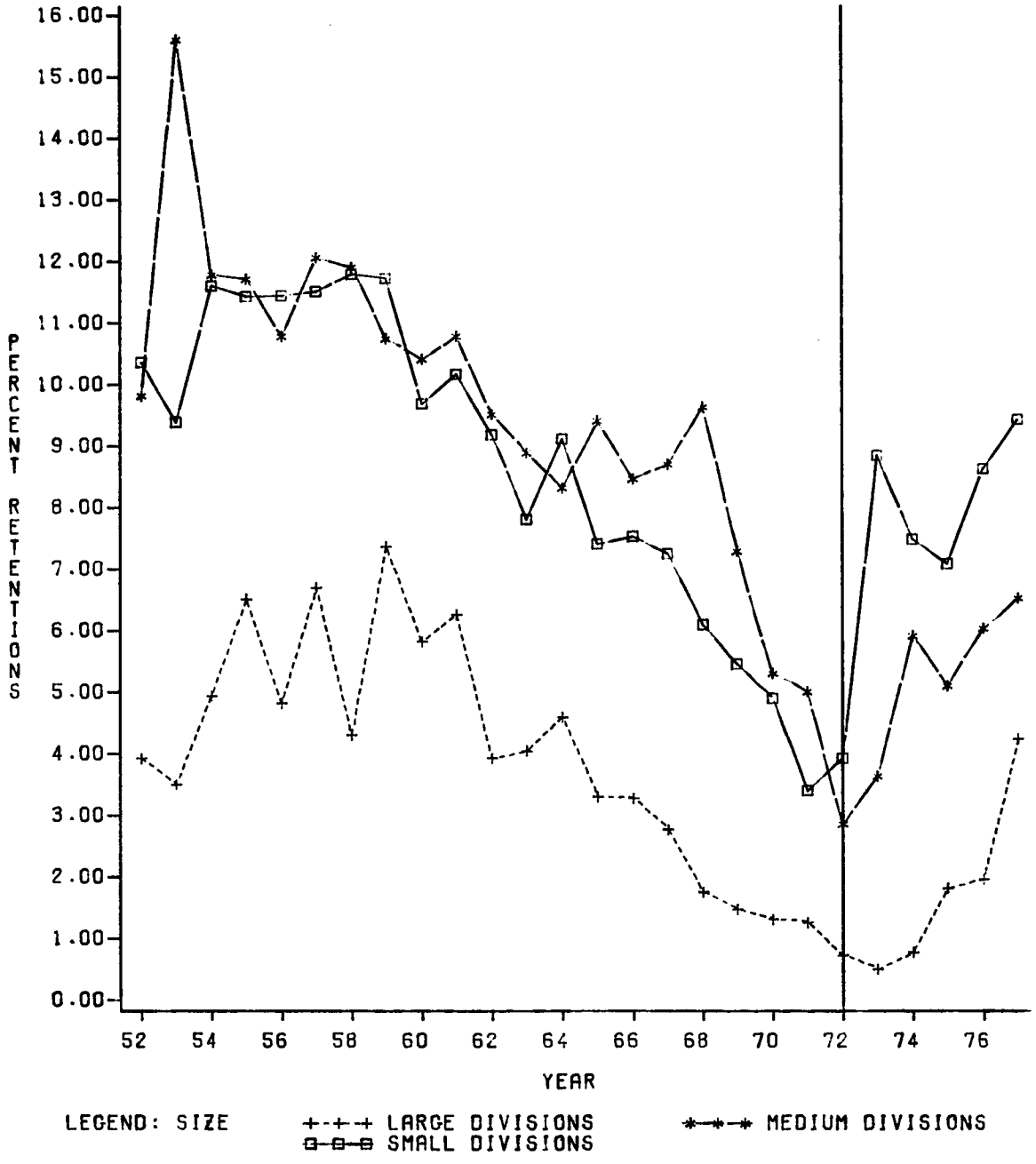
One again, the overall trend showed a rise in retention rates through the late fifties. A decline, which began in the early sixties, continued throughout the decade to the early seventies. The 1972-74 period was characterized by the conclusion of the decline and an upward turn in the trend. Small divisions changed most radically with a retention rate of 3.93 in 1972 increasing to 8.84 in 1973. Medium divisions experienced an increase in retention rate a year later - 3.63 in 1973 rising to 5.90 in 1974. The change was most gradual in large divisions which did not experience a big increase until their retention rate rose from 1.97 in 1976 to 4.24 in 1977. In both small and medium divisions, retention rates dropped after their initial post-Standards of Quality increases before they began their upward path again. Nothing similar occurred in large divisions whose mean retention rate moved in a more gradual but consistently upward path.

FIGURE 56:
MEAN PERCENTAGE OF RETENTIONS IN GRADE 4 IN SAMPLE DIVISIONS BY SCORE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 57:
MEAN PERCENTAGE OF RETENTIONS IN GRADE 4 IN SAMPLE DIVISIONS BY SIZE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

State - Grade 4

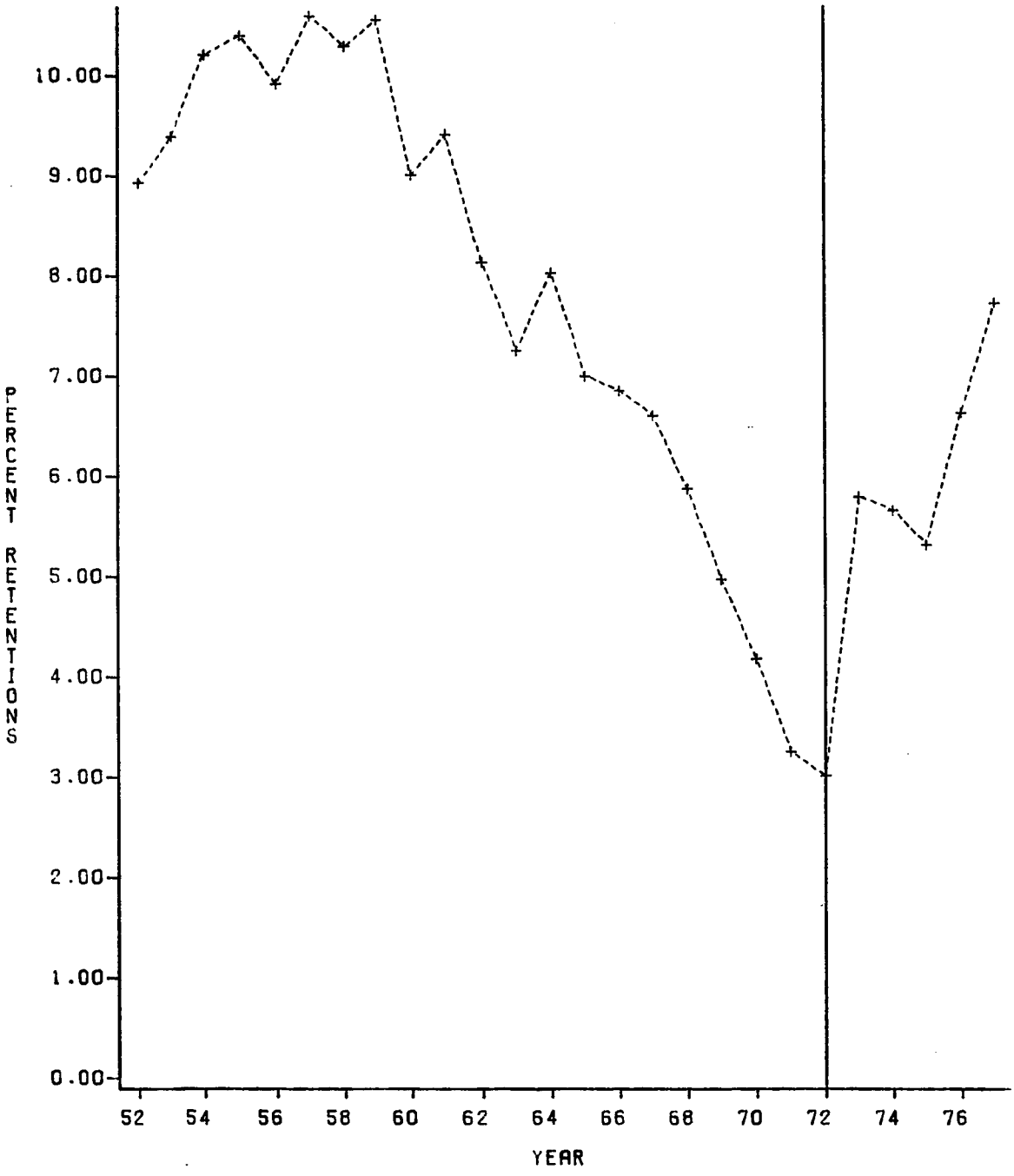
Figure 58. The retention for fourth graders changed much more than did the retention rate for eleventh graders. The retention rate for fourth graders started at eight percent and reached almost ten percent in the late fifties. For eleventh graders it started at six percent and rose to nine percent during the same approximate period. The period of decline for both grades was approximately the same (1958 to 1972 for the fourth grade and 1957-73 for the eleventh), but the retention rate in fourth grade dropped much faster and much lower than it did in the eleventh grade. From 1966 to 1972, it decreased about a full percentage point each year. For eleventh graders the drop was much less.

TABLE 7

RETENTION RATES FOR GRADES 4 AND 11 FROM 1957-77

	Year	Grade 4 Retention Rate		Grade 11 Retention Rate	
	1957	9.21		9.03	(Highest Rate)
	1958	9.82	(Highest Rate)	8.97	
	1966	6.05		6.20	
	1967	5.23		5.97	
	1968	4.60		5.81	
	1969	3.30		5.52	
	1970	2.55		5.37	
	1971	2.21		5.07	
First Standards of Quality and Objectives	1972	1.75	(Lowest Rate)	4.77	
	1973	1.96		4.43	(Lowest Rate)
	1974	2.22		4.59	
	1975	2.55		5.05	
	1976	3.61		5.17	
	1977	4.31		6.14	

FIGURE 58:
MEAN PERCENTAGE OF RETENTIONS IN GRADE 4 IN VIRGINIA



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

The table above clearly indicates the difference in the magnitude of the changes undergone in the retention rates in grades 4 and 11. In grade 4, there was an approximate eight point difference between the highest and lowest rates. For grade 11, there is about a four point difference. At the lowest levels, the retention rate for fourth graders was less than half of what it was for eleventh graders.

Once again, the 1972-74 period characterized the end of the long decline in retention rates and the beginning of the trend upward. This was true, although at different levels, for both fourth and eleventh grades.

Overageness

Overageness in grade K-7 was specifically addressed in one of the performance objectives of the 1972-74 Standards of Quality and Objectives and the data concerning overageness in those grades were presented earlier in this chapter. Here, overageness in grades 8-12, K-12, 11 and 4 will be presented as unobtrusive measures used to assess to what degree students are becoming more competent in fundamental academic skills and whether the quality of a division's Five-Year Improvement Plan, as measured by Epps's rating instrument, made a difference in the degree to which that goal was achieved.

Sample Divisions by Score - Grades 8-12

Figure 59. For all divisions the mean percentage of overageness in grade 8-12 decreased from 1952 to 1957. The decrease was most pronounced in low divisions. The downward path for high and average divisions was more erratic.

From 1958 to 1975 the mean percentage of overageness in low divisions slowed its path downward. It then moved in a series of waves

with each succeeding wave cresting at a slightly lower level than the one which preceded it.

The mean percentage of overageness in average divisions continued its declining trend from 1957 to 1959. From 1960 to 1972, it moved upward and then declined to a low 27.28. In 1974 and 1975, it rose to approximately 32 percent in each year. From 1974 to 1977 the trend upward picked up momentum.

High divisions' mean percentage of overageness broke its downward pattern with an increase to 34.13 percent in 1958. The overall trend was resumed the following year, however, and continued through 1961. It then moved in a series of depressions to its low of 24.85 in 1975. It increased to 31.50 in 1976 and then to 35.44 in 1977.

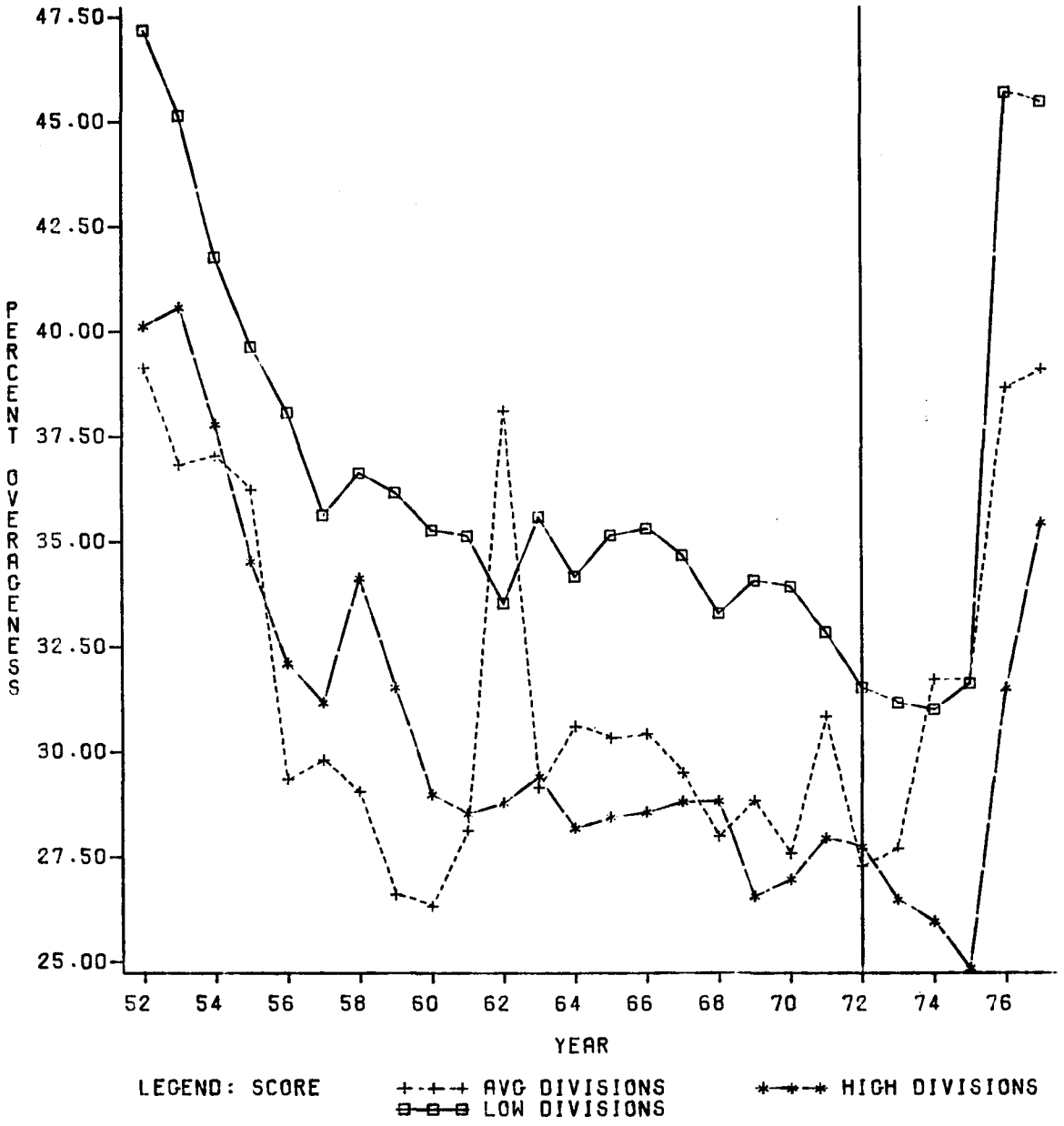
In the 1972-74 period, the mean percentage of overageness in low and average divisions reached its lowest level. An upward trend began in 1974 for the latter. This did not occur until 1976 for the former. Mean percentage of overageness for low divisions did not increase until 1976. High divisions' mean percentage reached its lowest level in 1975. It increased noticeably in each of the next two years.

Sample by Size - Grades 8-12

Figure 60. The plot of the mean percentage of overageness in grades 8-12 in large, medium, and small divisions shows that the fifties was a period of declining overageness for all sizes of divisions. The sixties was a period of fluctuation, but the mean percentages never equaled those of the early fifties. The early seventies saw a strong upward turn which appeared to return levels to those of the fifties.

Large divisions had the lowest mean percentage of overageness throughout the twenty-six year period. During the late fifties and

FIGURE 59:
MEAN PERCENTAGE OF OVERAGENESS IN GRADES 8-12 IN SAMPLE DIVISIONS BY SCORE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

sixties, the mean percentage of overageness fluctuated. It reached 28.71 in 1958, 23.51 in 1962 and 27.95 in 1966. From 1966, a decline set in through 1972, after which a turn upward began.

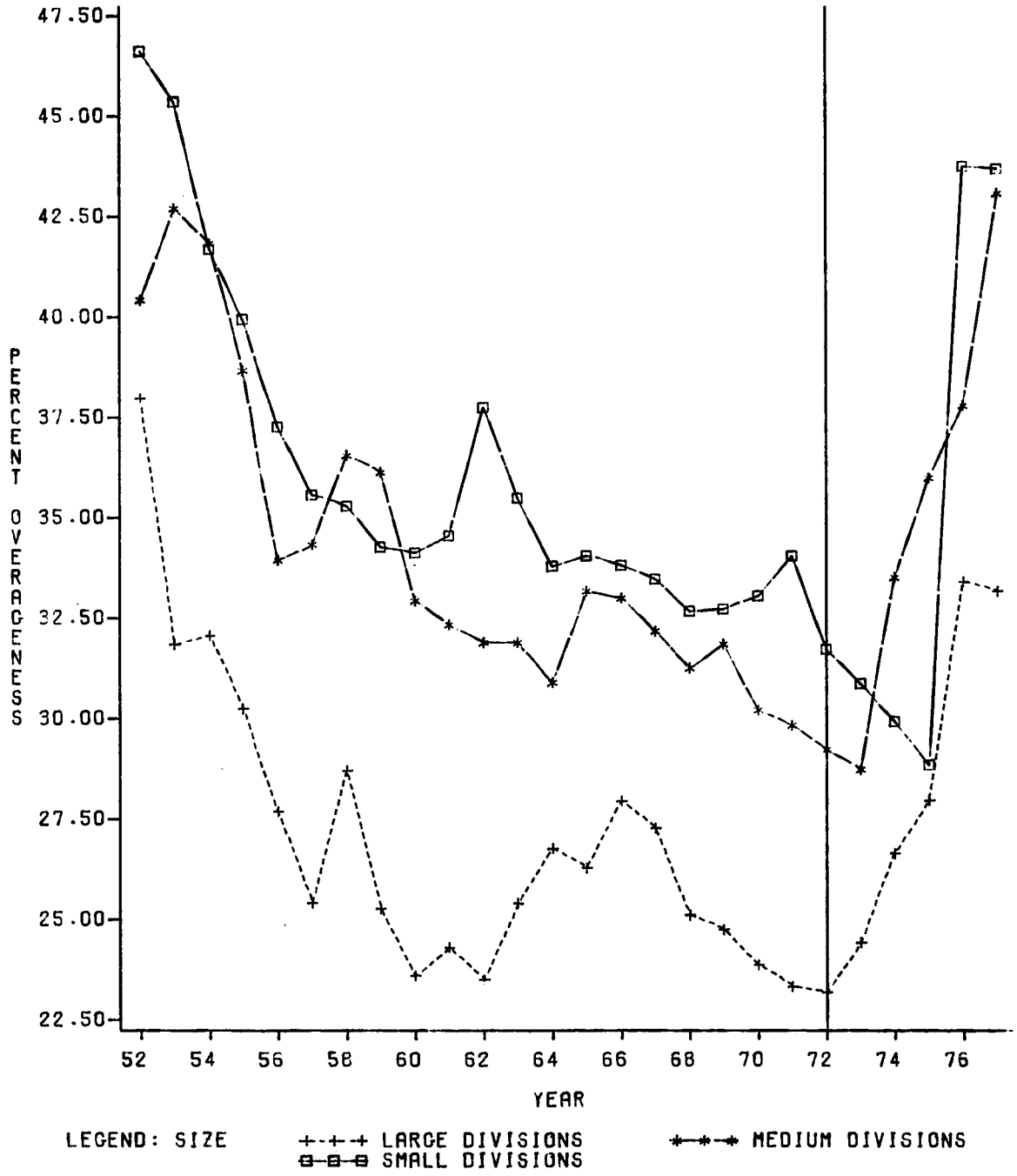
Medium and small divisions had rates which closely approximated each other during this period. They too experienced a decline in the fifties. In the sixties, however, mean overageness in medium divisions was consistently lower than in small divisions. The overall trend, however, was in a downward path. Medium divisions reached their lowest level in 1973 (28.73) and small divisions' mean percentage of overageness reached its lowest level in 1975. Both types of divisions experienced upward surges after these low points were registered. For medium division the following mean percentages were found after the low of 28.73 in 1973; 33.51; 35.98; 37.78 and 43.06. Small division's rates reached the lowest level in one year. They rose from 28.85 in 1975 to 43.75 in 1976.

For large and medium divisions, the 1972-74 period marked the end of the historic decline in the mean percentage of overageness and the beginning of the trend upward. While the decline in small divisions persisted through 1975, it took only one year to bring their rate above that of the other two kinds of divisions.

State - Grades 8-12

Figure 61. While the mean number of overage students in grades 8-12 in the state was increasing from 1952 to 1971, the percentage of overage students was decreasing. Throughout the fifties a steady downward path was evident. A decrease of greater than ten percent occurred in the decade between 1952 and 1962. An upward trend appeared briefly in the mid-sixties, but by 1966 the downward path was resumed. This

FIGURE 60:
MEAN PERCENTAGE OF OVERAGENESS IN GRADES 8–12 IN SAMPLE DIVISIONS BY SIZE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

trend reached its lowest point at 26.45 in 1973. Over the next four years, it rose back to the levels of the early fifties in only two stages. The greatest jump occurred in the second stage as the figure and table 8 indicates:

TABLE 8

MEAN PERCENTAGE OF OVERAGE STUDENTS IN GRADES 8-12 IN VIRGINIA: 1973-77

Year	Mean Percentage of Overage Students
1973	26.45
1974	29.07
1975	28.99
1976	37.47
1977	38.25

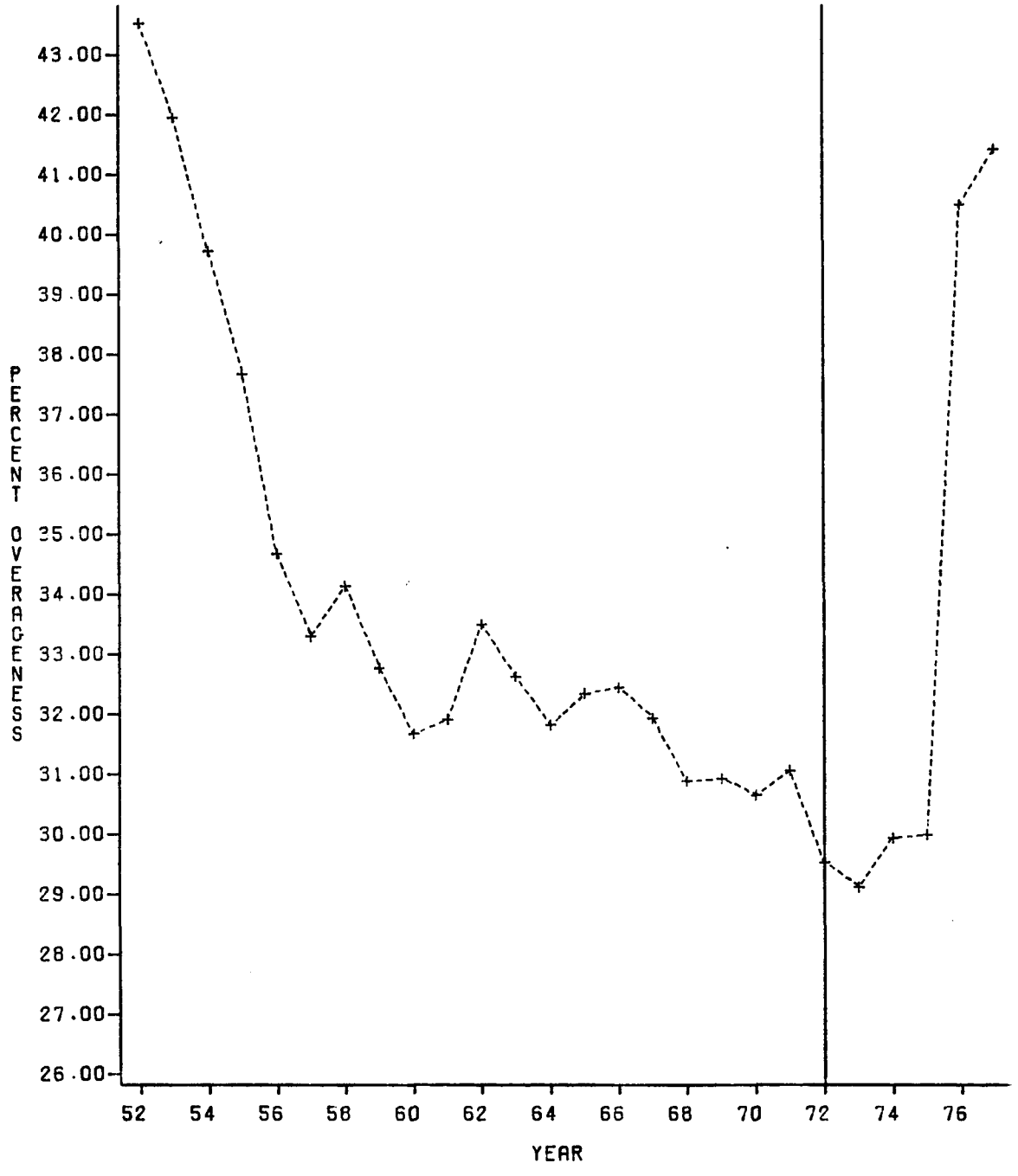
In the four years between 1973 and 1977, the change which occurred was almost comparable to that which occurred in the decade between 1952 and 1962 (11.01 for the former and 12.55 for the latter).

The 1972-74 period was characterized by the end of the historic decline in the mean percentage of overageness in grades 8-12 and the beginning of the trend upward.

Sample by Score - Grades K-12

Figure 62. Mean percentage of overageness in grades K-12 for the sample, considered by size, shows a strong decline through the fifties, a tapering off in the early sixties, an increase in the rate of decline in the late sixties and early seventies. Between 1973 and 1975, the downward trend for high, average, and low divisions reaches its lowest level. In average divisions, an upward trend began in 1974. For high and low divisions, the upward trend appeared in a dramatic increase to new levels in 1976. Average divisions also turned upward in that year.

FIGURE 61:
MEAN PERCENTAGE OF OVERAGENESS IN GRADES K-12 IN VIRGINIA



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

Low divisions consistently had the highest number of overage students. Average divisions almost always had the lowest number from 1952 through 1968. The gap between average and high divisions is small but persistent through the fifties and closed in the sixties. In the seventies, positions changed and the gap between average and high divisions regarding overageness widened.

From 1972-74, the twenty-six year decline in overageness in high, average, and low divisions drew to a close. In average divisions an upward trend began. This upward move did not appear until 1976 for high and low divisions. When it did, however, it increased sharply. (High 20.2 in 1975 to 28.8 in 1976. Low 26.5 in 1975 to 37.5 in 1976).

Sample by Size - Grades K-12

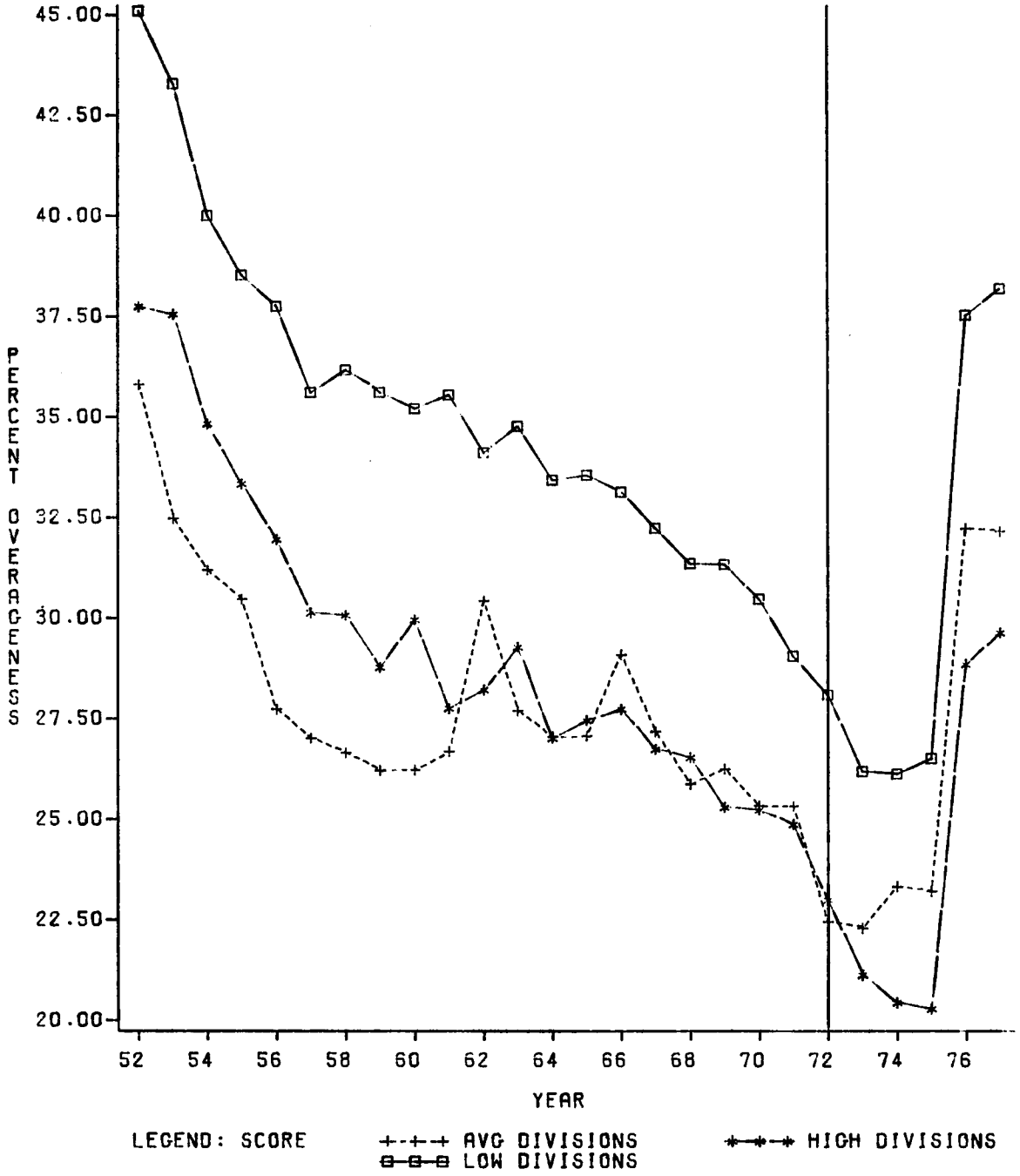
Figure 63. The mean percentage of overageness in grades K-12 in the sample divisions, considered by size, shows a declining trend for all divisions that began in 1952 and ended approximately twenty to twenty-two years later.

Large divisions always had the lowest percentage of students overage. Small divisions tended to have the highest percentage of overageness, although they were followed closely by medium divisions.

The mean percentage of overageness in large divisions reached its lowest level (17.65) in 1972. In medium divisions, the lowest level (23.72) occurred one year later (1973). The next year (1974) small divisions achieved their lowest level (24.20).

Shortly after reaching these low levels, the mean percentage of overageness in large, medium, and small divisions began to increase. In 1976, sharp increases occurred which, in one year, brought the mean percentage of overageness back to the levels of the early and mid-fifties

FIGURE 62:
MEAN PERCENTAGE OF OVERAGENESS IN GRADES K-12 IN SAMPLE DIVISIONS BY SCORE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

for all divisions.

In 1972 to 1974 the lowest mean percentages of overageness for large, medium, and small divisions are reached. Within this period, or shortly thereafter, the percentage of overageness rose with increasing speed.

State - Grades K-12

Figure 64. The percentage of overageness in grades K-12 for the state declined steadily from 38.07 in 1952, to 21.11 in 1973. From 1974 to 1977 a two-stage increase swiftly returned the state percentage of overageness (31.37 in 1977) to the level of 1956 (31.24).

The middle of the 1972-74 period marked the end of the twenty-one year decline in percentage of overageness and witnessed the early stage of a quick return to earlier rates.

Sample by Score - Grade 11

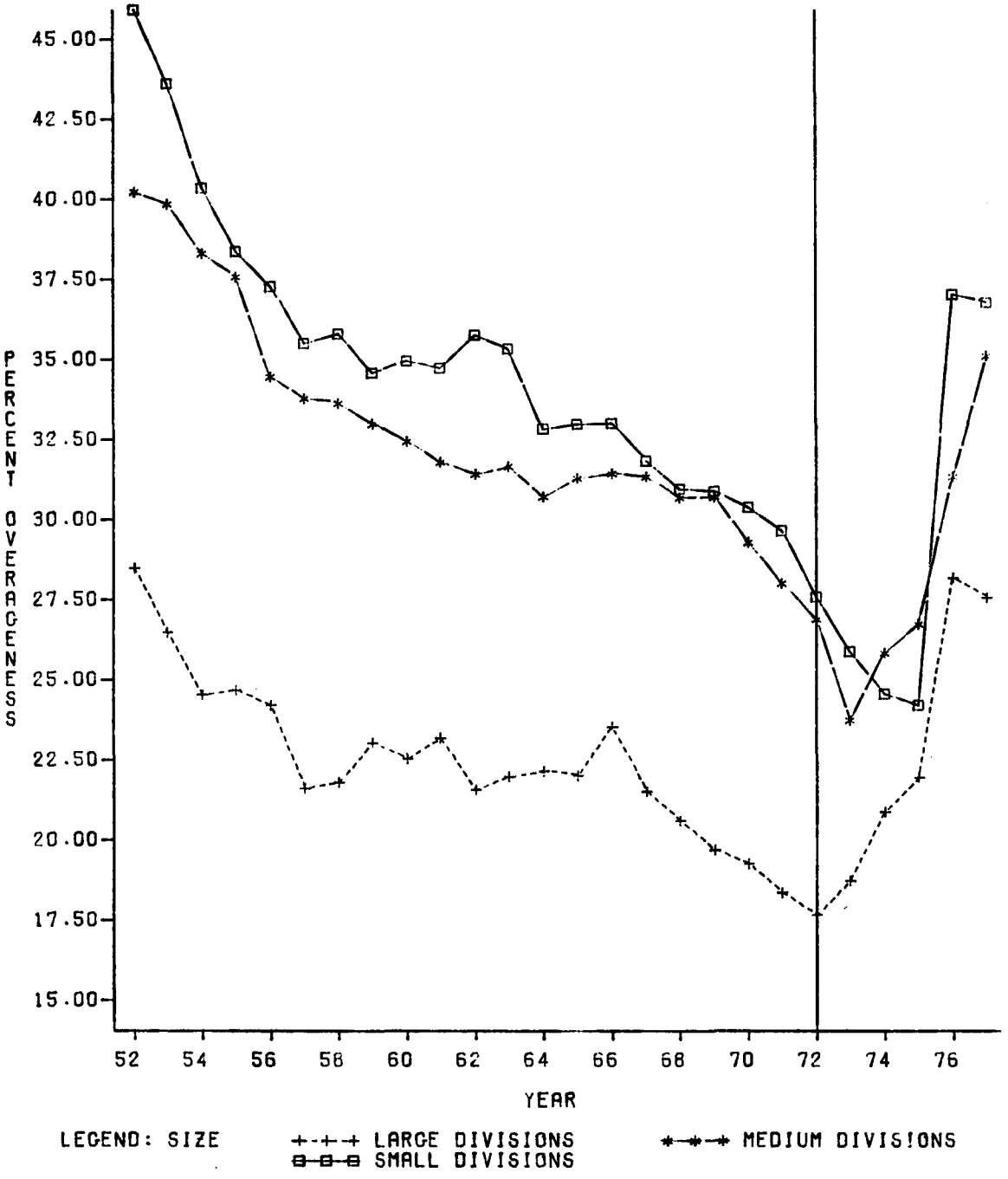
Figure 65. The plot of the mean percentage of overageness in grade 11 for the sample divisions, considered by score, shows an overall pattern of declining overageness in the fifties, a plateau containing positive and negative fluctuations in the sixties through the early seventies, and a trend upward beginning in 1974.

The 1972-74 period witnessed the end of a decline for average and high divisions. In the same time period the percentage of overageness in these divisions began to grow. Low divisions' mean percentage of overageness continued to decline through 1975. In 1976, however, it registered a gain of about fourteen percent.

Sample by Size- Grade 11

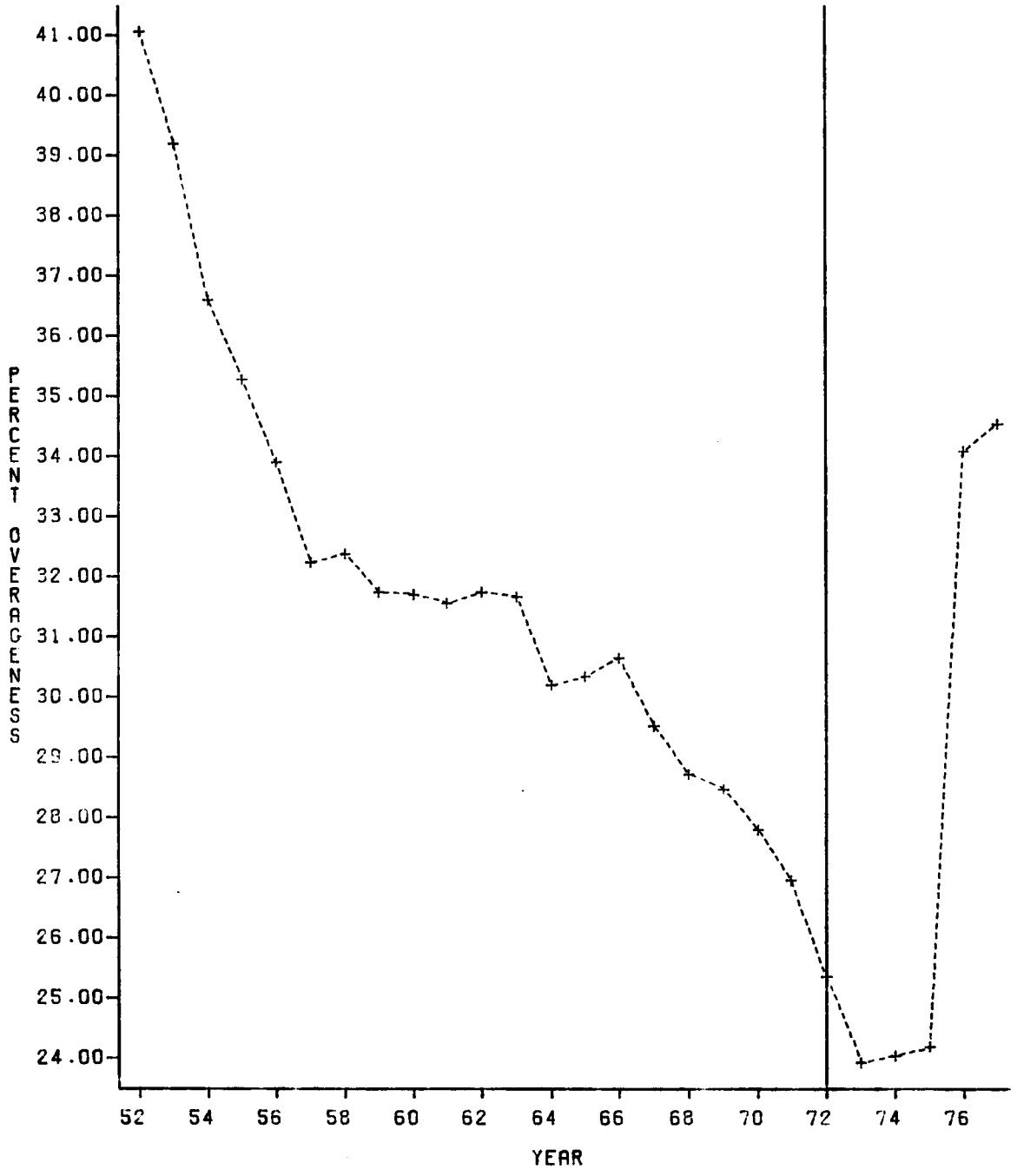
Figure 66. Mean percentages of overageness in grade 11 for the sample, considered by size, show that a decline began in the early

FIGURE 63:
MEAN PERCENTAGE OF OVERAGENESS IN GRADES K--12 IN SAMPLE DIVISIONS BY SIZE



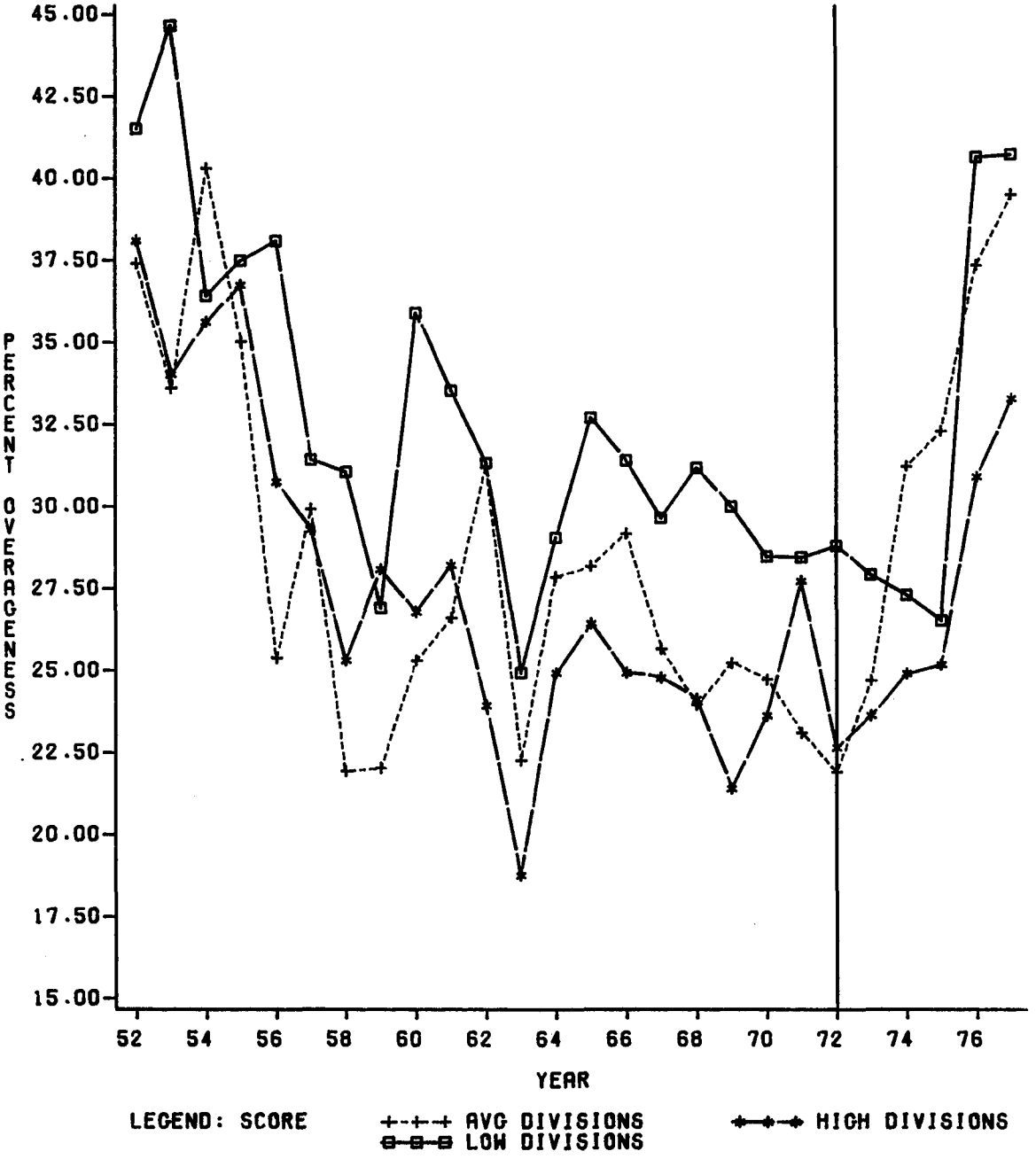
LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 64:
MEAN PERCENTAGE OF OVERAGENESS IN GRADES K-12 IN VIRGINIA



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 65:
MEAN PERCENTAGE OF OVERAGENESS IN GRADE 11 IN SAMPLE DIVISIONS BY SCORE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

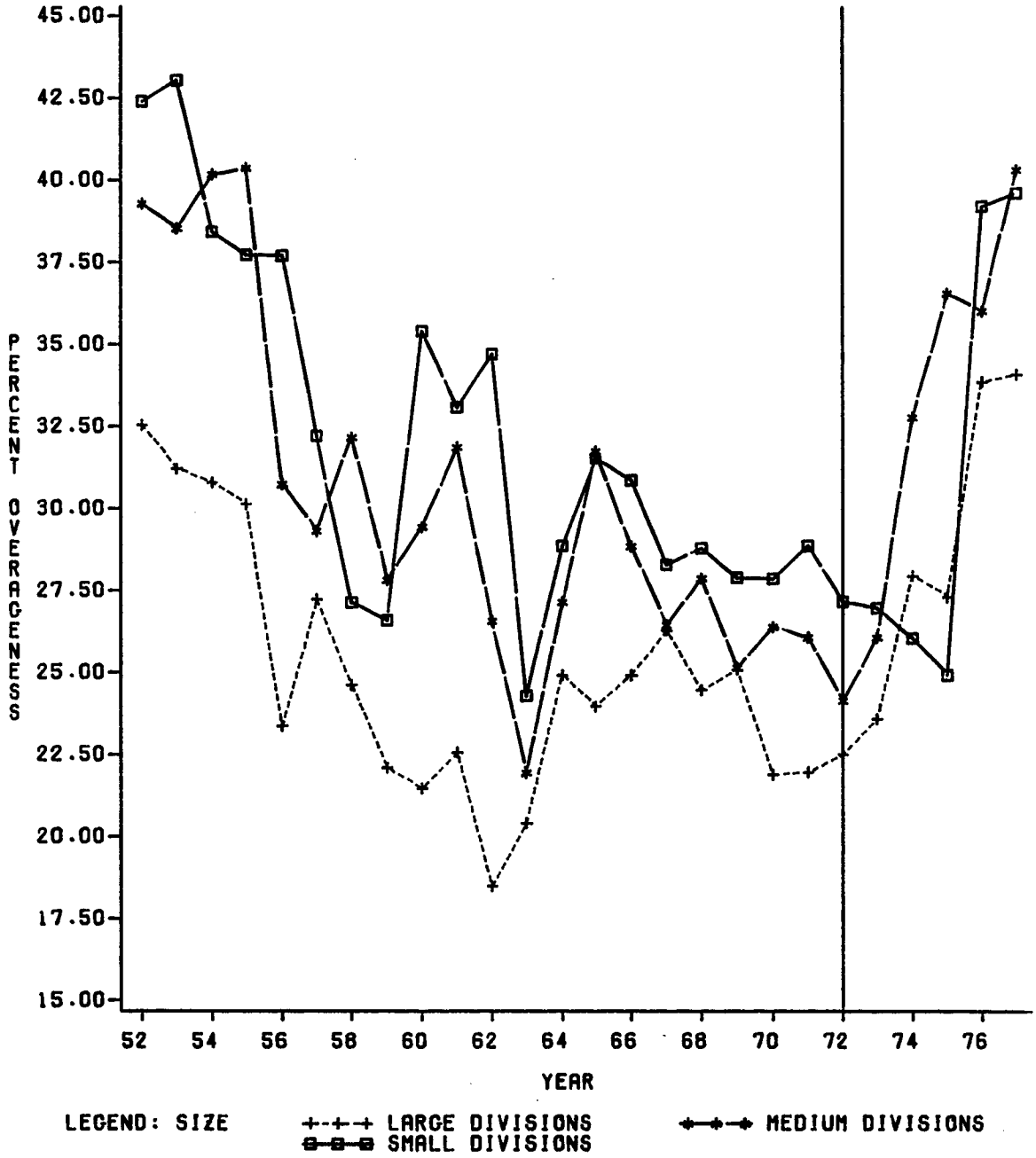
fifties reaches the lowest lowest levels for large (18.48 in 1962), medium (23.93 in 1963 in 1963), and small (24.27 in 1963) divisions. Following these low points increases occurred in the mid-sixties which were followed by decreases through the early seventies which brought the percentage of overageness close to, but not to low as, the earlier levels. In 1972, large divisions began to have increasing percentages. Medium divisions made this change in 1973, while small divisions declined through 1975, but in 1976 rose by about fifteen percentage points.

The 1972-74 period appeared to be the end of the second decline in overageness for large and medium divisions. Small divisions continued to decline through 1975. In addition, the period seemed to signal a sharp upturn in the percentage of overageness for large and medium divisions. Small divisons continued to decline through 1975. In addition, the period seemed to signal a sharp upturn in the percentage of overageness for large and medium divisions with small divisions having a delayed reaction.

State - Grade 11

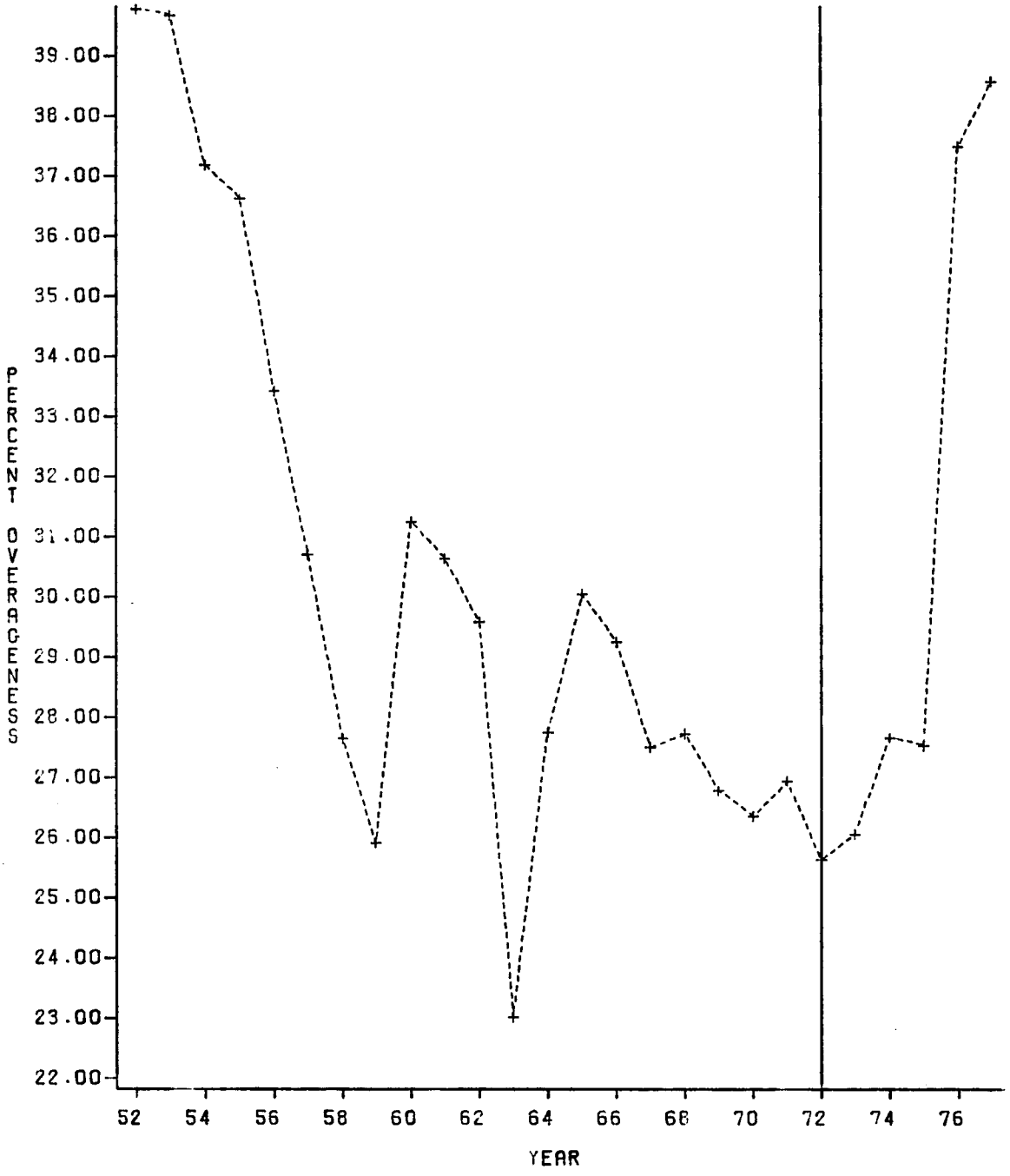
Figure 67. The mean percentage of overageness for grade 11 in the state indicates that a decline, appearing from 1952 to 1963, was interrupted by a brief upturn in 1960 and 1962. A shortened increase followed in the mid-sixties which quickly turned downward to reach its lowest level in 1972 and 1973. This downturn came close (24.10 - 1972) but did not equal the low point reached in 1963 (22.76). From 1974 to 1977 a rapid increase occurred in tow stages. By 1977, percentage of overageness among Virginia's eleventh grade students (36.56) approximated the highest levels of the early fifties (37.36 and 38.99 in 1952).

FIGURE 66:
MEAN PERCENTAGE OF OVERAGENESS IN GRADE 11 IN SAMPLE DIVISIONS BY SIZE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 67:
MEAN PERCENTAGE OF OVERAGENESS IN GRADE 11 IN VIRGINIA



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

Sample by Score - Grade 4

Figure 68. Mean percentage of overageness in grade 4 for the sample divisions, considered by score, shows an overall pattern of decline from 1952 to 1973. Low divisions tended to have the highest mean percentage of overageness. Average and high divisions changed positions for the lowest percentage with the former tending to be the lowest in the fifties and the latter being the lowest in the sixties.

Low points for all types of divisions occurred in 1973 (high-19.38; average-19.28; and low-25.14). High and average divisions retained their low levels through 1975, but change in 1976:

TABLE 9

MEAN PERCENTAGE OF OVERAGE STUDENTS IN GRADE 4 IN HIGH AND AVERAGE DIVISIONS: 1975-76

Year	High	Average
1975	19.32	19.83
1976	45.06	36.44

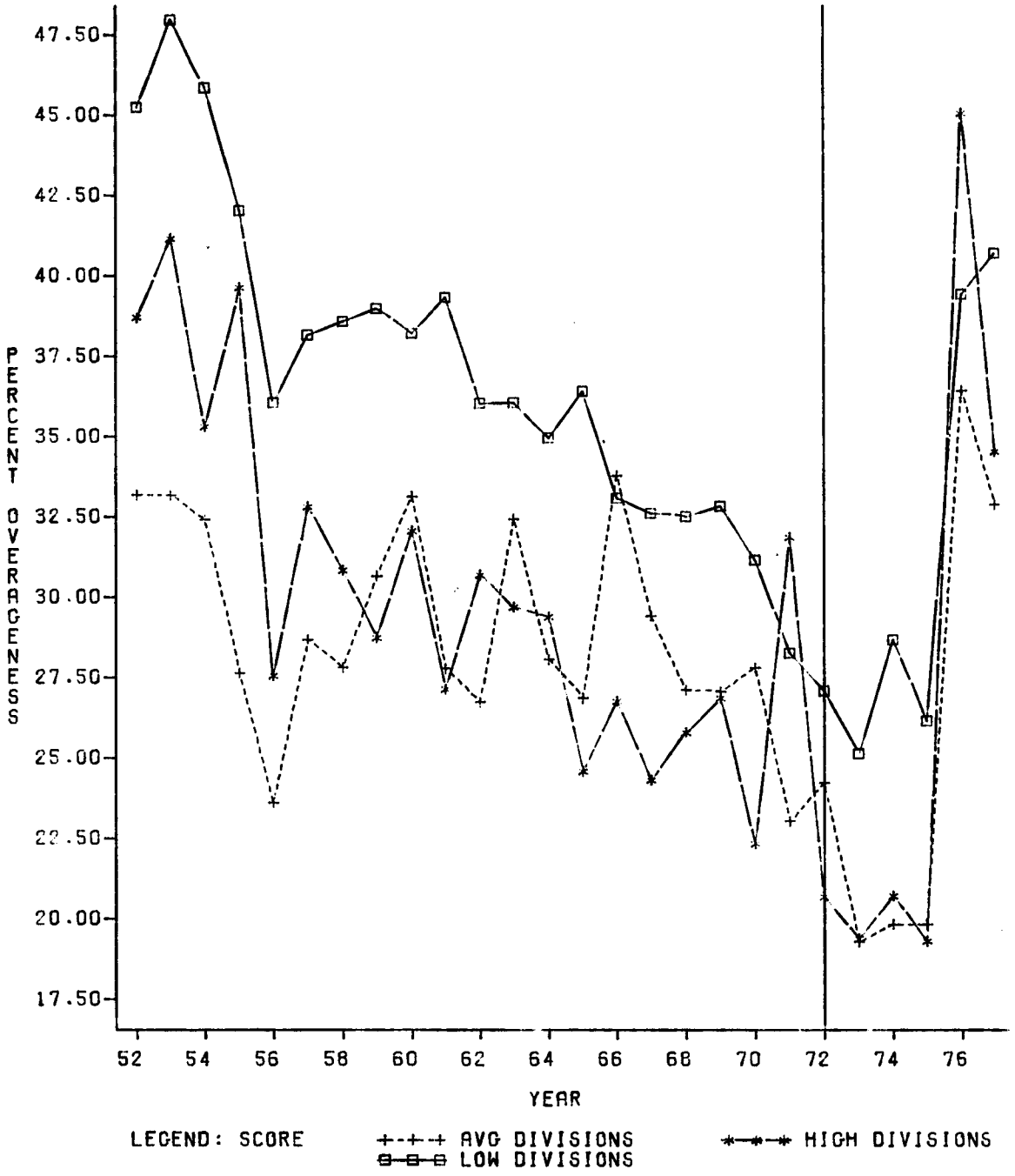
High divisions increased by more than twenty-six percent, and average divisions increased by more than seventeen percent.

Low divisions also increased their mean percentage of retentions between 1975 (26.16) and 1975 (39.44), an increase of more than thirteen percent.

Sample by Size - Grade 4

Figure 69. Mean percentage of overageness in grade 4 in the sample divisions, considered by size, shows large divisions always had the smallest mean percentage of overage fourth graders. From 1952 through 1966, small divisions had the highest mean percentage of overage

FIGURE 68:
MEAN PERCENTAGE OF OVERAGENESS IN GRADE 4 IN SAMPLE DIVISIONS BY SCORE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

fourth graders. From 1967 through 1975, medium divisions tended to have the most.

Throughout the twenty-six years under study, mean percentage rates for medium and small divisions were usually closer to each other than to that of large divisions. The rates for medium and small divisions continued to move closer together as one moved from the early fifties, to the early sixties. By the late sixties and early seventies, they were similar.

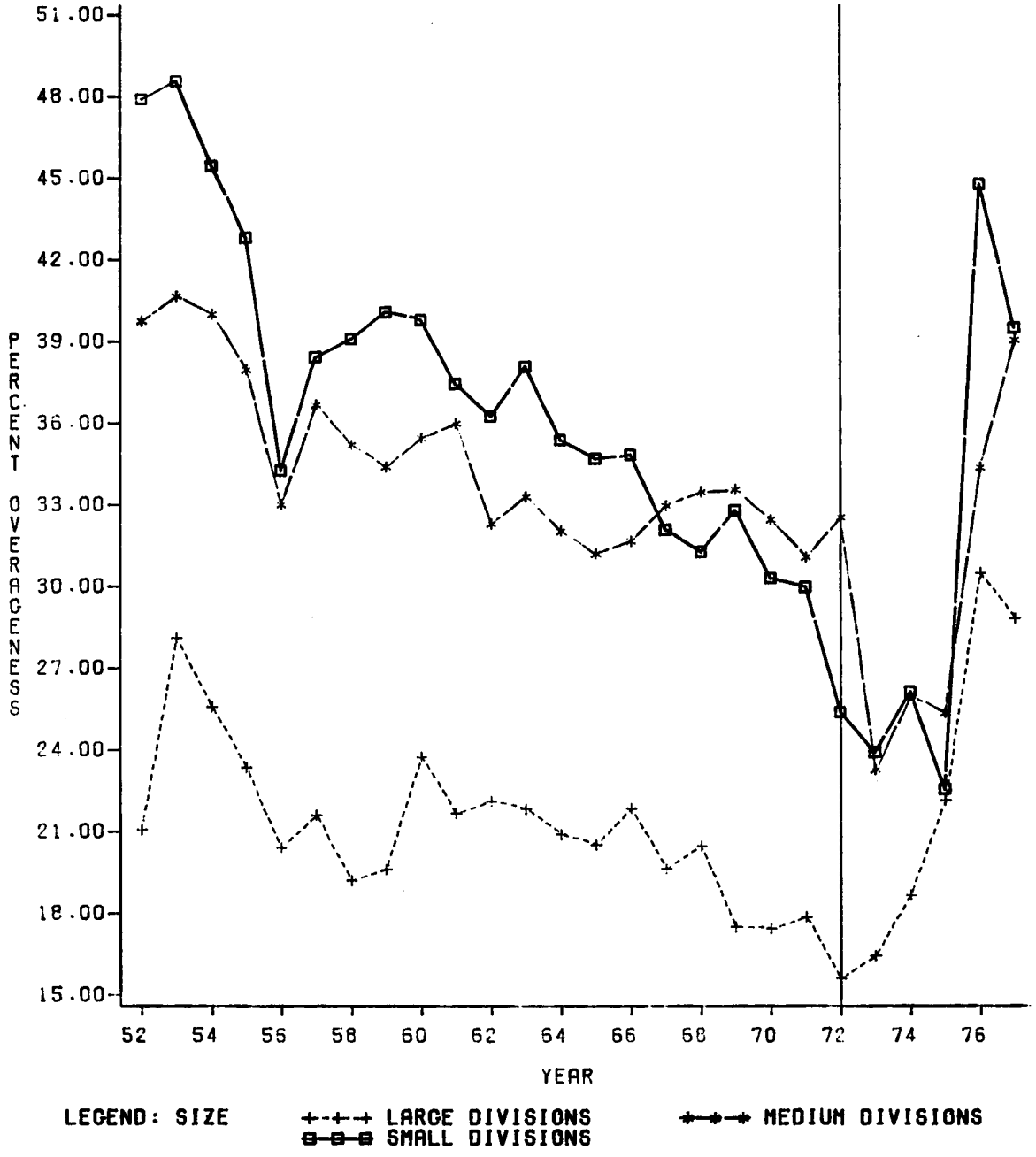
The low point for large divisions occurred in 1972 (15.61 in 1973 for medium (23.27) as well as small (23.91) divisions. The downward trend was more pronounced for medium and small divisions which began at much higher levels (40.6) in 1953 and (48.59 in 1953, respectively) than large divisions did (28.11 in 1953).

The 1972-74 period contained the end of the decline for divisions of all sizes and the beginning of the increases. Once again the largest increases occurred between 1975 and 1976 (large divisions-from 22.15 to 30.4; medium divisions-from 25.3 to 34.3; and small divisions-from 22.5 to 44.7).

State - Grade 4

Figure 70. The percentage of overageness of grade 4 students in the state declined steadily from a high in 1953 (39.63) to its lowest level in 1973 (20.25) with the drop in 1956 taking an usually large, one-year decrease that broke the otherwise stable pattern. Beginning with 1957, a series of plateaus, each slightly lower than the other, characterized the downward movement. In 1969, the downward pace quickened until the lowest level was reached. From 1974 to 1977, a large

FIGURE 69
MEAN PERCENTAGE OF OVERAGENESS IN GRADE 4 IN SAMPLE DIVISIONS BY SIZE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

increase, occurring primarily between 1975 and 1976, took place. The mean percentage of overageness among the state's fourth graders increased by about twelve percent during this time.

During the 1972 to 1974 period, the historical decline in overageness ended and the beginning of the increase occurred. The increase in 1976 took the percentage of overageness back to the approximate level of 1955, in one step.

Attendance

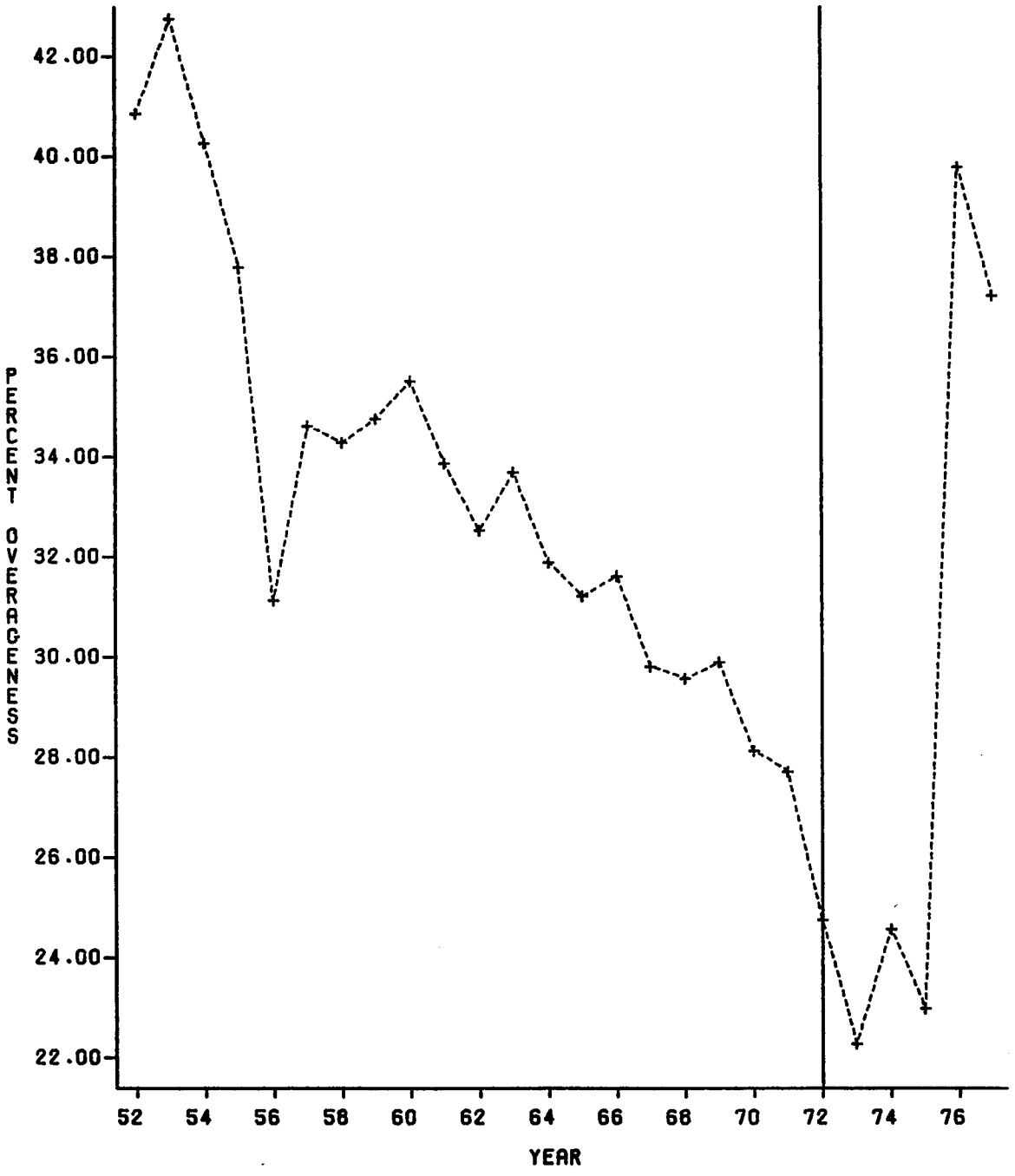
Sample by Score - Grades K-7

Figure 71. Mean percentage of attendance in grades K-7 for the sample divisions, by score, indicates that with the exception of one group in one year (average divisions in 1957 with 82.20% mean attendance) no group of divisions had less than 91% mean attendance. High divisions tended to have the highest percentage of attendance and low divisions tend to have the lowest but there were only slight differences (in many cases less than one percent) separating high, average, and low divisions. No noticeable change occurred between 1972 and 1974.

Sample by Size - Grades K-7

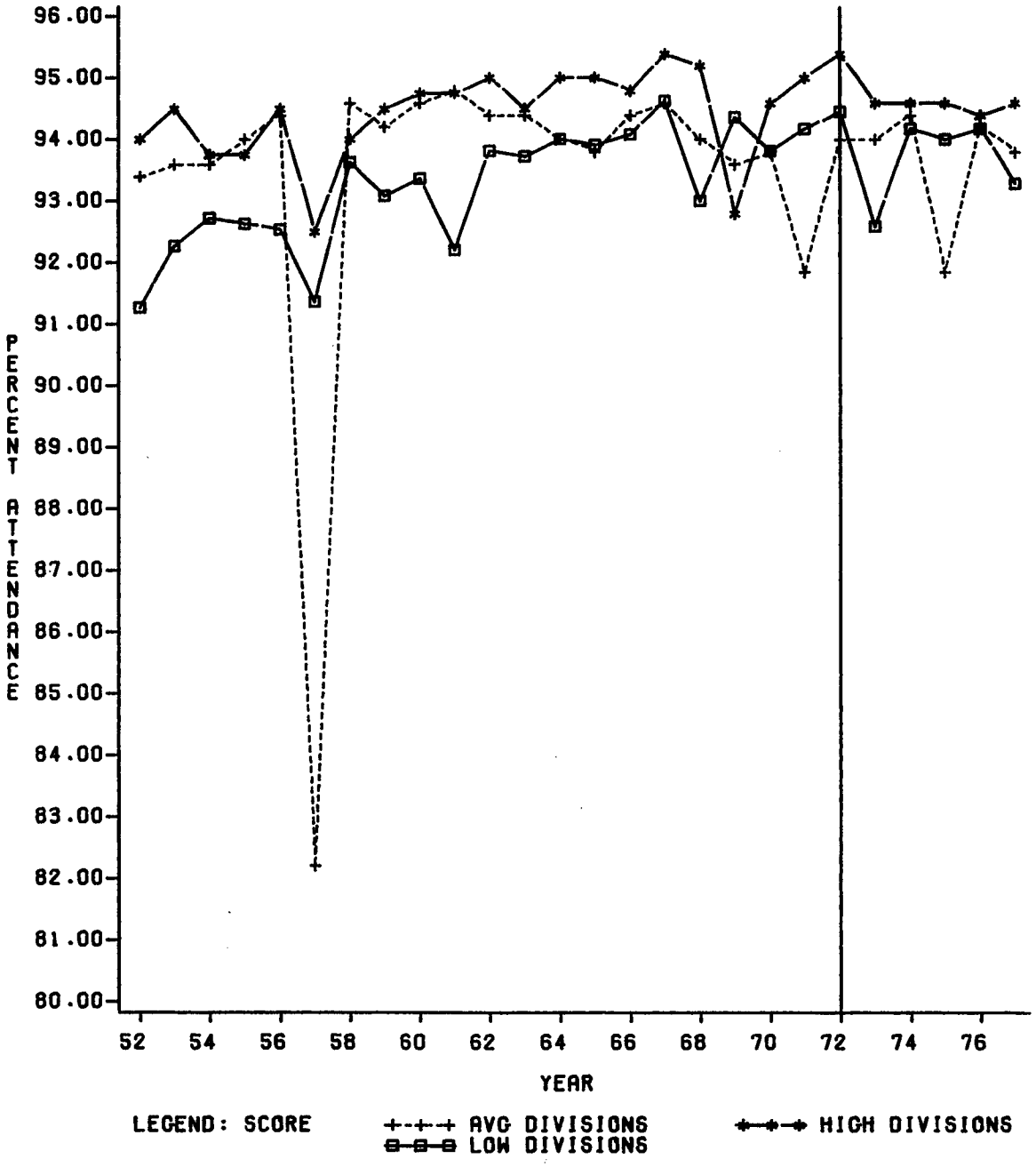
Figure 72. Mean percentage of attendance in grades K-7 for the sample divisions, by size, indicates that with the exception of one group in one year (medium divisions in 1957 with 78.5% mean attendance) no group of divisions had less than 90% mean attendance. Large divisions tended to have the highest percentage of attendance through 1964 and medium divisions tend to have the highest rate of attendance through 1976, but there are only slight differences (in many cases less than one percent) separating large, medium, and small divisions. No noticeable change occurred between 1972 and 1974.

FIGURE 70:
MEAN PERCENTAGE OF OVERAGENESS IN GRADE 4 IN VIRGINIA



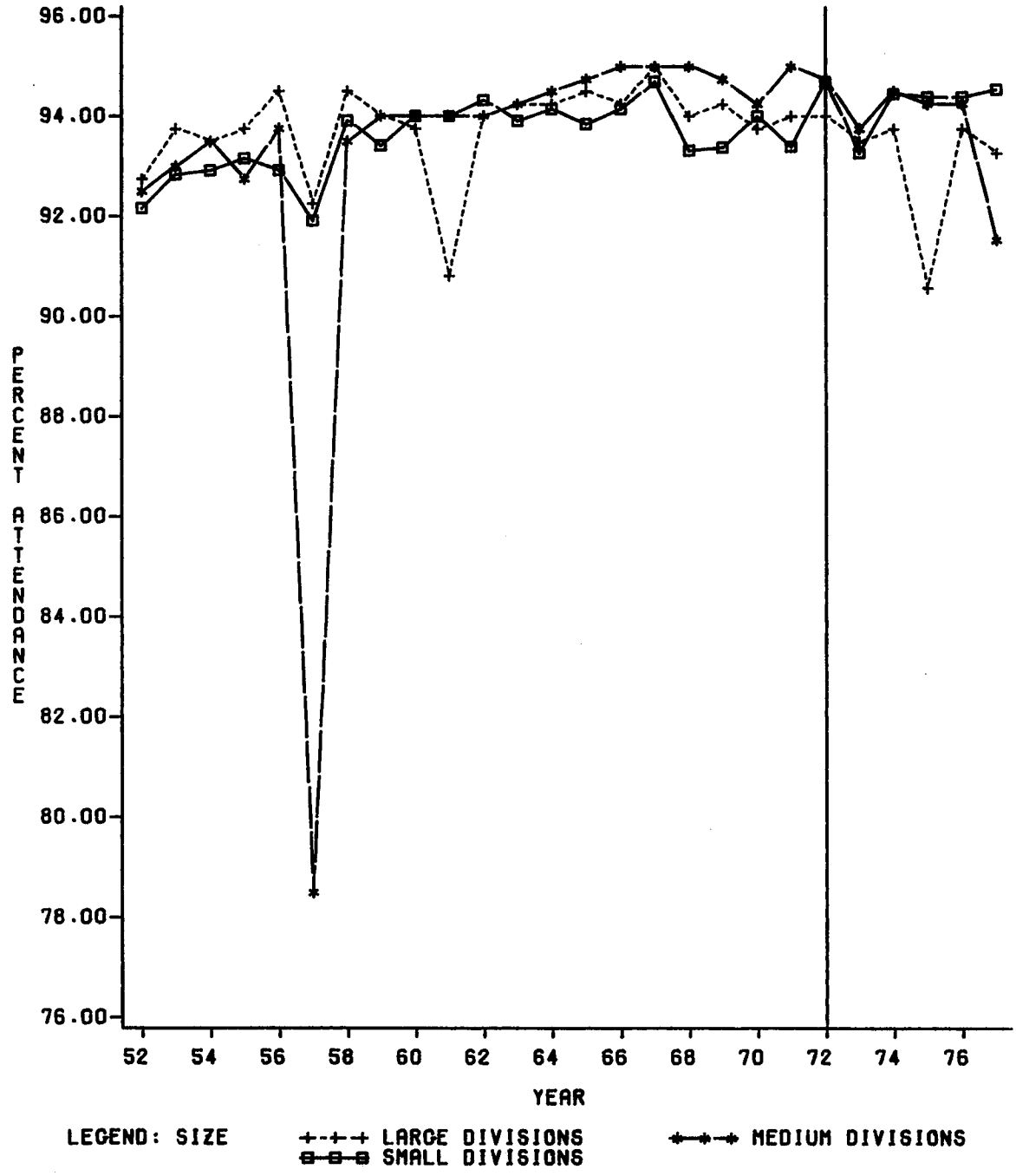
LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 71:
MEAN PERCENTAGE OF ATTENDANCE IN GRADES K-7 IN SAMPLE DIVISIONS BY SCORE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 72:
MEAN PERCENTAGE OF ATTENDANCE IN GRADES K-7 IN SAMPLE DIVISIONS BY SIZE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

State - Grades K-7

Figure 73. Percentage of attendance in grades K-7 for the state never fell below 92% nor did it ever change by more than one percent. In eighteen of twenty-six years (sixteen of the last eighteen), it was 94%. No noticeable change occurred between 1972 and 1974.

Sample by Score - Grades 8-12

Figure 74. Mean attendance in grades 8-12 for the sample divisions, considered by score, never (with the exception of average divisions in 1975 with 88.76% attendance) dropped below 90%.

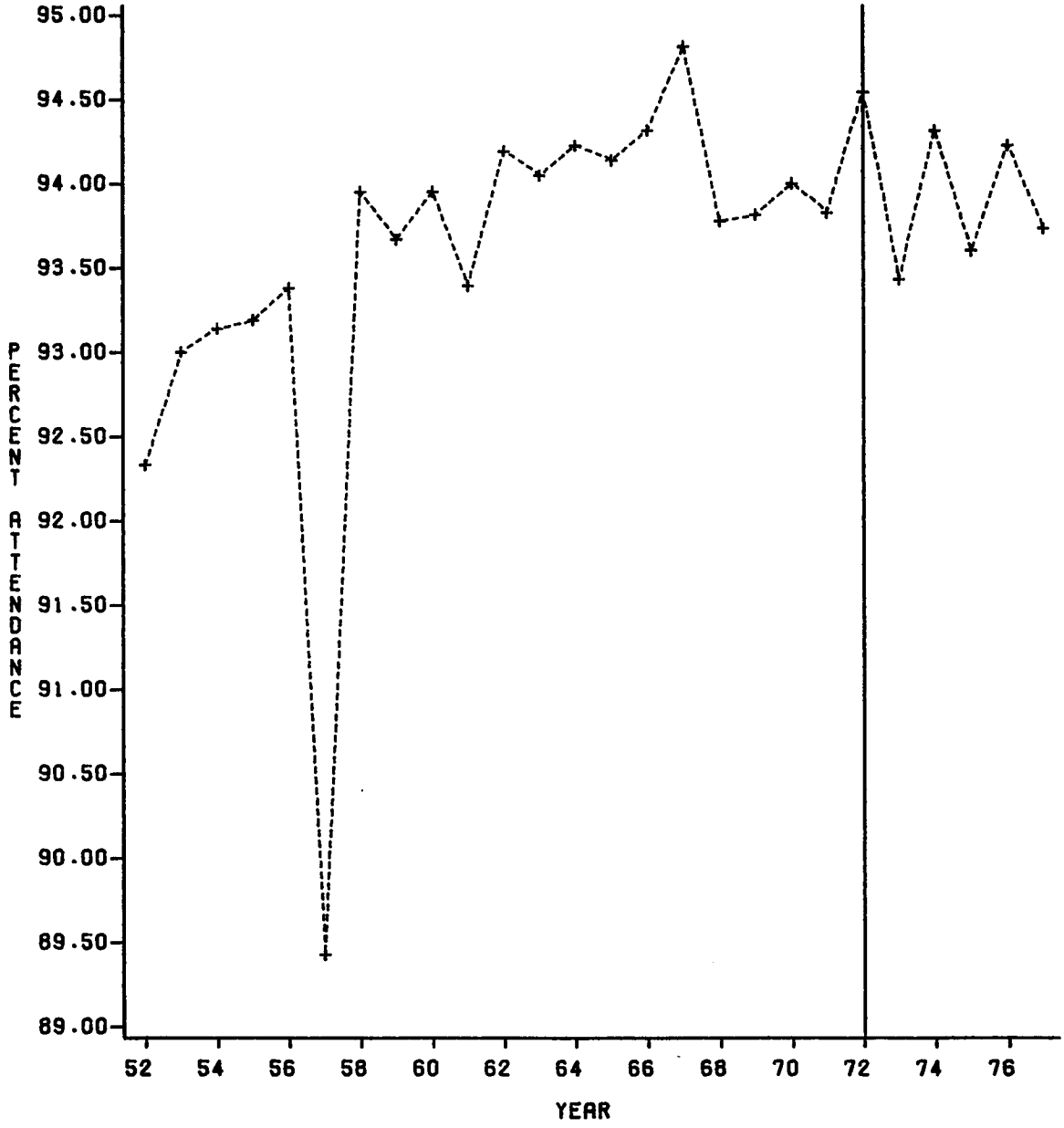
High divisions tended to have the highest attendance rates. Since 1963, average divisions tended to have the lowest attendance rates, but difference among divisions remained slight.

Since the mid-sixties a slight but persistent decline was in evidence for all type of divisions. Otherwise, no noticeable change occurred between 1972 and 1974.

Figure 75. Mean attendance in grades 8-12 for the sample divisions, considered by size, never (with the exception of medium divisions in 1958 with 89.75%, medium divisions in 1976 with 88.10%, and large divisions in 1973 with 89.75%) fell below 90%. Large divisions tended to have the lowest attendance rate, and medium divisions tended to have the highest. From 1966 to 1977, small divisions' attendance rate tended to be closer to that of medium divisions. Prior to 1966, attendance rates in all divisions tended to be stable. Beginning with 1967, a slight but persistent decline appeared.

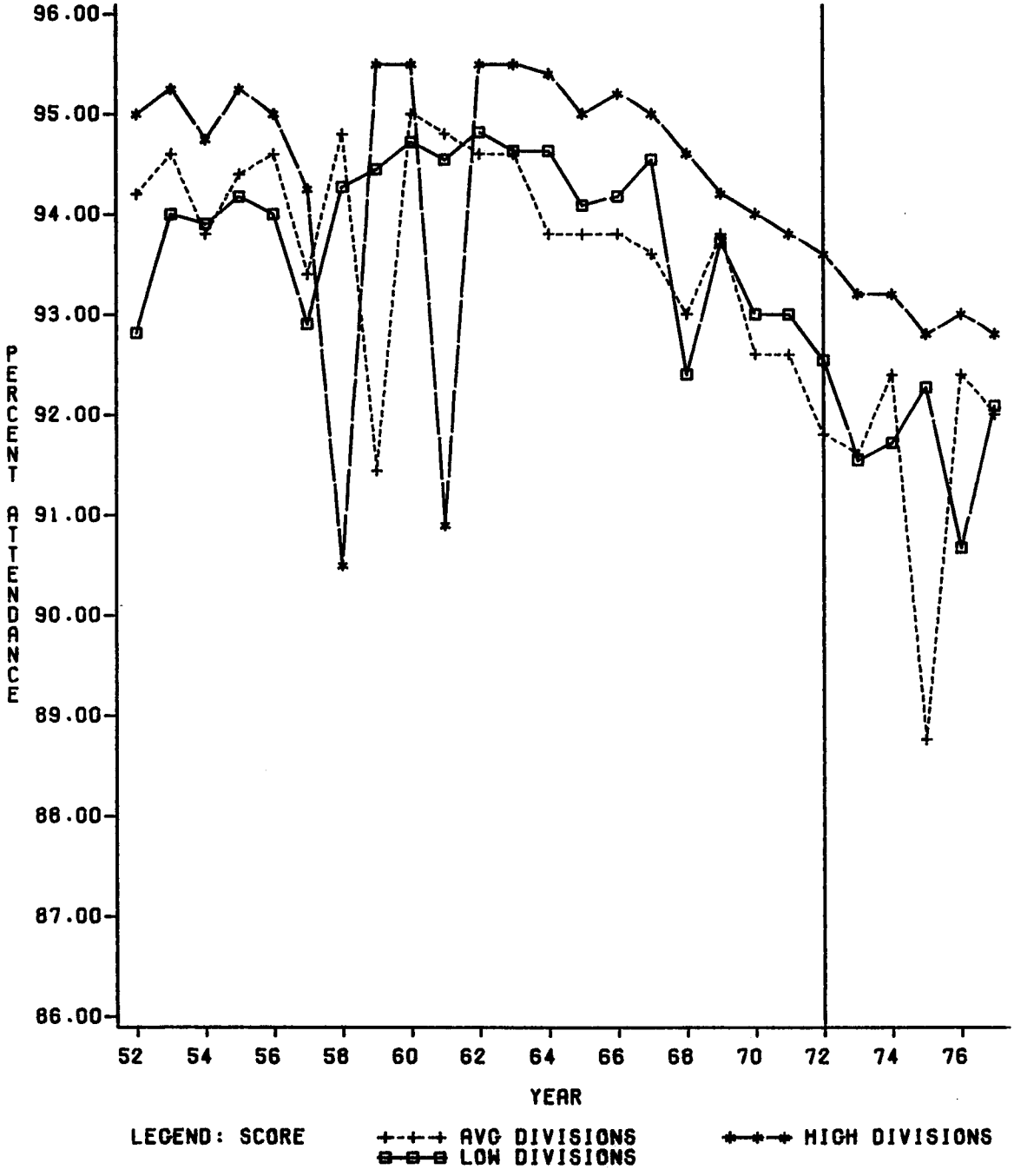
The 1972-74 period is characterized by a continuation of the overall downward trend with an additional but slight one-year depression

FIGURE 73:
MEAN PERCENTAGE OF ATTENDANCE IN GRADES K-7 IN VIRGINIA



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 74:
MEAN PERCENTAGE OF ATTENDANCE IN GRADES 8-12 IN SAMPLE DIVISIONS BY SCORE



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in 1973.

Figure 76. Attendance in grades 8-12 for the state confirms two observations. First, attendance rates never fell below 90%. Second, from 1966 on, there was a slight but persistent decline in attendance rates in grades 8-12.

High School Graduates

Sample by Score

Figure 77. The mean number of high school graduates tended to increase steadily in all divisions considered by score from 1952 to 1977. From 1952 to 1972, high divisions had the highest mean number of graduates. The number, however, began to diminish in 1971 so that by 1973, high divisions were second to low divisions in this category. From 1962 onward, average divisions tended to have the fewest graduates. There was no noticeable trend between 1972 to 1974 which interfered with the overall pattern.

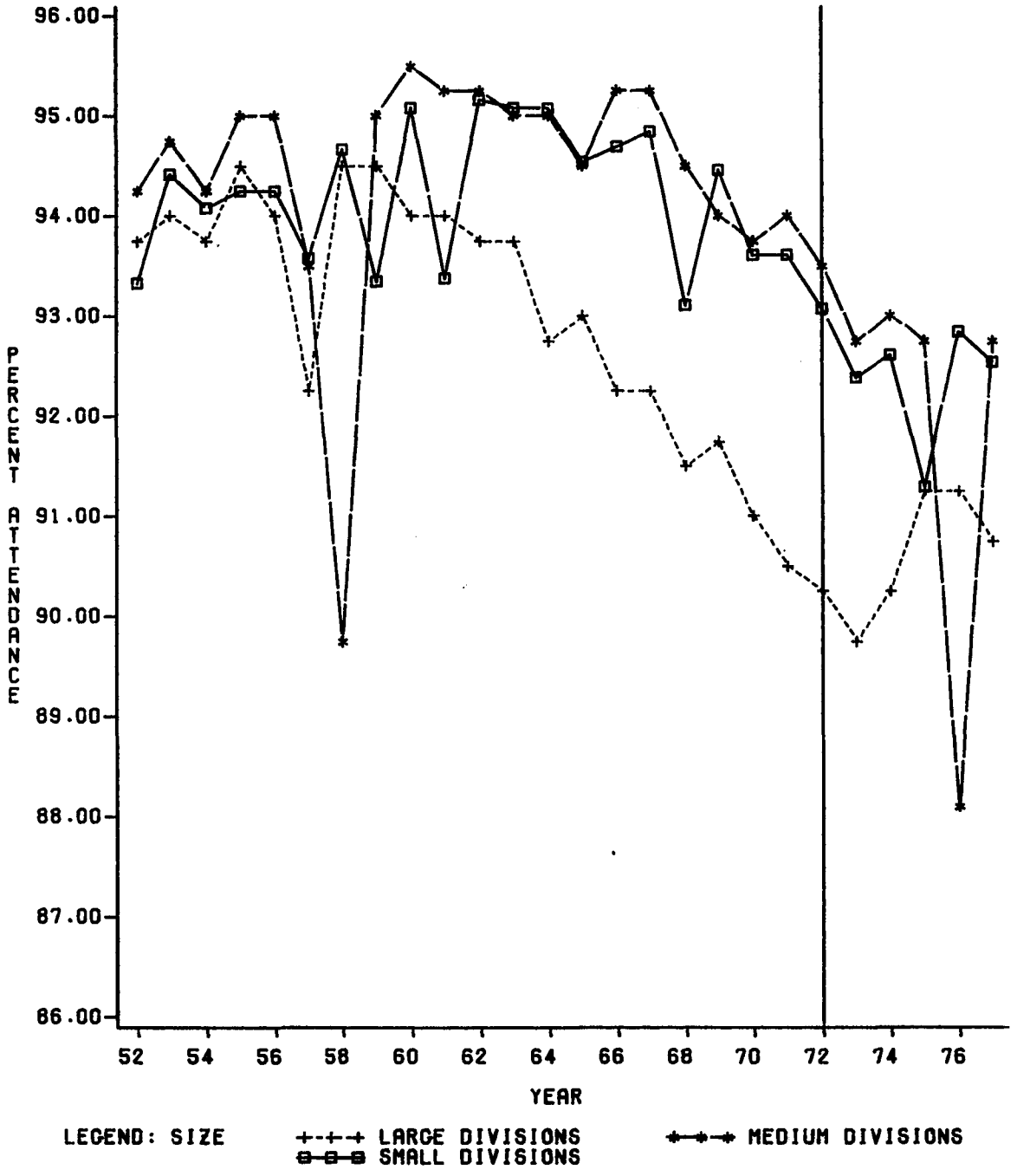
Sample by Size

Figure 78. The mean number of high school graduates tended to increase in all divisions, considered by size, from 1952 to 1977. The greatest growth occurred in large divisions. Beginning with 1964, they graduated more than a thousand students each year. A slight decline occurs in 1977. Medium size divisions experienced the next largest growth, and small divisions grew even less. Except for a small decrease in the growth of large divisions, no other break from the overall trend could be seen in the 1972-74 period.

State

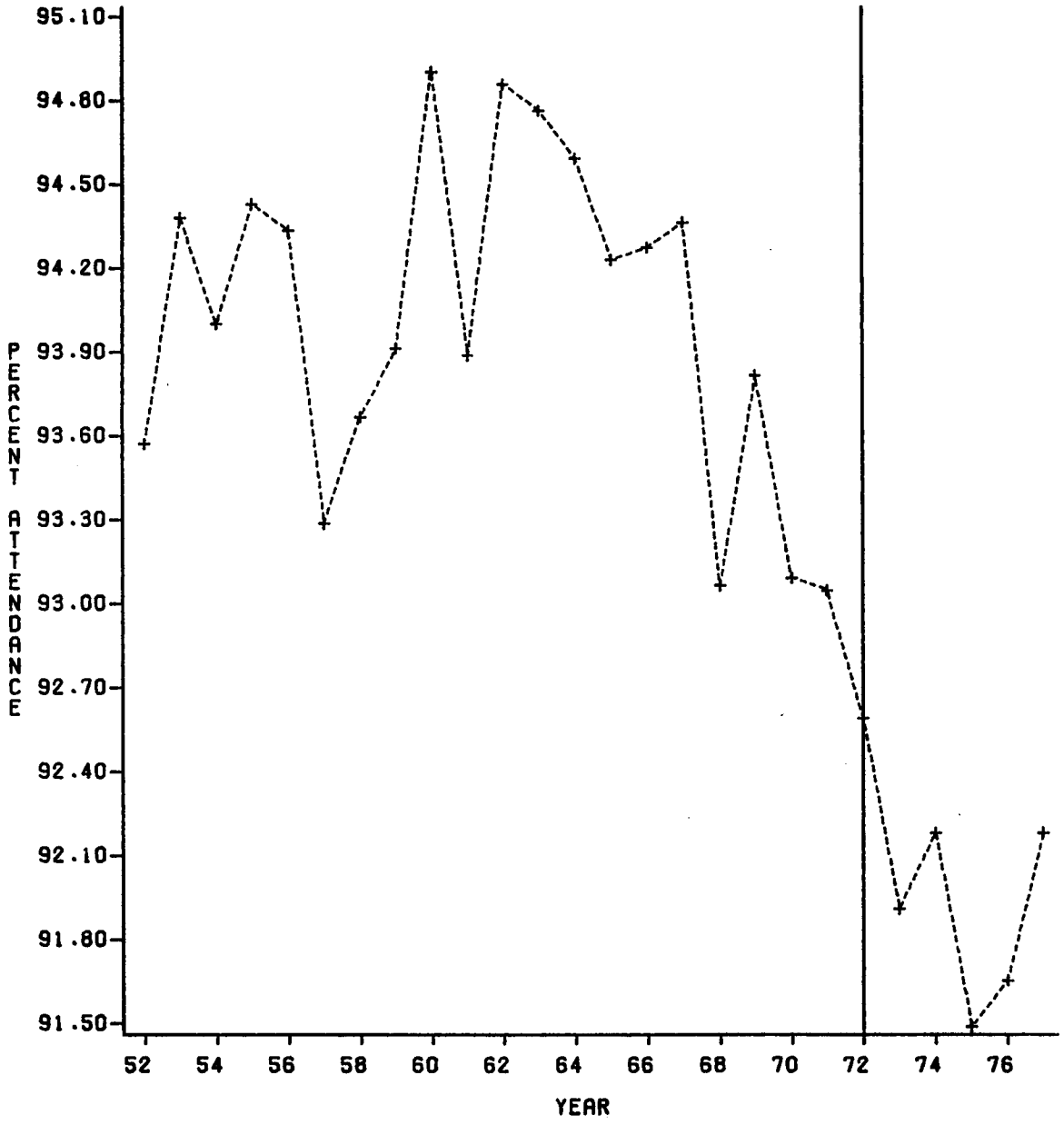
Figure 79. The number of high school graduates tended to rise continuously from 1952 to 1976. Although peaks occurred in 1955, 1960,

FIGURE 75:
MEAN PERCENTAGE OF ATTENDANCE IN GRADES 8-12 IN SAMPLE DIVISIONS BY SIZE



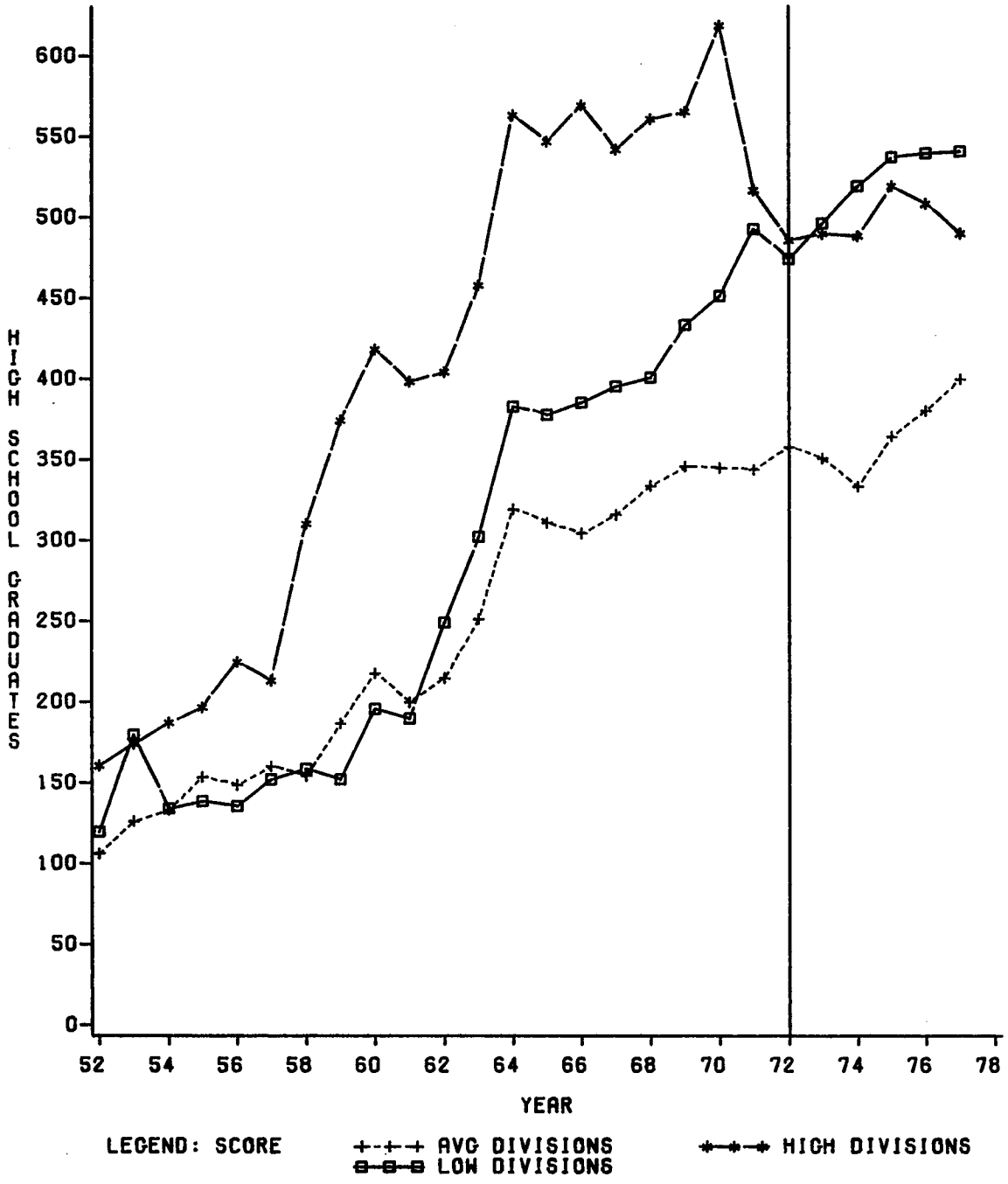
LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 76:
MEAN PERCENTAGE OF ATTENDANCE IN GRADES 8-12 IN VIRGINIA



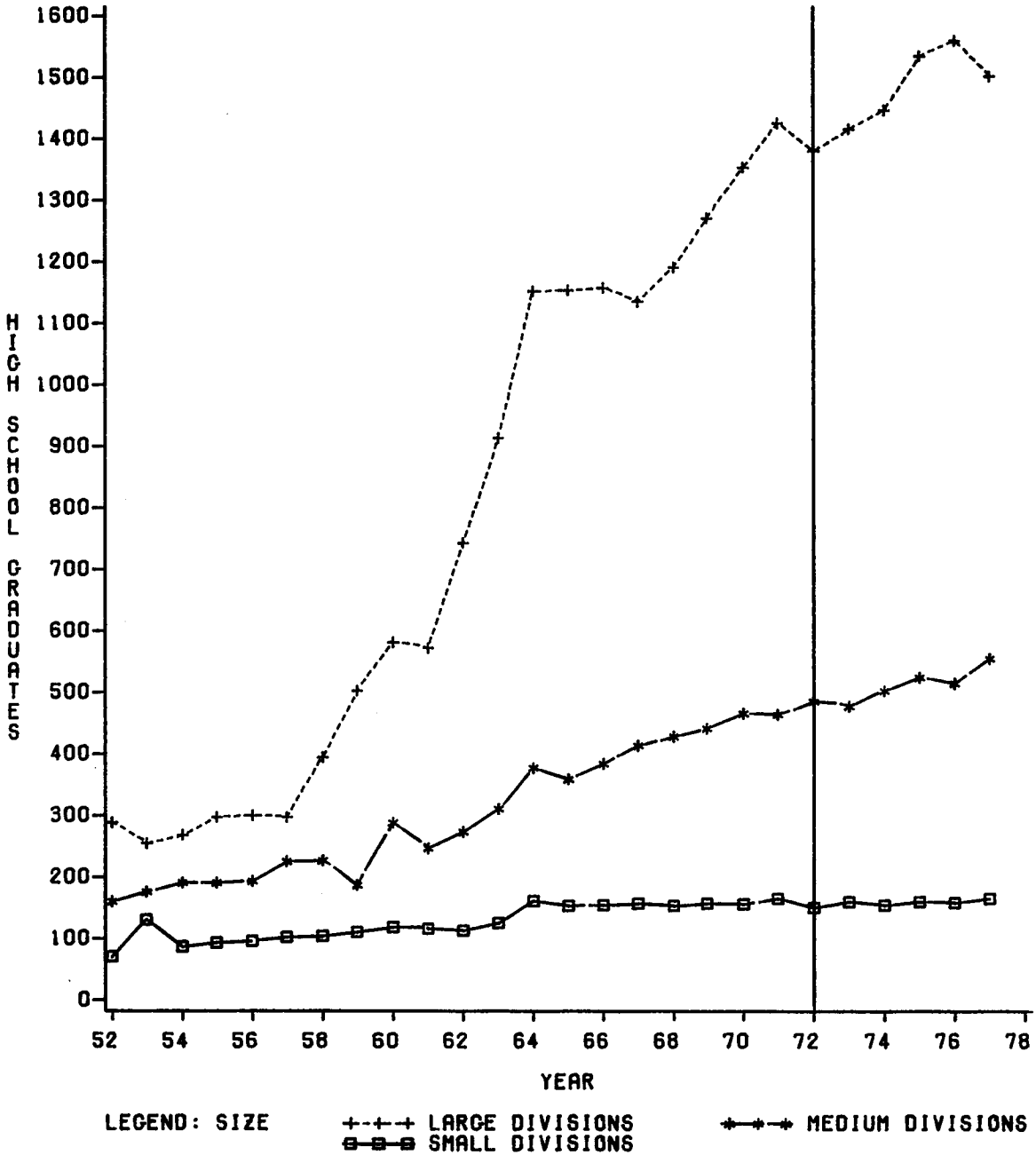
LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 77:
MEAN HIGH SCHOOL GRADUATES IN SAMPLE DIVISIONS BY SCORE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 78:
MEAN HIGH SCHOOL GRADUATES IN SAMPLE DIVISIONS BY SIZE



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1964, and 1971, the overall path was steadily upward. No noticeable break from the overall pattern can be seen in the 1972 to 1974 period.

High School Dropouts

(Data accessible only to 1959 to 1977)

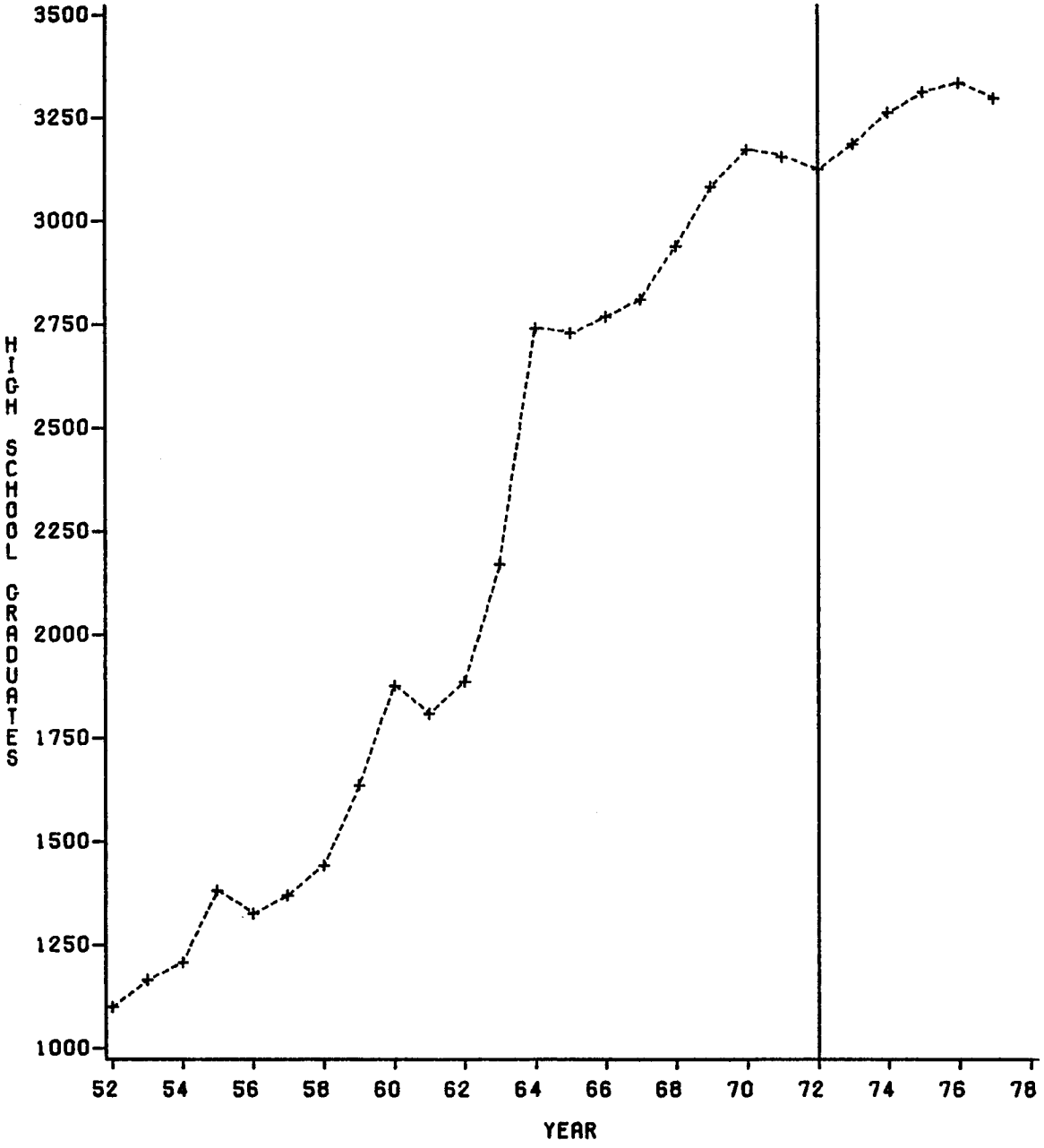
Figure 80. The mean percentage of dropouts in the sample divisions considered by score shows an overall pattern of decline from 1959 to the early seventies.

The percentage of dropouts in high divisions reaches its lowest level (16.82) in 1971. In average divisions, the lowest level (14.63) is reached in 1971, also. The mean percentage of dropouts in low divisions reached its lowest level (19.31) two years earlier (1969) than high and average divisions.

Following its lowest level in 1971, the mean percentage of dropouts in high divisions increased to 18.49 the following year (1972). After two successive drops, it increased for two years, and then decreased again. From 1973 to 1977, high divisions had the lowest mean percentage of dropouts. For average divisions, the mean percentage of dropouts rose to about twenty percent and remained at about that level from 1973 to 1977. In low divisions, the mean percentage of attendance remained stable for two years following its lowest level in 1969. In 1972, however, it increased to about twenty-three percent and remained at that level through 1973. A slight two-year decline in 1974 and 1975 was followed by a two-year increase. From 1971 to 1977, low divisions had the highest mean percentage of dropouts.

In the 1972-74 period, high, average, and low divisions had already passed their lowest dropout rates. Each type of division experienced a gain in the mean percentage of dropouts. Following these

FIGURE 79:
HIGH SCHOOL GRADUATES IN VIRGINIA



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

gains, something different happened to each. Low divisions' dropout rate remained stable, dropped for two years, and rose for two years. Average divisions' rate, dropped one year, but otherwise remained fairly stable. Mean percentage of dropouts in high divisions declined immediately, then rose, and then dropped once more.

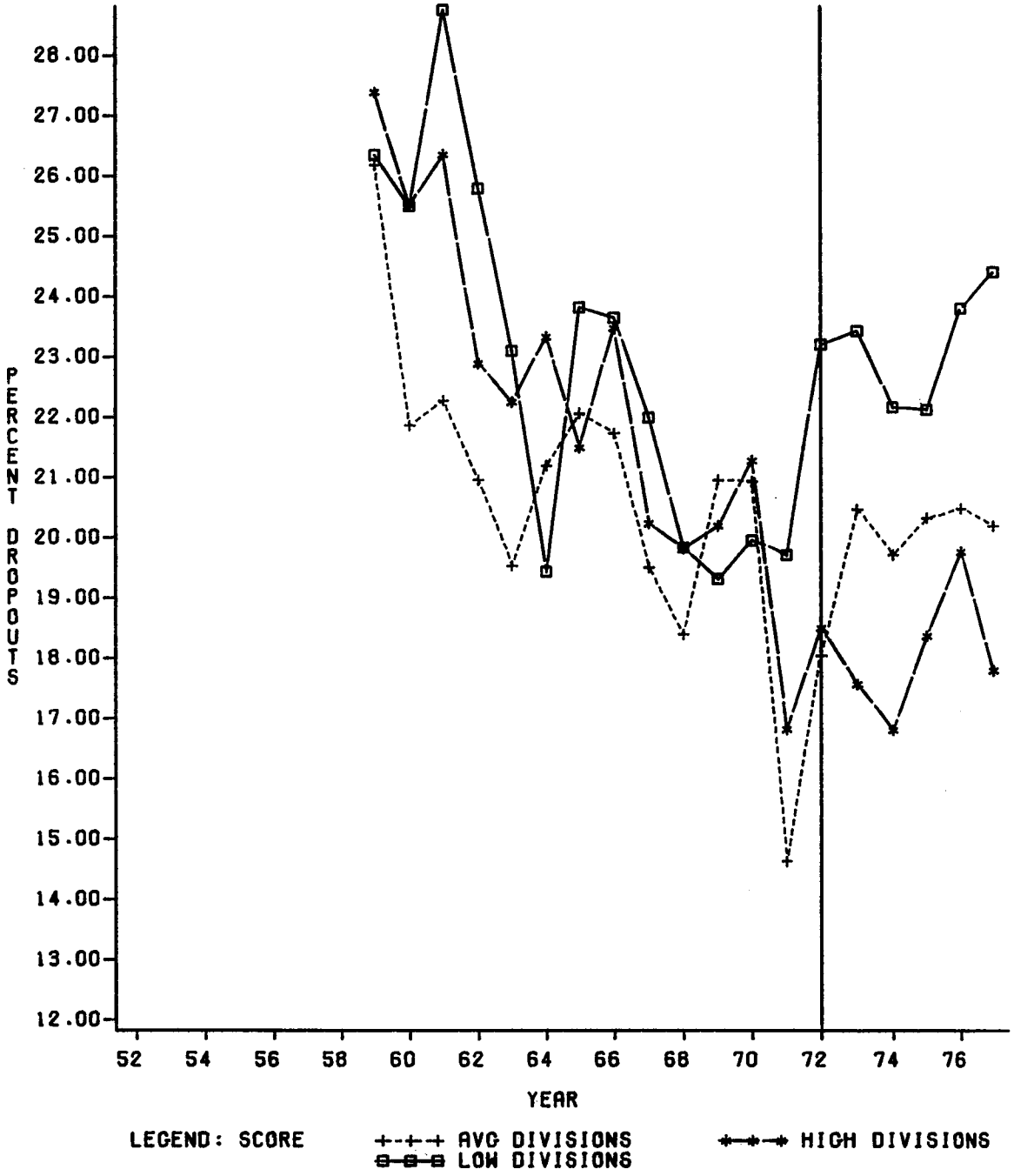
Figure 81. Mean percentage of dropouts declined steadily in all types of divisions from 1959 to 1964. From 1964 to 1967, a brief turn upward occurred. The downward trend resumed again in 1968, however, and continued through the early seventies. Rising again in 1972 and 1973, the mean percentage decreased in 1974 and 1975. In 1976 and 1977, it leveled off. Throughout the time-series, differences were small and divisions frequently switched positions, but the overall trend appeared consistent for all types of divisions.

Figure 82. The mean percentage of high school dropouts in the state showed a sporadic pattern. From 1961 and to 1968, there was, with the exception of 1966, a downward trend. From 1968 through 1971, the mean percentage rose steeply and then fell abruptly. In the eleven years between 1967 and 1977, inclusively, four peaks and three valleys were observed. Peaks occurred in 1967, 1970, 1973, and 1977. From 1970 onward, each peak brought the mean percentage of dropouts to a successively higher level. The valleys all fell to between nineteen and twenty percent. The 1972-74 period contained one peak and valley in the series.

Summary of Chapter 4

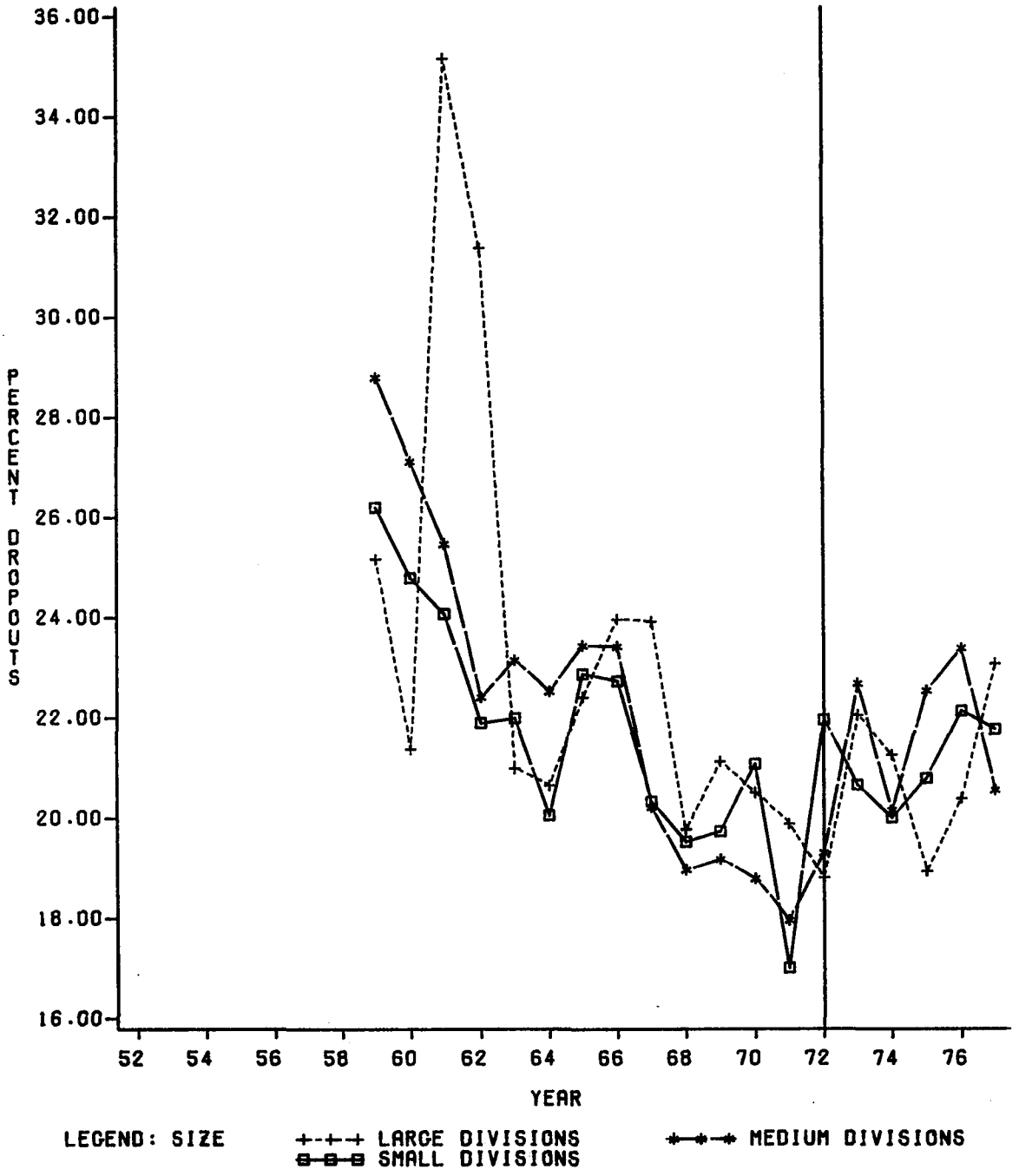
In chapter 4, the data collected for this study have been presented. The variables were organized according to grade levels - K-7, 8-12, K-12, grade 4, and grade 11 to provide meaningful contexts for

FIGURE 80:
MEAN PERCENTAGE OF HIGH SCHOOL DROPOUTS IN SAMPLE DIVISIONS BY SCORE



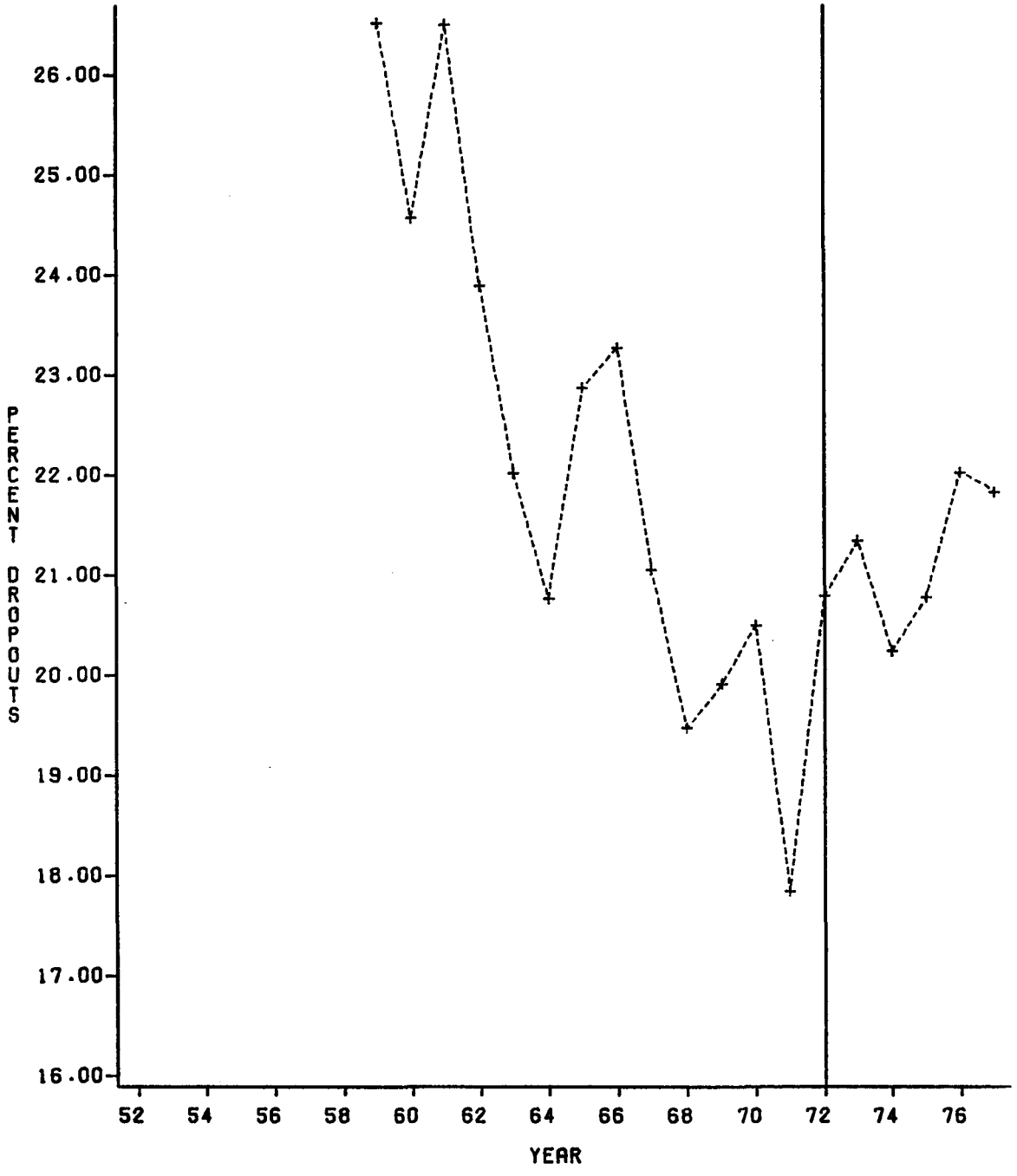
LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 81:
MEAN PERCENTAGE OF HIGH SCHOOL DROPOUTS IN SAMPLE DIVISIONS BY SIZE



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

FIGURE 82:
MEAN PERCENTAGE OF HIGH SCHOOL DROPOUTS IN VIRGINIA



LINE AT 1972 INDICATES INTRODUCTION OF STANDARDS OF QUALITY AND OBJECTIVES.

discussion. The data were presented by score and size, as time-series. Because statewide data are collected annually, there were too few time points after the introduction of the Standards of Quality and Objectives to make use of the CORREL and TSX computer programs. Analysis, conclusions, and recommendations will be based, therefore, on visual inspection of the data.

CHAPTER V

CONCLUSIONS, RECOMMENDATIONS, AND IMPLICATIONS

Organization of Chapter V

In chapter 5, conclusions and recommendations will be presented in five sections. The conclusions drawn from the data related to the performance objectives found in the 1972-74 Standards of Quality and Objectives are presented and discussed in the first section. Conclusions drawn from the unobtrusive measures collected are given and discussed in the second section. The hypotheses of this study are discussed in the third section. Recommendations concerning the Standards of Quality and Objectives and future studies are given in the fourth section, and the implications of this study for administrators and program evaluators of statewide educational programs appear in the final section.

Section 1 - Performance Objectives of the 1972-1974 Standards of Quality and Objectives

Criterion - Overageness in Grades K-7

State Performance Objective - "The percentage of school population overaged in the elementary grades should not exceed 20% of the enrollment in grades K-7."[1]

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[1] Virginia General Assembly, Standards of Quality and Objectives for Public Schools in Virginia: 1972-1974 (Richmond, Virginia: Commonwealth of Virginia, 1972), p. 4.

Conclusion - This objective was achieved from 1971 to 1975.

The mean percentage of overageness in grades K-7 has been declining in Virginia since 1952. With this historical trend, it would be incorrect to attribute the 1972-1974 Standards of Quality and Objectives as the sole cause for the decline in the statewide mean percentage of overageness in grades K-7. The objective was reached in 1971, one year before the introduction of the first set of the Standards of Quality and Objectives. It should be noted, however, that at no time during the twenty-six years had the mean percentage of overageness been below 20 percent except for the 1972-75 period.

This objective, which was intended to limit the level of overageness did not appear in any subsequent versions of the Standards of Quality and Objectives. Since its removal, the mean percentage of statewide overageness increased from 18.81 in 1975, to 27.23 in 1976. This increase of approximately 45 percent brought the mean percentage of overageness back to the level of the late fifties within one year. The state mean percentage of overageness for 1977 was 27.07, a decrease from the previous year of only six-tenths of one percent. In the absence of a performance objective limiting overageness, the state mean percentage of overageness changed more in 1976, than in any other year from 1952 to 1977.

Criterion - Overageness in Grades K-7

Division Performance Objective - "The percentage of the school population overage in grades K-7 should be reduced by at least two percent each year or until a level not exceeding twenty percent is reached."[2]

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[2]Ibid.

Divisions with Five-Year Improvement Plans receiving a high or average rating on the Five-Year Improvement Plans Rating Scale achieved this objective from 1970 to 1975. Divisions with Five-Year Improvement Plans receiving a low rating achieved this objective from 1969 to 1973.

Divisions ranked large achieved this objective in 1954, 1957, 1958, 1964-65, and 1968-75 by having less than 20 percent of their students overage. Divisions ranked medium achieved this objective from 1970 to 1973 by having decreases of 2 percent each year. In no year did medium divisions have less than 20 percent of their students overage. Divisions ranked small achieved this objective from 1970 to 1974 by having decreases of 2 percent each year.

While all the sample divisions, considered by either score or size, achieved this performance objective, they had done so before the initiation of the 1972-74 Standards of Quality and Objectives.

When analyzed by score, only divisions with Five-Year Improvement Plans rated high or average had years in which the mean percentage of overageness was less than 20 percent. When divisions were compared according to size, large divisions had fifteen years in which overageness was less than 20 percent. At no point during this time did the mean percentage of overageness in medium and small divisions fall below the 20 percent level.

Considered by score or size, all divisions marked their largest change in any single year in 1976. Table 5 indicates the magnitude of this change.

TABLE 10

PERCENT OF INCREASE IN OVERAGENESS IN 1976

Type of Division	Percentage of Increase in Overageness
High	57
Average	59
Low	39
Large	37
Medium	30
Small	50

In the absence of a performance objective regarding overageness, the mean percentage of overageness for all types of divisions registered a greater change during 1976 than in any other year.

Since sample divisions, considered by score or size, evidence a history of decline in the mean percentage of overageness, the effects of history cannot be eliminated as a rival hypothesis when trying to assess the initial impact of the Standards of Quality and Objectives on this performance objective. The abruptness and size of the increase noted in 1976 may mean the impact of the Standards of Quality and Objectives was to hold the mean percentage of overageness in the sample divisions at a lower level and for a longer time than could be expected in their absence. Appropriate statistical tests to determine whether random fluctuation occurred are not applicable because of the scarcity of observation points.

Criterion - Attendance in Grades K-12

Division Performance Objective - "The percentage of pupils shall not fall below the average of the last three years or ninety percent of school membership."[3]

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[3]Virginia, Standards of Quality and Objectives, p. 5.

Considered by either score or size, all divisions achieved this objective.

All divisions, whether considered by score or size, had mean percentages of attendance in grades K-12 higher than 90 percent from 1952 to 1977. This was true also for the mean attendance in grades K-12 for the state. With this historical trend, it may not be concluded that the Standards of Quality and Objectives were responsible for the achievement of this performance objective.

Criteria - Standardized Tests of Ability and Achievement

State Performance Objective - "The percentage of the student population achieving at or above grade level norms or the equivalent as measured by approved standardized achievement tests should equal or exceed the mean ability level of the student population as measured by appropriate scholastic tests."[4]

This objective was achieved for the state in grade 11 and grade 4.

Scores on standardized tests of ability and achievement were converted to z scores to permit the comparison of scores on different tests over a longer period of time. These standardized scores of ability and achievement for students in grade 11 are similar for each year from 1952 to 1978, with the exception of 1966.

When observed as a time series, scores on standardized tests of ability and achievement for students in grade 11 appear to be near the national mean with slight but persistent trends occurring in positive or negative directions periodically. The first set of the Standards of Quality and Objectives appear to have come during a move in a nega-

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[4]Ibid, p. 4.

tive direction. With this historical trend and the absence of sufficient observation points to discount random fluctuations, it may not be concluded that the Standards of Quality caused a change in standardized test scores.

Because students in grade 11 were not tested in 1977, test scores of students in grade 4 were gathered for the years 1973 to 1978 to provide comparable data on another group of students who were tested annually since the introduction of the Standards of Quality and Objectives. In grade 4, ability scores are slightly but persistently higher than achievement scores. However, considering the small range of scores and the number of students tested, there is inadequate evidence to conclude there is a statistically significant discrepancy between ability and achievement in the scores for students in grade 4.

Criteria - Standardized Tests of Ability and Achievement

Division Performance Objectives - "The percentage of the student population achieving at or above grade level norms or the equivalent as measured by approved standardized achievement tests should equal or exceed the mean ability level of the student population as measured by appropriate scholastic aptitude tests."[5]

This performance objective was achieved for sample divisions of all types.

With the large number of students tested and the small range of scores, when converted to z scores, it is appropriate to conclude that

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[5]Ibid, p. 4.

for both eleventh and fourth grade students scores on standardized tests of ability and achievement approximated each other. Differences are small, but trends are persistent. From 1973 to 1978, scores for the eleventh grade increased and then remained stable. Scores for the fourth grade increased every year.

Section 2 - Unobtrusive Measures Relating to the Goal of Competence in Fundamental Academic Skills in the 1972-74 Standards of Quality and Objectives

Measure - Retention in Grades K-7, 8-12, K-12, 11, and 4

Conclusions - For all types of divisions and for the state, the mean percentage of retentions tended to decrease annually in the years preceeding the introduction of the 1972-74 Standards of Quality and Objectives and to increase in the years following.

Divisions with Five-Year Improvement Plans rated low had the highest rates of retention. Differences between divisions with Five-Year Improvement Plans rated high or average were less pronounced. When considered by size, divisions ranked as small had the highest retention rates, followed closely and sometimes surpassed by medium divisions. Large divisions had the smallest retention rates.

Retention rates were higher for students in grade 11 than for those in grade 4 from 1967 to 1977. Due to the history of declining retention rates prior to the introduction of the Standards of Quality and Objectives and the inability to discount chance fluctuations, causal influence regarding this measure cannot be attributed to the Standards of Quality and Objectives.

However, when comparing retention rates for students in grades 4 and 11, the difference in the lowest level reached by each group is striking. The retention rate in grade 4 shows a greater decline than that in grade 11 as indicated in table 6.

TABLE 11

A COMPARISON OF RETENTION RATES EXPRESSED AS PERCENTAGES IN GRADES 11 AND 4 FROM 1967 TO 1977

Year	Grade 11 Retention Rate	Grade 4 Retention Rate	
1967	5.97	5.23	
1968	5.81	4.60	
1969	5.52	3.30	
1970	5.37	2.55	
1971	5.07	2.21	
1972	4.77	1.75	First Standards
1973	4.43	1.96	of Quality and
1974	4.59	2.22	Objectives
1975	5.05	2.55	
1976	5.17	3.61	
1977	6.14	4.31	

Thus, the implementation of the Standards of Quality and Objectives cannot be said to have caused a decline in retentions. However there is some evidence to indicate this legislation may have been responsible for the low levels of retention rates reached during the 1972-1974 period in grades K-7 generally, and grade 4 specifically. The retention rate in grade 11 declined to its lowest level during this period also, but it did not decline as far as the rate found in grade 4.

Comparing mean percentages of retention with the standardized test scores for grades 4 and 11, at the state level, indicates there may be a relationship between retention rates and performance on standardized tests. Test scores for both grades were at their lowest levels during 1973. Fourth grade scores were lower than eleventh grade scores, while the fourth grade retention rate was lower than that in the eleventh grade. As the retention rate in the fourth grade increased, so did standardized test scores. Retention rates increased at a higher rate in the fourth grade than in the eleventh from 1973 to 1977 as indicated in table 7.

TABLE 12

A COMPARISON OF THE PERCENTAGE OF INCREASE IN RETENTIONS IN GRADES 11 AND 4 FROM 1973 TO 1977

Year	Grade 11 Retention Rate	Percent Increase over previous year	Grade 4 Retention Rate	Percent Increase over previous year
1973	4.43		1.96	
1974	4.59	6	2.22	13
1975	5.05	10	2.55	15
1976	5.17	2	3.61	42
1977	6.14	19	4.31	19

From 1973 to 1977, standardized test scores for fourth grade students increased each year, while scores for eleventh grade students increased in 1974 and then remained stable as Table 13 shows.

TABLE 13

ABILITY AND ACHIEVEMENT SCORES IN GRADES 11 AND 4

Year	Grade 11 Ability	Grade 11 Composite Achievement	Grade 4 Ability	Grade 4 Composite Achievement
1973	-.213	no single score	-.410	-.868
1974	-.125	-.068	-.142	-.666
1975	-.758	-.106	-.089	-.623
1976	-.196	-.112	-.026	-.570
1977	not tested	not tested	.021	-.498
1978	-.212	-.087	.089	-.413

All scores in table 13 are expressed as z scores.

Measure - Overageness in Grades 8-12, K-12, 11, and 4

Conclusions - Overageness patterns were more distinct in the sample when divisions were considered by size rather than by score. Overageness tended to be in a pattern of decline in the years preceeding the 1972-74 Standards of Quality and Objectives and to rise following this period.

Divisions with Five-Year Improvement Plans receiving a low rating had the highest mean percentage of overageness. Divisions with plans

rated average or high tended to have levels of overageness closer to each other than to the levels in divisions with plans rated low.

When divisions were ranked by size, small divisions, though followed closely and sometimes surpassed by medium divisions, tended to have the highest mean percentage of overageness. Large divisions' rates were smaller.

Overageness in grades 8-12, K-12, and 4 had the same patterns found in grades K-7 from 1952-77. Within the overall decline in the years preceeding the implementation of the Standards of Quality and Objectives, the mean percentage of overageness in grade 11 appeared to have more variation than that in grade 4. For all categories of divisions, as well as for the state, 1976 was the year in which the largest single change took place. For all divisions and for the state, the mean percentage of overageness increased that year.

Measure - Attendance in grades K-7 and 8-12

Elementary schools and high schools in the sample divisions, considered by score or size, and in the state as a whole, had attendance rates of 90 percent or greater throughout the twenty-six year period under consideration with only three exceptions within the sample and none in the state data.

Divisions with Five-Year Improvement Plans ranked high tended to have the highest levels of attendance when sample divisions were considered by score. Divisions ranked medium in size had the highest attendance rates when the sample was considered by size. Differences among sample divisions considered by score or size, tended to be slight.

Measure - High School Graduates

The number of high school graduates increased in all the sample

divisions with the clearest patterns emerging when divisions are considered by size.

No suitable measure was found to express the number of high school graduates as a percentage because of demographic changes. Thus, its usefulness in assessing the impact of the Standards of Quality and Objectives is limited.

Measure - High School Dropouts

Divisions with Five-Year Improvement Plans rated low had the highest mean percentage of dropouts. From 1973 to 1977, divisions with plans rated high tended to have the lowest mean percentage of dropouts. Prior to 1973, average divisions tended to have the lowest dropout rate.

When considered by size, the sample divisions did not show persistent patterns regarding the mean percentage of dropouts. As a group, these divisions had a decline in high school dropouts prior to 1971, and a tendency toward an increase after 1971.

At the state level, the mean number of dropouts increased, while the mean percentage of dropouts increased and declined in a series of short peaks and depressions.

Section 3 - Hypotheses

Hypothesis 1

There has been no significant difference in the levels of specific indicators or criteria used to measure competence in fundamental academic skills since the inception of the Standards of Quality and Objectives. The hypothesis is not rejected.

Because statewide data are collected annually, there have not been sufficient observation points since the introduction of the Standards of Quality and Objectives to conduct statistical tests of significance.

Examination of both the pertinent performance objectives set forth in the 1972-74 Standards of Quality and Objectives and the unobtrusive measures gathered as time-series data reveals two phenomena. In most cases, trends had been established before 1972. The rates of retentions, overageness, and dropouts, as well as standardized test scores, showed patterns of decline. Also during the 1972-1974 period the criteria and unobtrusive measures reached their lowest levels in twenty-six years and began to turn upward. These increases experienced their greatest gain in 1976.

Thus, it is possible to conclude that the impact of the first set of the Standards of Quality and Objectives was to reinforce by legislative mandate trends that had already begun. The force of this impact can be seen not at the introduction of the Standards of Quality and Objectives but when, as in the case of the performance objective regarding overageness, they were modified or eliminated.

Hypothesis 2

There is no relationship between the quality of multi-year plans, as measured by the Five-Year School Improvement Plan Rating Scale, and the achievement of individual competence in fundamental academic skills. The hypothesis is rejected.

Divisions with Five-Year Improvement Plans rated low did not perform well on the criteria of the 1972-74 Standards of Quality and Objectives and the unobtrusive measures. However, Epps' Rating Scale proved to be more effective at making general and broad distinctions than fine ones. While differences frequently existed in performance between divisions with plans rated high and low, divisions with plans rated average often performed as well or better than those divisions

with plans rated high.

Although size of the district was discounted by Epps as a factor in producing a multi-year plan of high quality, it seemed to influence performance. Small divisions did not perform as well as large divisions. Medium divisions tended to lean toward one extreme or the other.

Section 4 - Recommendations

Based on the procedures used and the analysis of data in this study, the following recommendations are made:

1. A data pool should be created to support additional time-series studies.

The time-series data based on the Age-Grade Distribution Table in the Superintendent's Annual Report, which was gathered for the years 1952 to 1957, and stored in the Computer Center at the College of William and Mary, should be supplemented and maintained annually. This will provide data which can be used to investigate trends in promotions, retentions, and overageness in one or all of grades K-12.

The standardized test data which were gathered for this study and stored in the Computer Center of the College of William and Mary should be maintained annually. Nowhere else in Virginia does such a historically complete listing of statewide scores on standardized tests of ability and achievement for grade eleven exist in readily usable form.

From all divisions of state government, a set of unobtrusive measures should be compiled to assess the accomplishment of each of the goals set forth in the Standards of Quality and Objectives. Measures relating to health practices, civic responsibility, and work habits could be used to make quantifiable inferences regarding the humanistic

goals of the Standards of Quality and Objectives which lack specific measures themselves to provide summative evaluation. The use of a variety of measures would provide clearer evidence of trends.

2. Further studies should be conducted to examine:

a. the relationship between division goals and statewide goals

b. the extent to which the respective divisions meet their selected goals

c. the relationship between the number of dropouts and the percentage of overageness

d. the relationship between retention policies, overageness, and test performance

e. the influence of the planning standard on improving planning procedures within the divisions and the state

f. the effect of subsequent revisions to the Standards of Quality and Objectives on the achievement of state and division goals

g. the use of TSX and CORREL in studies with fewer than fifty observation points.

3. The Five-Year School Improvement Plan Rating Scale be used to evaluate subsequent plans.

The results of this study appear to confirm its validity. It thus becomes a reliable and valid instrument to assess further plans. Additional studies employing the instrument's subscales are recommended.

Section 5 - Implications for Administrators and Program Evaluators of Statewide Educational Programs

The findings and procedures employed in this study offer several implications for personnel charged with developing, administering and evaluating both divisionwide and statewide educational programs. Evaluation methodology should be given major consideration at the time

such programs are developed. Beginning at such a position offers several benefits. The likelihood is greater that measurable and concrete goals will be selected or that measures will be established by which goals or standards can be quantitatively assessed. Flexible procedures of implementation can then provide rigorous evaluation designs. Informational feedback can be presented at predetermined intervals, and decisions may then be based on the most nearly accurate data available rather than upon political pressures, expediency, or fiscal influences.

Another implication which can be drawn from this study is that planning is related to performance. School divisions with Multi-Year Plans rated high tended to perform better in the performance objectives and unobtrusive measures included in this study. However, this tendency predates the introduction of the Standards of Quality and Objectives, and this presents the question of cause and effect. There may be political, financial, or social factors which caused these divisions to perform well throughout the twenty-six year period under consideration in the evaluation. Personnel charged with program development and assessment should give consideration to the need to improve their planning skills and to develop systems for monitoring their performance at selected stages of the program implementation.

The influence of size, when measured by the number of students in a division, on performance and planning needs further study. While size may not have been a factor in the quality of the Multi-Year Plan produced by a division, the data indicate that large divisions were more successful in the selected measures of goal attainment. Size, planning capability, and performance are variables which need further investigation.

The planning standard, a central fixture to the 1972-74 Standards of Quality and Objectives, was included to decrease the disparities among Virginia school divisions. The data presented in this study suggest that the disparities have not decreased. Additional studies are needed to determine the accuracy of this finding and to provide information for further decisions.

Summary of Chapter 5

In this chapter, conclusions were drawn and discussed. One hypothesis was rejected and one was not rejected. Recommendations regarding further studies were made.

The impact of the Standards of Quality and Objectives could not be discerned directly from either the measures specified in the first version of this legislation or the unobtrusive measures gathered. Because both types of measures exhibited strong historical trends preceeding the introduction of the Standards of Quality and Objectives, it was not possible to assign causality for the changes which took place in the 1972-74 period to the program. An additional complicating factor was size, which seemed to influence performance. Large divisions tended to perform better on both types of measures than small ones. Only with the removal of overageness objectives for the 1976 data could the impact of the Standards of Quality and Objectives be inferred.

An assessment of the impact of the planning standard must also be tempered by the consideration of history. Those divisions identified as having multi-year plans rated high and low by the Five-Year School Improvement Rating Scale appeared to maintain their relative positions with regard to the variables measured throughout the

twenty-six-year period considered. Divisions with plans rated high tended to outperform those with plans rated low before, as well as after, the introduction of the Standards of Quality and Objectives. Thus, rather than equalize educational opportunity throughout Virginia, the impact of the first set of Standards of Quality and Objectives may have been simply to reinforce the status quo.

This study can also serve to verify the validity of the Five-Year School Rating Plan Scale in that the results of the use of the scale were logical and consistent. Divisions whose plans rated high and low tended to perform as expected on all types of measures. The variability among divisions whose plans rated average could be due to the small number of average divisions sampled. Continued use of this rating instrument could provide valuable information regarding changes in the quality of planning among local school divisions.

The tentative nature of the results of this study should be emphasized. Because of the recency of the Standards of Quality and Objectives, insufficient observation points (less than fifty) were available to apply the appropriate statistical methods to discount chance fluctuations in the data. As long as statewide data continue to be collected annually in Virginia only the educational historian many years removed from a particular innovation will be able to make use of the TSX and CORREL programs. The collection of a variety of data as a time-series proved useful, but the inability to apply statistical tests makes the conclusions drawn more tentative.

It is hoped this study will be used by others to hasten the day when the goals of the Standards of Quality and Objectives will be realized for students in the public schools of Virginia.

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APPENDIX A

Standards of Quality and Objectives for Public Schools in Virginia 1972-74

Enacted by the General Assembly of Virginia, 1972

INTRODUCTION

As required by the new Constitution of Virginia, standards of quality for public schools were adopted by the State Board of Education in August 1971 and were revised and enacted by the General Assembly for the biennium beginning July 1, 1972. Standards were established for personnel, instructional materials (including educational television), program, and systemwide planning and management. In addition, the General Assembly enacted performance objectives for the State and for school divisions and planning and management objectives for public schools and teachers. The State Board was directed by the General Assembly to adopt rules and regulations necessary to implement the objectives.

The *Standards of Quality and Objectives for Public Schools in Virginia* provide new impetus for improving public education. They are a clear statement of the goals we seek and the procedures necessary for obtaining them. They offer new opportunities for the State Department of Education and local school divisions to work together to improve the quality of public education in Virginia.

The standards and objectives are designed to help each child to develop as fully as possible in the following ways:

- To acquire competence in using the fundamental learning skills and to acquire basic knowledge needed for participation in today's society;
- To acquire skills and knowledge needed for education beyond high school or for employment;
- To acquire a sense of personal worth and dignity;
- To develop attitudes and values that lead to responsible participation as a citizen of our republic;
- To develop understanding of one's relationship to his ecological, physical, economic, and social environment;
- To understand and appreciate people of different nationalities and ethnic groups and their contributions to the development of our nation and culture;
- To develop personal habits for continuing physical and mental health;
- To appreciate beauty and to understand its contribution to daily life.

The standards and objectives will be reviewed every two years to keep pace with changing expectations and conditions affecting education, new knowledge in the science and processes of education, and improved methods of evaluating educational quality.

Woodrow W. Wilkerson
Superintendent of Public Instruction

STANDARDS OF QUALITY AND OBJECTIVES

FOR PUBLIC SCHOOLS IN VIRGINIA

ENACTED BY THE

GENERAL ASSEMBLY OF VIRGINIA, 1972

Whereas, Section 2 of Article VIII of the Constitution of Virginia provides that standards of quality for the several school divisions shall be determined and prescribed from time to time by the Board of Education, subject to revision only by the General Assembly; and

Whereas, such Board has published such standards and it is now the wish of the General Assembly that such standards be hereby revised; now, therefore

Be it enacted by the General Assembly of Virginia:

1. § 1. That the standards of quality for public schools in Virginia, as determined and prescribed by the Board of Education, are revised as follows:

Personnel Standards

1. Central Office

a. In addition to the superintendent, each school division shall provide for one State-aid administrative position, subject to the rules and regulations of the Board of Education.

b. Each school division shall have one additional State-aid professional position for every fifty State-aid teaching positions or major fraction thereof. Such positions shall be limited to instructional supervisors, including supervisor of special education, and visiting teachers.

2. Schools

a. There shall be one State-aid elementary school teaching position for every thirty pupils in average daily membership and one State-aid secondary school teaching position for every twenty-three pupils in average daily membership.

b. There shall be additional State-aid positions that are required to meet school accrediting standards, including principals, assistant principals, librarians, and guidance counselors.

The foregoing standards are further revised as follows: They shall constitute standards of quality for, and have force and effect in, each school division only to an extent proportionate to the funding therefor provided by the General Assembly.

Instructional Materials and/or Educational Television Standards

The annual expenditure for library and supplementary materials and/or educational television shall amount to at least five dollars per pupil in average daily membership, and each school division shall supply from local funds or other available resources the difference between the amount allocated to each school division by the Board of Education and the amount herein required.

Program Standards

1. Elementary Schools

Each school division that has one or more elementary schools unaccredited or accredited with a warning by the Board of Education shall develop by September one of the ensuing school year a plan for each such school to meet the accrediting standards, and shall state a date acceptable to the Board for meeting those standards.

2. Secondary Schools

Each school division that has one or more secondary schools unaccredited or accredited with a warning by the Board of Education shall develop by September one of the ensuing school year a plan for each such school to meet the accrediting standards, and shall state a date acceptable to the Board for meeting those standards.

3. Kindergarten

Each school division that does not provide a kindergarten program shall by the end of the 1972-74 biennium develop a plan to provide such a program, and shall state in the plan a date acceptable to the Board of Education on which the kindergarten program will be implemented.

4. Special Education

Each school division shall identify exceptional children, including the gifted, by use of diagnostic procedures and shall develop a plan acceptable to the Board of Education to provide appropriate educational opportunities for them. Such opportunities may be provided through local programs, regional cooperative programs, or tuition assistance for handicapped children where no public school program is available.

5. Vocational Education

Each school division shall provide, either within the division or on a regional basis, training for employment by students planning to enter the world of work, or it shall develop a plan acceptable to the Board of Education by June thirty, nineteen hundred seventy-three to provide such training.

6. Continuing Education

Each school division that does not provide a program of adult education either within the division or on a regional basis shall develop a plan acceptable to the Board of Education by June thirty, nineteen hundred seventy-four to provide such a program.

Planning and Management Standards

1. The School Board shall adopt policies which guide the total operation of the school division toward established objectives.
2. The superintendent shall prepare a policy manual in cooperation with school division personnel.
3. The superintendent shall develop the capability, procedures, and organizational structure to enable the school division to plan for future needs.
4. The superintendent shall involve the community and his staff in the preparation of a five-year plan, which shall be updated annually. Such a plan shall be based on a study of the extent to which pupils are achieving the eight broad objectives formulated by the Board of Education and shall be designed to raise the level of pupil performance. This plan shall be reviewed and approved by the School Board and submitted to the State Superintendent of Public Instruction for approval by the Board of Education.
5. The superintendent shall prepare and present to the School Board an annual plan to achieve specific objectives of the approved five-year plan as part of the annual operating and capital outlay budgets.
6. The superintendent shall, as directed by the Board of Education, make annual follow-up studies of former students (dropouts and graduates) who enter employment or who continue their education beyond high school as a means of assessing the effectiveness of the school program.
7. The superintendent and his staff shall provide an effective program of instructional supervision and assistance to principals and teachers that is consistent with the objectives of the school division.
8. The superintendent and his staff shall provide for the cooperative evaluation of central office personnel and principals and shall provide assistance to principals in the cooperative evaluation of teachers and other school employees.

The standards of quality prescribed above, as herein revised, and made effective, shall alone be the only standards of quality required by Article VIII, Section 2, of the Constitution of Virginia.

§ 2. In addition to the standards of quality revised, and made effective as prescribed above, the State and local school divisions shall undertake to achieve the objectives set out below. Annual reports will be prepared by the Board of Education to show the progress being made throughout the State to meet these objectives. The Board of Education is directed and shall have the authority to promulgate rules and regulations necessary to implement these objectives.

Performance Objectives

State

1. A number of pupils equal to at least seventy percent of the pupils who entered the first grade twelve years earlier should be graduated from high school.
2. The percentage of the school population overage in the elementary grades should not exceed twenty percent of the enrollment in grades K-7.
3. The percentage of the student population achieving at or above grade level norms or the equivalent as measured by approved standardized achievement tests should equal or exceed the mean ability level of the student population as measured by appropriate scholastic aptitude tests.
4. At least thirty-one thousand, seven hundred fifty five-year-old children in the State should be enrolled in kindergarten.
5. At least one hundred thirty thousand pupils should be enrolled in summer programs.
6. At least fifty thousand eligible children should be enrolled in special education programs.
7. At least one hundred thirty-five thousand adults should be enrolled in continuing education programs.
8. At least seventy percent of the high school graduates should continue their education in programs provided by colleges and by schools such as business, nursing, data processing, and trade and technical.
9. At least ninety percent of the teachers should be assigned to teach only those subjects for which they have certificate endorsements.
10. At least twenty-three percent of the teachers should hold advanced degrees.

School Division

1. High school graduates expressed as a percent of the first grade enrollment twelve years earlier should increase by at least three percent each year or until a level of seventy percent is reached. Appropriate adjustments will be made for school divisions with significant increases or decreases in school population.
2. The percentage of the school population overage in grades K-7 should be reduced by at least two percent each year or until a level not exceeding twenty percent is reached.
3. The percentage of the student population achieving at or above grade level norms or the equivalent as measured by approved standardized achievement tests should equal or exceed the mean ability level of the student population as measured by appropriate scholastic aptitude tests.
4. The percentage of teachers holding advanced degrees should increase by at least two percent each year or until at least twenty-three per-

cent of the teachers hold such degrees. Work toward advanced degrees should be in the subject area to which the teacher is assigned.

The percentage of attendance of pupils shall not fall below the average of the last three years or ninety percent of school membership.

Teachers shall be assigned to teach only those subjects for which they have certificate endorsements unless exceptions are granted by the Board of Education.

Planning and Management Objectives

Individual School Planning and Management (Principal and Staff)

In accordance with local policies and regulations, the principal shall be responsible for discharging the following major duties:

a. The principal shall involve the community and his staff in the preparation and implementation of an annual school plan, which shall be consistent with the division-wide plan and which shall be approved by the division superintendent.

b. The principal shall develop a school handbook of policies and procedures which are in compliance with and which implement division policies.

c. The principal shall coordinate the services of all persons who work in the school to provide a healthful, stimulating school environment and an efficient and effective operation.

d. The principal shall assign pupils to classes, programs, and activities that are designed to promote maximum learning. All pupils whose achievement is below a level commensurate with their scholastic aptitude should be diagnosed for learning disabilities and appropriate instruction should be prescribed.

e. The principal shall ensure that instructional materials and equipment are used to provide learning experiences that are compatible with the educational needs of pupils.

f. The principal and his staff shall establish methods of evaluating the progress of individual students and the effectiveness of the instructional program in each classroom and in the school as a whole.

g. The principal shall provide direct instructional supervision and assistance to teachers to help them meet the standards for classroom planning and management and shall utilize available supervisory and other consultant personnel as needed to ensure an effective instructional program in the school.

h. The principal and his staff shall provide for the cooperative evaluation of the teachers and other employees in his school. The evaluation of teachers shall be based on the standards for Classroom Planning and Management.

2. Classroom Planning and Management (Teacher)

In accordance with local policies and regulations, the teacher shall be responsible for discharging the following major duties:

a. The teacher shall provide for the humanizing of instruction in the classroom. To accomplish this, the teacher should:

(i) Know the academic strengths and weaknesses of each child;

(ii) Know the home and community environment of each child;

(iii) Treat each child as an individual in accordance with his needs;

(iv) Understand and appreciate each child as an individual of worth; and

(v) Help each child to recognize his potential, to develop his abilities, and to assume his responsibilities as a member of the group.

b. The teacher shall provide for individual differences in the classroom. To accomplish this, the teacher should:

(i) Provide different subject matter and learning experiences and have different achievement standards for individuals with different abilities and/or past achievements; and

(ii) Provide opportunities for pupils to work independently on meaningful tasks that derive from and contribute to the planned activities of the group.

c. The teacher shall make use of available instructional materials and other resources that are appropriate to the needs of the pupils. To accomplish this, the teacher should supplement the textbook and make appropriate use of:

(i) Additional reading materials, such as library books and reference materials, magazines, and newspapers;

(ii) Educational television and other audio-visual aids;

(iii) Demonstrations, dramatizations, and other classroom activities;

(iv) Field trips;

(v) Resource persons and school-related youth organizations; and

(vi) Individual and group projects, in or out of school.

d. The teacher shall organize learning activities to achieve specific objectives which should include:

(i) The development of needed skills;

(ii) The understanding of specific concepts;

(iii) The solution of meaningful problems; and

(iv) The development of wholesome attitudes.

e. The teacher shall provide a favorable psychological environment for learning. To accomplish this, the teacher should:

(i) Develop and use questioning techniques that require pupils to employ the higher cognitive processes as well as to demonstrate retention and comprehension;

(ii) Encourage pupils to express their ideas in group discussions; and

(iii) Involve pupils in planning and conducting class activities under the guidance and direction of the teacher.

f. The teacher shall evaluate the progress of students. To do this, the teacher should:

(i) Emphasize the application of knowledge to new situations;

(ii) Include achievement in all areas of instruction, habits of work, attitudes, personal traits, and group relationships; and

(iii) Help each pupil to develop the ability to evaluate his own progress and to involve him in the evaluation process.

APPENDIX B

Evaluative Criteria for Five-Year School Improvement Plans

Evaluative Criteria for Five-Year School Improvement Plans

Systematic Dimension

A. Performance Objectives

Intent: to translate goals into objectives which are measurable (when appropriate).

Comprehensive Dimension

A. Performance Objectives

1. Goals and Values Criterion

   The specific objectives are contributory toward and consistent with all the educational goals of the state.

2. Policies Criterion

   a. The objectives are primarily learner-oriented rather than learning facilitative objectives.

   b. The objectives contain the product to be produced and/or the observable behavior to be performed.

   c. The objectives contain the criteria or specifications which describe how well the desired outcome is expected to be performed.

3. Relevance Criteria

   a. Learner-oriented objectives were included for the psychomotor and affective domains as well as the cognitive domains.

   b. Performance objectives were included for each broad educational goal of the state.

Systematic Dimension

B. Needs Assessment

Intent: to identify educational problems, to hypothesize the trouble spots that exist in the educational system and to establish priorities.

Comprehensive Dimension

B. Needs Assessment

1. Goals and Values Criterion

The present level of pupil performance with respect to learner-oriented objectives or the current status of the extent to which learning facilitative objectives are being achieved is reported for each educational goal of the state.

2. Policies Criterion

A variety of descriptive information (i.e., demographic data, program description, test results, needs and problem inventories, self-report questionnaires, teacher rating) provided empirical evidence which substantiated need.

3. Relevance Criteria

a. The behavioral needs of students in the cognitive, affective and psychomotor domains were assessed and reported.

b. Human and material resources were estimated.

c. Those needs for which there was the greatest discrepancy between objectives and current status of achievement received high ranking.

d. Directional needs, as well as management needs were included in the ranking.

e. Priorities by years were determined.

Systematic Dimension	Comprehensive Dimension
C. Strategies for Achieving the Objectives of the School Division, Including an Organized Program for Staff Development Intent: to develop a plan for organizing the critical elements of the educational program into the most advantageous position prior to the actual program implementation.	C. Strategies 1. Goals and Values Criterion a. Strategies are developed to meet each performance objective. b. Each strategy relates to a corresponding objective. 2. Policies Criterion a. Each strategy contains specific statements describing what will be done. b. Each strategy contains a statement identifying the person or group responsible for implementing the strategy and sub-strategies. c. Each strategy contains the target date for completion. d. Each strategy contains a statement describing how the results will be measured. e. Estimates of personnel, materials, space and equipment costs for implementing and maintaining programs are included in each strategy. f. The strategies are broken down into logical steps or sub-strategies. g. Objectives, strategies and sub-strategies are coded for ease of reference.

Systematic Dimension	Comprehensive Dimension
	h. Innovative strategies contain provisions for testing prior to full-scale adoption and implementation.
	3. Relevance Criteria
	a. Sub-strategies are identified for preparing people to effect change as well as for program changes.
	b. Sub-strategies move from (1) effecting change in people, to (2) changes in institutions, to (3) changes in program or process.
	c. Task forces were assigned to study alternative strategies for meeting the educational needs of the K-12 school population.
D. Plan for Evaluation of Progress Intent: to determine whether or not designated changes in educational programs have brought changes in outcomes in order to redefine goals, objectives and strategies.	D. Plan for Evaluation
	1. Goals and Values Criterion
	a. The description of the plan for evaluation of progress reflects that all learner-oriented and learning facilitative needs will be identified by the appropriate organizational unit, committee, and/or member of the professional staff for implementation and evaluation purposes.
	b. The results of each program will be measured in terms of established criteria.

Systematic Dimension

Comprehensive Dimension

2. Policies Criterion

   a. The assessment of objectives and programs will be made by assigned professional staff.

   b. The procedure for collecting reports and analyzing data was described.

   c. Professional staff will be required to analyze all relevant data and to present findings to the Planning Council and division superintendent.

   d. A calendar of evaluation activities was devised which reflects an on-going and continuous evaluation program.

   e. Procedures for listing new priorities and preparing new strategies were described.

3. Relevance Criteria

   The procedure for collecting data, listing new priorities and/or new strategies reflected that input was sought from all educational programs, the community, and all levels of the educational hierarchy.

Participative Dimension

Intent: for the purpose of securing understanding, acceptance and support of all persons and groups affected in order to promote needed changes in education.

Comprehensive Dimension

1. Goals and Values Criterion

   The process includes the broadest type of participation in developing proposals for statements of goals (i.e., teacher and student organizations as well as lay citizens and other educational agencies input and agreement were sought).

2. Policies Criterion

   a. An advisory system-wide planning council was responsible for developing the plan.

   b. The council's membership included at least one central office administrator, one central office supervisor, one elementary and secondary principal and teacher, and one lay person.

   c. Central office personnel did not constitute a majority of the membership of the council.

   d. Study committees and/or task forces were assigned to work on major areas of identified concern.

3. Relevance Criterion

   The plan reflected that the planning process provided involvement of students, teachers, administrators, and specialists, when appropriate, in policy making and program design.

APPENDIX C

TABLE 14

MEAN PERCENTAGE OF OVERAGE STUDENTS IN GRADES K-7:
BY SCORE AND STATE

Year	High	Average	Low	State
1952	36.05	33.58	43.74	35.93
1953	35.39	29.43	42.03	33.58
1954	32.71	27.11	38.78	31.38
1955	32.45	26.47	37.77	29.80
1956	31.83	26.60	37.52	28.97
1957	29.39	25.05	35.59	27.95
1958	27.17	24.97	35.83	27.57
1959	26.81	25.93	35.23	27.29
1960	30.64	26.17	35.15	26.86
1961	27.19	25.68	35.85	26.31
1962	27.81	25.08	34.51	25.49
1963	29.15	26.68	34.19	25.60
1964	26.16	24.58	32.90	24.80
1965	26.73	24.79	32.39	23.75
1966	27.12	28.16	31.57	23.67
1967	25.24	25.55	30.49	23.11
1968	24.89	24.42	29.97	22.90
1969	24.36	24.55	29.39	22.04
1970	23.98	23.80	28.02	21.31
1971	22.71	21.68	26.37	20.00
1972	19.58	19.25	25.69	18.67
1973	17.51	18.72	22.89	17.77
1974	16.90	17.95	22.95	19.21
1975	17.27	17.75	23.23	18.81
1976	27.09	28.20	32.37	27.23
1977	25.99	27.80	33.57	27.07

TABLE 15

MEAN PERCENTAGE OF OVERAGE STUDENTS IN GRADES K-7:
BY SIZE AND STATE

Year	Large	Medium	Small	State
1952	22.26	40.09	45.46	35.93
1953	22.78	37.94	42.43	33.58
1954	19.35	35.94	39.41	31.38
1955	20.87	36.84	37.30	29.80
1956	21.79	34.81	37.28	28.97
1957	18.98	33.39	35.47	27.95
1958	17.06	31.67	36.16	27.57
1959	21.55	30.73	34.83	27.29
1960	21.83	32.09	35.58	26.86
1961	22.44	31.38	34.88	26.31
1962	20.19	31.08	34.33	25.49
1963	19.64	31.49	35.22	25.60
1964	18.98	30.59	32.16	24.80
1965	19.07	29.94	32.21	23.75
1966	20.48	30.31	32.44	23.67
1967	17.67	30.74	30.67	23.11
1968	17.63	30.27	29.74	22.90
1969	16.30	29.92	29.58	22.04
1970	16.17	28.63	28.46	21.31
1971	15.04	26.75	26.57	20.00
1972	13.96	25.28	24.67	18.67
1973	15.06	20.59	22.46	17.77
1974	17.28	21.05	21.05	19.21
1975	18.18	20.96	21.15	18.81
1976	24.90	27.30	32.70	27.23
1977	24.05	30.13	32.41	27.07

TABLE 16

MEAN TOTAL ATTENDANCE IN GRADES K-12: BY SCORE AND STATE

Year	High	Average	Low	State
1952	94.25	93.40	91.54	93
1953	94.25	93.80	92.54	93
1954	93.75	93.60	92.81	93
1955	94.00	94.20	93.09	94
1956	94.25	94.50	92.90	94
1957	92.75	93.40	91.81	93
1958	92.21	94.60	93.63	94
1959	94.25	92.95	93.45	94
1960	95.25	94.80	93.90	95
1961	92.40	94.60	93.06	94
1962	95.25	94.40	94.18	94
1963	95.25	94.40	94.00	95
1964	95.00	93.80	93.90	95
1965	95.00	94.00	94.18	94
1966	95.20	94.40	94.18	94
1967	95.40	94.40	94.45	94
1968	94.80	93.80	92.69	94
1969	93.32	93.80	94.09	94
1970	94.40	93.20	93.45	93
1971	94.40	92.35	93.72	93
1972	94.40	93.40	93.63	93
1973	93.80	93.00	92.27	93
1974	94.00	93.40	93.27	93
1975	93.80	90.73	93.45	93
1976	93.80	93.20	93.07	93
1977	93.80	93.00	92.88	93

TABLE 17

MEAN TOTAL ATTENDANCE IN GRADES K-12: BY SIZE AND STATE

Year	Large	Medium	Small	State
1952	93.00	93.25	92.16	93
1953	93.50	93.50	93.00	93
1954	93.25	93.75	93.00	93
1955	93.75	93.50	93.50	94
1956	94.25	94.00	93.16	94
1957	92.25	92.50	92.41	93
1958	94.75	91.71	93.83	94
1959	94.25	94.00	93.06	94
1960	94.00	94.50	94.50	95
1961	91.94	93.25	93.80	94
1962	94.00	94.50	94.58	94
1963	94.00	94.75	94.33	95
1964	93.50	94.75	94.15	95
1965	94.00	95.00	94.23	94
1966	94.00	95.25	94.38	94
1967	93.75	95.00	94.84	94
1968	93.25	94.50	93.20	94
1969	93.50	94.25	93.81	94
1970	92.75	94.25	93.69	93
1971	92.75	94.50	93.52	93
1972	92.50	94.25	94.00	93
1973	92.25	93.50	92.77	93
1974	92.50	93.75	93.69	93
1975	90.96	93.75	93.21	93
1976	92.50	91.96	93.92	93
1977	92.25	92.19	93.69	93

TABLE 18

GRADE 11 ACHIEVEMENT SCORES REPORTED AS Z SCORES - VIRGINIA

Year	Reading	Math	Writing/Language
1952	.	.	.
1953	.	.	.
1954	.	.	.
1955	.	.	.
1956	.	.	.
1957	.	.	.
1958	.	.	.
1959	.042	-0.124	.109
1960	.146	-0.005	.226
1961	.166	.065	.265
1962	.209	.074	.299
1963	.230	.122	.317
1964	.166	.065	.265
1965	.119	-0.003	.206
1966	-0.435	-0.562	-0.370
1967	.123	.006	.200
1968	.052	-0.037	.123
1969	.076	-0.006	.158
1970	.005	-0.062	.082
1971	-0.017	-0.100	.023
1972	-0.113	-0.205	-0.256
1973	-0.193	-0.316	-0.300
1974	-0.168	-0.031	-0.237
1975	-0.214	-0.066	-0.290
1976	-0.234	-0.080	-0.299
1977	.	.	.
1978	-0.269	-0.099	-0.293

TABLE 19

GRADE 11 ABILITY SCORES REPORTED AS Z SCORES - VIRGINIA

Year	Verbal	Quantitative	Total
1952	.	.	.
1953	.	.	.
1954	.	.	.
1955	.	.	.
1956	.	.	.
1957	.	.	.
1958	.	.	.
1959	-0.075	.015	-0.020
1960	.032	.136	.109
1961	.147	.166	.201
1962	.159	.200	.231
1963	.170	.240	.259
1964	.147	.166	.201
1965	.084	.117	.135
1966	.093	.094	.130
1967	.120	.082	.146
1968	.066	.017	.030
1969	.106	.041	.107
1970	.060	.017	.061
1971	.006	.052	-0.007
1972	-0.156	.116	-0.180
1973	-0.187	.161	-0.213
1974	.	.	-0.068
1975	.	.	-0.106
1976	.	.	-0.112
1977	.	.	.
1978	.	.	-0.087

TABLE 20

GRADE 11 ACHIEVEMENT (READING) AND ABILITY (VERBAL AS Z SCORES - VIRGINIA

Year	Achievement (Reading)	Ability (Verbal)	Ability (Total)
1952	.	.	.
1953	.	.	.
1954	.	.	.
1955	.	.	.
1956	.	.	.
1957	.	.	.
1958	.	.	.
1959	.042	-0.075	-0.020
1960	.146	.032	.109
1961	.166	.147	.201
1962	.209	.159	2314
1963	.230	.170	.259
1964	.166	.147	.201
1965	.119	.084	.135
1966	-0.435	.093	.130
1967	.123	.120	.146
1968	.052	.066	.030
1969	.076	.106	.107
1970	.005	.060	.061
1971	-0.017	.006	-0.007
1972	-0.113	-0.156	-0.180
1973	-0.193	-0.187	-0.213
1974	-0.168	.	-0.068
1975	-0.214	.	-0.106
1976	-0.234	.	-0.112
1977	.	.	.
1978	-0.269	.0	-0.087

TABLE 21

GRADE 11 ACHIEVEMENT (WRITING/LANGUAGE) AND ABILITY (VERBAL AND TOTAL) AS Z SCORES - VIRGINIA

Year	Achievement (Writing/Language)	Ability (Verbal)	Ability (Total)
1952	.	.	.
1953	.	.	.
1954	.	.	.
1955	.	.	.
1956	.	.	.
1957	.	.	.
1958	.	.	.
1959	.109	-0.075	-0.020
1960	.226	.032	.109
1961	.265	.147	.201
1962	.299	.159	.231
1963	.317	.170	.259
1964	.265	.147	.201
1965	.206	.084	.135
1966	-0.370	.093	.130
1967	.200	.120	.146
1968	.123	.066	.030
1969	.158	.106	.107
1970	.082	.060	.061
1971	.023	.006	-0.007
1972	-0.256	-0.156	-0.180
1973	-0.300	-0.187	-0.213
1974	-0.237	.	-0.068
1975	-0.290	.	-0.106
1976	-0.299	.	-0.112
1977	.	.	.
1978	-0.293	.	-0.087

TABLE 22

GRADE 11 ACHIEVEMENT (MATH) AND ABILITY
(QUANTITATIVE AND TOTAL) AS Z SCORES - VIRGINIA

Year	Achievement (Math)	Ability (Quantitative)	Ability (Total)
1952	.	.	.
1953	.	.	.
1954	.	.	.
1955	.	.	.
1956	.	.	.
1957	.	.	.
1958	.	.	.
1959	-0.124	.015	-0.020
1960	-0.005	.136	.109
1961	.065	.166	.201
1962	.074	.200	.231
1963	.122	.240	.259
1964	.065	.166	.201
1965	-0.003	.117	.135
1966	-0.562	.094	.130
1967	.006	.082	.146
1968	-0.037	.017	.030
1969	-0.006	.041	.107
1970	-0.062	.017	.061
1971	-0.100	-0.052	-0.007
1972	-0.205	-0.116	-0.180
1973	-0.316	-0.161	-0.213
1974	-0.031	.	-0.068
1975	-0.066	.	-0.106
1976	-0.080	.	-0.112
1977	.	.	.
1978	-0.099	.	-0.087

TABLE 23

GRADE 4 ACHIEVEMENT AND ABILITY SCORES
REPORTED AS Z SCORES - VIRGINIA

Year	Achievement Reading	Math	Language
1952	.	.	.
1953	.	.	.
1954	.	.	.
1955	.	.	.
1956	.	.	.
1957	.	.	.
1958	.	.	.
1959	.	.	.
1960	.	.	.
1961	.	.	.
1962	.	.	.
1963	.	.	.
1964	.	.	.
1965	.	.	.
1966	.	.	.
1967	.	.	.
1968	.	.	.
1969	.	.	.
1970	.	.	.
1971	.	.	.
1972	.	.	.
1973	-0.706	-0.961	-0.759
1974	-0.509	-0.749	-0.542
1975	-0.449	-0.713	-0.506
1976	-0.414	-0.635	-0.448
1977	-0.336	-0.562	-0.372
1978	-0.260	-0.455	-0.299

TABLE 24

GRADE 4 ACHIEVEMENT (READING) AND ABILITY (TOTAL) - VIRGINIA

Year	Achievement Reading	Ability Total
1952	.0	.0
1953	.0	.0
1954	.0	.0
1955	.0	.0
1956	.0	.0
1957	.0	.0
1958	.0	.0
1959	.0	.0
1960	.0	.0
1961	.0	.0
1962	.0	.0
1963	.0	.0
1964	.0	.0
1965	.0	.0
1966	.0	.0
1967	.0	.0
1968	.0	.0
1970	.0	.0
1971	.0	.0
1972	.0	.0
1973	-0.706	-0.410
1974	-0.509	-0.142
1975	-0.449	-0.089
1976	-0.414	-0.026
1977	-0.336	-0.021
1978	-0.260	-0.089

TABLE 25

GRADE 4 ACHIEVEMENT (MATH) AND ABILITY (TOTAL) - VIRGINIA

Year	Achievement Math	Ability Total
1952	.0	.0
1953	.0	.0
1954	.0	.0
1955	.0	.0
1956	.0	.0
1957	.0	.0
1958	.0	.0
1959	.0	.0
1960	.0	.0
1961	.0	.0
1962	.0	.0
1963	.0	.0
1964	.0	.0
1965	.0	.0
1966	.0	.0
1967	.0	.0
1968	.0	.0
1969	.0	.0
1970	.0	.0
1971	.0	.0
1972	.0	.0
1973	-0.961	-0.410
1974	-0.749	-0.142
1975	-0.713	-0.089
1976	-0.635	-0.026
1977	-0.562	0.021
1978	-0.455	0.089

TABLE 26

GRADE 4 ACHIEVEMENT (LANGUAGE) AND ABILITY (TOTAL) - VIRGINIA

Year	Achievement Lanugage	Ability Total
1952	.0	.0
1953	.0	.0
1954	.0	.0
1955	.0	.0
1956	.0	.0
1957	.0	.0
1958	.0	.0
1959	.0	.0
1960	.0	.0
1961	.0	.0
1962	.0	.0
1963	.0	.0
1964	.0	.0
1965	.0	.0
1966	.0	.0
1967	.0	.0
1968	.0	.0
1969	.0	.0
1970	.0	.0
1971	.0	.0
1972	.0	.0
1973	-0.759	-0.410
1974	-0.542	-0.142
1975	-0.506	-0.089
1976	-0.448	-0.026
1977	-0.372	0.021
1978	-0.299	0.089

TABLE 27

READING ACHIEVEMENT IN GRADES 11 AND 4 - VIRGINIA

Year	Grade 11	Grade 4
1952	.0	.0
1953	.0	.0
1954	.0	.0
1955	.0	.0
1956	.0	.0
1957	.0	.0
1958	.0	.0
1959	-0.042	.0
1960	-0.146	.0
1961	-0.166	.0
1962	-0.209	.0
1963	-0.230	.0
1964	-0.166	.0
1965	-0.119	.0
1966	-0.435	.0
1967	-0.123	.0
1968	-0.052	.0
1969	-0.076	.0
1970	-0.005	.0
1971	-0.017	.0
1972	-0.113	.0
1973	-0.193	-0.706
1974	-0.168	-0.509
1975	-0.214	-0.449
1976	-0.234	-0.414
1977		-0.336
1978	-0.269	-0.260

TABLE 28

MATH ACHIEVEMENT IN GRADES 11 AND 4 - VIRGINIA

Year	Grade 11	Grade 4
1952	.0	.0
1953	.0	.0
1954	.0	.0
1955	.0	.0
1956	.0	.0
1957	.0	.0
1958	.0	.0
1959	-0.124	.0
1960	-0.005	.0
1961	0.065	.0
1962	0.074	.0
1963	0.122	.0
1964	0.065	.0
1965	-0.003	.0
1966	-0.562	.0
1967	0.006	.0
1968	-0.037	.0
1969	-0.006	.0
1970	-0.062	.0
1971	-0.100	.0
1972	-0.205	.0
1973	-0.316	-0.961
1974	-0.031	-0.749
1975	-0.066	-0.713
1976	-0.080	-0.635
1977		-0.562
1978	-0.099	-0.455

TABLE 29

WRITING/LANGUAGE ACHIEVEMENT IN GRADES 11 AND 4 - VIRGINIA

Year	Grade 11	Grade 4
1952	.0	.0
1953	.0	.0
1954	.0	.0
1955	.0	.0
1956	.0	.0
1957	.0	.0
1958	.0	.0
1959	0.109	.0
1960	0.226	.0
1961	0.265	.0
1962	0.299	.0
1963	0.317	.0
1964	0.265	.0
1965	0.206	.0
1966	-0.370	.0
1967	0.200	.0
1968	0.123	.0
1969	0.158	.0
1970	0.082	.0
1971	0.023	.0
1972	-0.256	.0
1973	-0.300	-0.759
1974	-0.237	-0.542
1975	-0.290	-0.506
1976	-0.299	-0.448
1977		-0.372
1978	-0.293	-0.299

TABLE 30

ABILITY IN GRADES 11 AND 4 - VIRGINIA

Year	Grade 11	Grade 4
1952	.0	.0
1953	.0	.0
1954	.0	.0
1955	.0	.0
1956	.0	.0
1957	.0	.0
1958	.0	.0
1959	-0.020	.0
1960	0.109	.0
1961	0.201	.0
1962	0.231	.0
1963	0.259	.0
1964	0.201	.0
1965	0.135	.0
1966	0.130	.0
1967	0.146	.0
1968	0.030	.0
1969	0.107	.0
1970	0.061	.0
1971	-0.007	.0
1972	-0.180	.0
1973	-0.213	-0.410
1974	-0.068	-0.142
1975	-0.106	-0.089
1976	-0.112	-0.026
1977		0.021
1978	-0.087	0.089

TABLE 31

GRADE 11 COMPOSITE ACHIEVEMENT IN SAMPLE BY SCORE

Year	High	Average	Low	State
1952	.	.	.	.
1953	.	.	.	.
1954	.	.	.	.
1955	.	.	.	.
1956	.	.	.	.
1957	.	.	.	.
1958	.	.	.	.
1959	.	.	.	.
1960	.	.	.	.
1961	.	.	.	.
1962	.	.	.	.
1963	.	.	.	.
1964	.	.	.	.
1965	.	.	.	.
1966	.	.	.	.
1967	.	.	.	.
1968	.	.	.	.
1969	.	.	.	.
1970	.	.	.	.
1971	.	.	.	.
1972	.	.	.	.
1973	.	.	.	.
1974	-0.117	-0.097	-0.235	-0.125
1975	0.276	-0.179	-0.283	-0.175
1976	-0.164	-0.172	-0.275	-0.196
1977				
1978	-0.241	0.219	-0.259	-0.212

TABLE 32

GRADE 11 COMPOSITE ACHIEVEMENT IN SAMPLE BY SIZE

Year	Large	Medium	Small	State
1952	.	.	.	.
1953	.	.	.	.
1954	.	.	.	.
1955	.	.	.	.
1956	.	.	.	.
1957	.	.	.	.
1958	.	.	.	.
1959	.	.	.	.
1960	.	.	.	.
1961	.	.	.	.
1962	.	.	.	.
1963	.	.	.	.
1964	.	.	.	.
1965	.	.	.	.
1966	.	.	.	.
1967	.	.	.	.
1968	.	.	.	.
1969	.	.	.	.
1970	.	.	.	.
1971	.	.	.	.
1972	.	.	.	.
1973	.	.	.	.
1974	-0.082	0.077	-0.232	-0.125
1975	0.203	-0.166	-0.301	-0.175
1976	-0.158	-0.136	0.271	-0.196
1977				
1978	-0.196	-0.179	-0.280	-0.212

TABLE 33

GRADE 4 COMPOSITE ACHIEVEMENT IN SAMPLE BY SCORE

Year	High	Average	Low	State
1952	.	.	.	.
1953	.	.	.	.
1954	.	.	.	.
1955	.	.	.	.
1956	.	.	.	.
1957	.	.	.	.
1958	.	.	.	.
1959	.	.	.	.
1960	.	.	.	.
1961	.	.	.	.
1962	.	.	.	.
1963	.	.	.	.
1964	.	.	.	.
1965	.	.	.	.
1966	.	.	.	.
1967	.	.	.	.
1968	.	.	.	.
1969	.	.	.	.
1970	.	.	.	.
1971	.	.	.	.
1972	.	.	.	.
1973	-0.789	-0.896	-0.866	-0.868
1974	-0.655	0.632	-0.727	-0.666
1975	-0.667	-0.563	-0.611	-0.623
1976	-0.664	-0.535	-0.621	-0.570
1977	-0.530	0.474	-0.554	-0.498
1978	-0.454	-0.324	-0.506	-0.413

TABLE 34

GRADE 4 COMPOSITE ACHIEVEMENT IN SAMPLE BY SIZE

Year	Large	Medium	Small	State
1952	.	.	.	.
1953	.	.	.	.
1954	.	.	.	.
1955	.	.	.	.
1956	.	.	.	.
1957	.	.	.	.
1958	.	.	.	.
1959	.	.	.	.
1960	.	.	.	.
1961	.	.	.	.
1962	.	.	.	.
1963	.	.	.	.
1964	.	.	.	.
1965	.	.	.	.
1966	.	.	.	.
1967	.	.	.	.
1968	.	.	.	.
1969	.	.	.	.
1970	.	.	.	.
1971	.	.	.	.
1972	.	.	.	.
1973	-0.850	-0.850	-0.858	-0.868
1974	-0.653	0.575	0.731	-0.666
1975	0.638	-0.540	-0.628	-0.623
1976	-0.584	-0.508	-0.651	-0.570
1977	-0.509	0.473	0.550	-0.498
1978	-0.373	-0.357	-0.503	-0.413

TABLE 35

GRADE 11 ABILITY SCORES IN SAMPLE BY SCORE

Year	High	Average	Low	State
1952	.	.	.	.
1953	.	.	.	.
1954	.	.	.	.
1955	.	.	.	.
1956	.	.	.	.
1957	.	.	.	.
1958	.	.	.	.
1959	.	.	.	.
1960	.	.	.	.
1961	.	.	.	.
1962	.	.	.	.
1963	.	.	.	.
1964	.	.	.	.
1965	.	.	.	.
1966	.	.	.	.
1967	.	.	.	.
1968	.	.	.	.
1969	.	.	.	.
1970	.	.	.	.
1971	.	.	.	.
1972	.	.	.	.
1973	.	.	.	.
1974	-0.103	-0.013	-0.164	-0.068
1975	-0.168	0.107	-0.188	-0.106
1976	-0.045	-0.071	-0.158	-0.112
1977				
1978	-0.073	0.083	-0.155	-0.087

TABLE 36

GRADE 11 ABILITY SCORES IN SAMPLE BY SIZE

Year	Large	Medium	Small	State
1952	.	.	.	.
1953	.	.	.	.
1954	.	.	.	.
1955	.	.	.	.
1956	.	.	.	.
1957	.	.	.	.
1958	.	.	.	.
1959	.	.	.	.
1960	.	.	.	.
1961	.	.	.	.
1962	.	.	.	.
1963	.	.	.	.
1964	.	.	.	.
1965	.	.	.	.
1966	.	.	.	.
1967	.	.	.	.
1968	.	.	.	.
1969	.	.	.	.
1970	.	.	.	.
1971	.	.	.	.
1972	.	.	.	.
1973	.	.	.	.
1974	0.023	-0.015	-0.172	-0.068
1975	-0.139	-0.071	0.200	-0.106
1976	-0.115	0.003	-0.141	-0.112
1977				
1978	-0.100	-0.095	-0.132	-0.087

TABLE 37

GRADE 4 ABILITY SCORES IN SAMPLE BY SCORE

Year	High	Average	Low	State
1952	.	.	.	.
1953	.	.	.	.
1954	.	.	.	.
1955	.	.	.	.
1956	.	.	.	.
1957	.	.	.	.
1958	.	.	.	.
1959	.	.	.	.
1960	.	.	.	.
1961	.	.	.	.
1962	.	.	.	.
1963	.	.	.	.
1964	.	.	.	.
1965	.	.	.	.
1966	.	.	.	.
1967	.	.	.	.
1968	.	.	.	.
1969	.	.	.	.
1970	.	.	.	.
1971	.	.	.	.
1972	.	.	.	.
1973	-0.418	-0.436	-0.423	-0.410
1974	-0.184	0.132	-0.230	-0.142
1975	-0.137	-0.087	0.100	-0.089
1976	-0.112	-0.051	-0.109	-0.026
1977	-0.086	0.013	-0.034	0.021
1978	-0.034	0.068	-0.039	0.089

TABLE 38

GRADE 4 ABILITY SCORES IN SAMPLE BY SIZE

Year	Large	Medium	Small	State
1952	.	.	.	.
1953	.	.	.	.
1954	.	.	.	.
1955	.	.	.	.
1956	.	.	.	.
1957	.	.	.	.
1958	.	.	.	.
1959	.	.	.	.
1960	.	.	.	.
1961	.	.	.	.
1962	.	.	.	.
1963	.	.	.	.
1964	.	.	.	.
1965	.	.	.	.
1966	.	.	.	.
1967	.	.	.	.
1968	.	.	.	.
1969	.	.	.	.
1970	.	.	.	.
1971	.	.	.	.
1972	.	.	.	.
1973	-0.317	0.455	-0.450	-0.410
1974	0.156	-0.118	-0.232	-0.142
1975	-0.106	-0.089	0.111	-0.089
1976	-0.056	0.022	-0.131	-0.026
1977	0.005	-0.001	-0.055	0.021
1978	0.061	0.096	-0.042	0.089

TABLE 39

MEAN PERCENTAGE OF RETENTIONS IN GRADES K-7 IN VIRGINIA AND SAMPLE BY SCORE

Year	High	Average	Low	State
1952	8.60	7.37	10.44	7.75
1953	8.02	6.45	10.57	7.24
1954	8.02	7.03	11.03	7.40
1955	8.79	8.11	11.21	7.71
1956	8.14	7.95	12.58	7.97
1957	8.32	8.72	12.47	8.59
1958	7.58	8.89	12.43	9.29
1959	8.45	7.46	13.31	8.18
1960	7.97	7.93	12.11	7.81
1961	9.46	7.65	11.56	7.58
1962	8.84	7.62	10.41	7.18
1963	7.56	7.00	9.11	6.68
1964	7.82	7.95	9.97	6.69
1965	11.17	7.50	9.16	7.05
1966	9.33	6.58	9.82	6.33
1967	8.03	6.48	8.22	5.64
1968	6.93	6.48	7.12	4.98
1969	5.53	5.00	7.06	4.20
1970	4.57	3.59	6.17	3.44
1971	3.32	2.69	5.16	3.09
1972	2.82	2.91	5.57	2.79
1973	2.95	2.77	9.32	3.00
1974	3.16	3.99	8.04	3.15
1975	3.33	3.33	7.18	3.45
1976	4.73	4.43	7.50	4.59
1977	5.99	6.43	8.44	5.66

TABLE 40

MEAN PERCENTAGE OF RETENTIONS IN GRADES K-7 IN VIRGINIA AND SAMPLE BY SIZE

Year	Large	Medium	Small	State
1952	4.55	11.10	10.28	7.75
1953	4.00	11.70	9.69	7.24
1954	4.87	11.61	10.25	7.40
1955	5.17	11.60	10.96	7.71
1956	4.57	11.49	12.05	7.97
1957	7.16	10.91	11.77	8.59
1958	5.73	11.13	11.97	9.29
1959	7.69	10.80	11.96	8.18
1960	6.33	10.49	11.47	7.81
1961	5.94	10.61	11.51	7.58
1962	5.61	9.98	11.43	7.18
1963	4.30	9.32	9.25	6.68
1964	4.53	9.75	10.15	6.69
1965	3.96	10.28	10.61	7.05
1966	3.90	10.09	10.09	6.33
1967	3.54	9.01	8.76	5.64
1968	2.61	8.81	7.79	4.98
1969	2.14	7.42	7.23	4.20
1970	1.99	5.47	6.19	3.44
1971	1.79	5.91	4.44	3.09
1972	1.65	4.76	5.27	2.79
1973	1.72	3.53	9.16	3.00
1974	1.77	4.98	7.78	3.15
1975	2.44	5.19	6.35	3.45
1976	3.46	5.94	7.02	4.59
1977	5.68	6.84	8.09	5.66

TABLE 41

MEAN PERCENTAGE OF RETENTIONS IN GRADES 8-12 IN VIRGINIA AND SAMPLE BY SCORE

Year	Large	Medium	Small	State
1952	8.47	9.45	10.56	8.26
1953	7.79	8.82	9.16	7.86
1954	6.47	11.12	10.03	8.61
1955	7.59	11.02	10.65	9.58
1956	10.28	13.13	11.94	10.01
1957	12.89	14.45	11.54	11.09
1958	11.70	11.32	12.52	11.13
1959	12.91	11.50	13.73	10.97
1960	11.85	12.31	11.51	10.21
1961	12.26	12.75	12.00	9.88
1962	11.52	11.45	10.85	9.51
1963	10.65	11.16	10.26	8.97
1964	10.70	9.03	10.16	8.45
1965	11.75	10.31	10.68	8.30
1966	11.29	8.51	10.75	9.37
1967	9.87	7.52	9.10	7.23
1968	7.87	9.28	10.93	7.26
1969	6.79	6.99	9.79	6.64
1970	7.40	6.61	9.85	6.39
1971	6.09	5.06	8.03	5.86
1972	4.95	4.99	8.15	5.73
1973	6.22	5.95	7.75	5.41
1974	6.87	5.88	7.71	5.70
1975	6.87	6.14	8.48	6.28
1976	7.14	5.86	9.39	6.72
1977	9.41	6.47	9.48	8.11

TABLE 42

MEAN PERCENTAGE OF RETENTIONS IN GRADES 8-12 IN VIRGINIA AND SAMPLE BY SIZE

Year	Large	Medium	Small	State
1952	7.96	9.65	10.52	8.26
1953	6.54	10.33	9.03	7.86
1954	7.03	13.23	9.24	8.61
1955	8.00	9.64	10.98	9.58
1956	8.93	11.75	12.95	10.01
1957	8.56	11.69	14.28	11.09
1958	9.46	12.53	12.72	11.13
1959	12.20	12.83	13.31	10.97
1960	11.98	11.56	11.79	10.21
1961	10.87	12.33	12.69	9.88
1962	11.40	10.59	11.24	9.51
1963	10.11	10.54	10.74	8.97
1964	8.45	9.60	10.65	8.45
1965	8.91	11.72	11.21	8.30
1966	8.94	9.39	11.08	9.37
1967	8.17	9.29	9.02	7.23
1968	9.02	7.25	10.93	7.26
1969	7.58	6.69	9.22	6.64
1970	6.84	6.47	9.70	6.39
1971	6.32	6.56	7.09	5.86
1972	6.33	5.94	6.91	5.73
1973	5.66	5.97	7.67	5.41
1974	5.50	6.29	7.78	5.70
1975	5.14	6.28	8.65	6.28
1976	5.60	7.04	9.05	6.72
1977	7.59	7.53	9.47	8.11

TABLE 43

MEAN PERCENTAGE OF RETENTIONS IN GRADES K-12 IN VIRGINIA AND SAMPLE BY SCORE

Year	High	Average	Low	State
1952	8.54	8.21	10.48	7.95
1953	7.93	7.35	10.04	7.48
1954	7.37	8.67	10.65	7.86
1955	8.29	9.31	10.99	8.43
1956	9.03	10.07	12.32	8.75
1957	10.22	11.01	12.09	9.55
1958	9.29	9.89	12.47	10.00
1959	10.31	9.11	13.48	9.25
1960	9.59	9.72	11.86	8.73
1961	10.62	9.74	11.74	8.47
1962	9.95	9.15	10.59	8.07
1963	8.85	8.73	9.58	7.56
1964	9.02	8.39	10.05	7.37
1965	11.41	8.62	9.78	7.53
1966	10.14	7.37	10.21	7.50
1967	8.80	6.91	8.59	6.25
1968	7.32	7.60	8.68	5.86
1969	6.09	5.80	8.18	5.14
1970	5.82	4.79	7.65	4.57
1971	4.51	3.73	6.32	4.15
1972	3.79	3.87	6.62	3.92
1973	4.35	4.14	8.67	3.93
1974	4.70	4.77	7.91	4.13
1975	4.70	4.43	7.70	4.54
1976	5.65	4.98	8.23	5.41
1977	7.32	6.45	8.84	6.61

TABLE 44

MEAN PERCENTAGE OF RETENTIONS IN GRADES K-12 IN VIRGINIA AND SAMPLE BY SIZE

Year	Large	Medium	Small	State
1952	5.93	10.51	10.37	7.95
1953	5.02	11.16	9.45	7.48
1954	5.75	12.25	9.85	7.86
1955	6.31	10.81	10.97	8.43
1956	6.37	11.60	12.41	8.75
1957	7.74	11.23	12.77	9.55
1958	7.24	11.69	12.27	10.00
1959	9.53	11.65	12.51	9.25
1960	8.64	10.94	11.60	8.73
1961	7.91	11.33	11.99	8.47
1962	8.02	10.24	10.75	8.07
1963	6.72	9.83	9.86	7.56
1964	6.13	9.69	10.36	7.37
1965	5.98	10.88	10.85	7.53
1966	6.00	9.80	10.50	7.50
1967	5.39	9.13	8.87	6.25
1968	5.17	8.16	9.07	5.86
1969	4.32	7.12	8.08	5.14
1970	3.93	5.87	7.64	4.57
1971	3.64	6.19	5.55	4.15
1972	3.56	5.32	5.96	3.92
1973	3.30	4.49	8.51	3.93
1974	3.19	5.50	7.78	4.13
1975	3.41	5.62	7.28	4.54
1976	4.26	6.36	7.81	5.41
1977	6.42	7.10	8.63	6.61

TABLE 45

MEAN PERCENTAGE OF RETENTIONS IN GRADE 11 IN VIRGINIA AND SAMPLE BY SCORE

Year	High	Average	Low	State
1952	6.73	7.37	7.36	6.05
1953	4.97	10.05	5.11	6.13
1954	5.26	11.80	7.23	6.62
1955	6.12	9.29	7.36	7.95
1956	9.05	14.21	7.59	8.30
1957	6.90	11.57	7.82	9.03
1958	10.36	10.95	8.01	8.97
1959	7.99	6.50	7.75	8.69
1960	8.85	10.00	7.89	8.51
1961	10.20	11.10	7.96	8.32
1962	9.60	10.67	7.55	7.94
1963	8.32	9.40	6.76	7.16
1964	9.24	6.97	8.77	6.96
1965	9.66	8.60	7.00	7.42
1966	11.03	7.90	8.10	6.20
1967	9.53	6.13	7.79	5.97
1968	6.22	9.40	7.92	5.81
1969	4.22	7.42	5.86	5.52
1970	5.82	4.80	5.96	5.37
1971	3.66	4.83	8.54	5.07
1972	2.46	6.21	5.27	4.77
1973	9.20	5.22	5.04	4.43
1974	8.12	4.57	5.33	4.59
1975	8.28	4.47	7.35	5.05
1976	5.43	5.16	8.00	5.17
1977	8.40	5.58	8.24	6.14

TABLE 46

MEAN PERCENTAGE OF RETENTIONS IN GRADE 11 IN VIRGINIA AND SAMPLE BY SIZE

Year	Large	Medium	Small	State
1952	5.64	7.06	7.98	6.05
1953	5.75	9.50	5.57	6.13
1954	5.68	13.05	7.54	6.62
1955	6.79	9.94	6.99	7.95
1956	6.93	9.02	10.58	8.30
1957	6.61	8.51	9.25	9.03
1958	7.62	8.63	9.94	8.97
1959	7.95	7.77	7.23	8.69
1960	11.32	9.78	7.32	8.51
1961	9.66	8.91	9.24	8.32
1962	10.20	7.92	8.53	7.94
1963	9.25	8.13	7.09	7.16
1964	8.64	8.61	8.35	6.96
1965	7.90	8.32	7.95	7.42
1966	8.31	7.04	9.41	6.20
1967	9.77	5.45	7.93	5.97
1968	9.87	6.27	7.74	5.81
1969	8.49	5.35	5.18	5.52
1970	6.89	5.22	5.36	5.37
1971	6.70	5.00	6.76	5.07
1972	5.14	5.73	4.45	4.77
1973	3.16	5.50	7.15	4.43
1974	3.56	4.72	6.71	4.59
1975	4.04	5.23	8.13	5.05
1976	4.07	6.90	7.09	5.17
1977	5.24	6.98	8.59	6.14

TABLE 47

MEAN PERCENTAGE OF RETENTIONS IN GRADE 4 IN VIRGINIA AND SAMPLE BY SCORE

Year	High	Average	Low	State
1952	9.11	5.87	10.32	8.08
1953	8.23	6.41	11.28	8.15
1954	9.23	7.34	12.04	8.41
1955	8.84	6.47	12.93	8.52
1956	8.19	7.21	11.90	8.40
1957	8.39	8.65	12.40	9.21
1958	6.75	8.38	12.49	9.82
1959	7.16	7.88	13.18	8.64
1960	6.56	5.85	11.41	7.93
1961	9.04	6.32	11.12	7.53
1962	7.64	6.78	9.03	6.95
1963	6.53	6.57	7.85	6.86
1964	6.45	6.04	9.77	6.52
1965	6.97	5.73	7.58	6.94
1966	6.28	4.67	8.17	6.05
1967	6.13	5.46	7.46	5.23
1968	5.98	4.48	6.64	4.60
1969	3.83	3.08	6.49	3.30
1970	3.11	1.77	5.81	2.55
1971	2.02	1.29	4.79	2.21
1972	2.30	1.61	4.01	1.75
1973	2.06	1.19	9.16	1.96
1974	1.89	3.79	8.18	2.22
1975	3.45	2.55	7.98	2.55
1976	4.80	2.51	9.91	3.61
1977	5.59	4.12	10.65	4.31

TABLE 48

MEAN PERCENTAGE OF RETENTIONS IN GRADE 4 IN VIRGINIA AND SAMPLE BY SIZE

Year	Large	Medium	Small	State
1952	3.93	9.81	10.36	8.08
1953	3.49	15.61	9.39	8.15
1954	4.93	11.77	11.60	8.41
1955	6.51	11.71	11.42	8.52
1956	4.82	10.78	11.44	8.40
1957	6.69	12.06	11.51	9.21
1958	4.30	11.89	11.79	9.82
1959	7.36	10.74	11.72	8.64
1960	5.81	10.41	9.68	7.93
1961	6.26	10.78	10.16	7.53
1962	3.92	9.50	9.18	6.95
1963	4.04	8.88	7.80	6.86
1964	4.59	8.31	9.11	6.52
1965	3.29	9.40	7.40	6.94
1966	3.27	8.45	7.52	6.05
1967	2.76	8.69	7.24	6.23
1968	1.75	9.63	6.10	4.60
1969	1.47	7.28	5.45	3.30
1970	1.31	5.29	4.90	2.55
1971	1.26	5.00	3.40	2.21
1972	0.72	2.85	3.93	1.75
1973	0.50	3.63	8.84	1.96
1974	0.78	5.90	7.48	2.22
1975	1.81	5.09	7.08	2.55
1976	1.97	6.03	8.63	3.61
1977	4.24	6.52	9.43	4.31

TABLE 49

MEAN PERCENTAGE OF OVERAGENESS IN GRADES 8-12 IN VIRGINIA AND SAMPLE BY SCORE

Year	High	Average	Low	State
1952	40.13	39.13	47.19	41.49
1953	40.56	36.82	45.15	40.03
1954	37.78	37.04	41.77	39.11
1955	34.53	36.22	39.63	36.74
1956	32.11	29.34	38.07	34.89
1957	31.16	29.80	35.63	33.59
1958	34.13	29.04	36.62	32.91
1959	31.52	26.60	36.17	31.25
1960	28.99	26.33	35.27	29.43
1961	28.52	28.12	35.12	29.15
1962	28.78	38.10	33.53	28.94
1963	29.41	29.15	35.59	30.04
1964	28.19	30.60	34.16	30.12
1965	28.44	30.33	35.15	30.74
1966	28.56	30.42	35.31	30.30
1967	28.80	29.48	34.66	29.57
1968	28.83	27.99	33.28	29.11
1969	26.56	28.85	34.07	28.48
1970	26.96	27.59	33.93	28.23
1971	27.94	30.85	32.85	28.07
1972	27.75	27.28	31.53	27.39
1973	26.49	27.70	31.17	26.45
1974	25.97	31.73	31.01	29.07
1975	24.85	31.73	31.64	28.99
1976	31.50	38.67	45.69	37.47
1977	35.44	39.10	45.47	38.25

TABLE 50

MEAN PERCENTAGE OF OVERAGENESS IN GRADES 8-12 IN VIRGINIA AND SAMPLE BY SIZE

Year	Large	Medium	Small	State
1952	37.97	40.43	46.63	41.49
1953	31.84	42.70	45.37	40.03
1954	32.06	41.82	41.68	39.11
1955	30.24	38.66	39.95	36.74
1956	27.68	33.95	37.27	34.89
1957	25.40	34.32	35.56	33.59
1958	28.71	36.54	35.29	32.91
1959	25.27	36.13	34.27	31.25
1960	23.61	32.93	34.12	29.43
1961	24.30	32.32	34.55	29.15
1962	23.51	31.88	37.74	28.94
1963	25.40	31.88	35.48	30.04
1964	26.76	30.88	33.78	30.12
1965	26.29	33.17	34.05	30.74
1966	27.95	32.99	33.81	30.30
1967	27.26	32.16	33.47	29.57
1968	25.11	31.24	32.67	29.11
1969	24.75	31.85	32.72	28.48
1970	23.86	30.21	33.05	28.23
1971	23.33	29.82	34.05	28.07
1972	23.19	29.23	31.72	27.39
1973	24.42	28.73	30.87	26.45
1974	26.65	33.51	29.92	29.07
1975	27.97	35.98	28.85	28.99
1976	33.41	37.78	43.75	37.47
1977	33.17	43.06	43.69	38.25

TABLE 51

MEAN PERCENTAGE OF OVERAGENESS IN GRADES K-12 IN VIRGINIA AND SAMPLE BY SCORE

Year	High	Average	Low	State
1952	37.75	35.80	45.10	38.07
1953	37.54	32.46	43.29	36.06
1954	34.82	31.18	40.00	34.35
1955	33.32	30.47	38.53	32.47
1956	31.94	27.72	37.75	31.24
1957	30.13	27.00	35.61	30.12
1958	30.07	26.64	36.16	29.62
1959	28.77	26.20	35.61	28.81
1960	29.95	26.23	35.20	27.85
1961	27.74	26.68	35.55	27.40
1962	28.21	30.42	34.10	26.82
1963	29.26	27.69	34.77	27.31
1964	27.01	27.05	33.42	26.85
1965	27.44	27.06	33.54	26.44
1966	27.72	29.08	33.13	26.22
1967	26.72	27.16	32.22	25.60
1968	26.53	25.86	31.34	25.29
1969	25.28	26.25	31.33	24.52
1970	25.22	25.33	30.46	23.97
1971	24.86	25.32	29.05	23.10
1972	22.98	22.44	28.09	22.03
1973	21.13	22.29	26.19	21.11
1974	20.45	23.33	26.12	23.00
1975	20.28	23.21	26.51	22.73
1976	28.84	32.23	37.53	31.17
1977	29.62	32.15	38.18	31.37

TABLE 52

MEAN PERCENTAGE OF OVERAGENESS IN GRADES K-12 IN VIRGINIA AND SAMPLE BY SIZE

Year	Large	Medium	Small	State
1952	28.48	40.23	45.93	38.07
1953	26.48	39.86	43.63	36.06
1954	24.54	38.31	40.35	34.35
1955	24.69	37.58	38.39	32.47
1956	24.20	34.45	37.28	31.24
1957	21.60	33.78	35.51	30.12
1958	21.82	33.64	35.80	29.62
1959	23.04	32.98	34.59	28.81
1960	22.54	32.44	34.97	27.85
1961	23.18	31.77	34.74	27.40
1962	21.55	31.41	35.75	26.82
1963	21.99	31.66	36.32	27.31
1964	22.16	30.71	32.83	26.85
1965	22.01	31.29	32.98	26.44
1966	23.53	31.43	33.01	26.22
1967	21.50	31.33	31.83	25.60
1968	20.62	30.68	30.96	25.29
1969	19.68	30.71	30.88	24.52
1970	19.25	29.28	30.37	23.97
1971	18.36	28.00	29.65	23.10
1972	17.65	26.89	27.57	22.03
1973	18.73	23.72	25.88	21.11
1974	20.88	25.84	24.57	23.00
1975	21.95	26.74	24.20	22.73
1976	28.17	31.33	37.03	31.17
1977	27.56	35.10	36.77	31.37

TABLE 53

MEAN PERCENTAGE OF OVERAGENESS IN GRADE 11 IN VIRGINIA AND SAMPLE BY SCORE

Year	High	Average	Low	State
1952	38.10	37.41	41.52	38.99
1953	38.04	33.60	44.69	37.36
1954	36.64	40.33	36.43	35.59
1955	36.75	35.04	37.50	34.15
1956	30.76	25.37	38.10	32.67
1957	29.31	29.93	31.44	32.06
1958	25.31	21.94	31.06	27.91
1959	28.09	22.04	26.90	25.63
1960	26.78	25.30	35.9C	27.68
1961	28.21	26.60	33.52	28.69
1962	23.94	31.23	31.32	24.56
1963	18.77	22.26	24.93	22.76
1964	24.93	27.85	29.05	27.14
1965	26.43	28.18	32.70	28.13
1966	24.94	29.18	31.40	27.42
1967	24.78	25.66	29.65	26.64
1968	24.14	23.95	31.19	26.29
1969	21.41	25.24	30.00	25.69
1970	23.64	24.72	28.49	24.53
1971	27.74	23.12	28.45	25.22
1972	22.65	21.91	28.81	24.10
1973	23.64	24.70	27.94	24.19
1974	24.90	31.24	27.30	27.39
1975	25.18	32.31	26.52	26.38
1976	30.90	37.37	40.65	36.17
1977	33.27	39.50	40.73	36.56

TABLE 5a

PLOT OF MEAN PERCENTAGE OF RETENTIONS IN GRADES 8-12 IN SAMPLE DIVISIONS BY SIZE

Year	Large	Medium	Small	State
1952	32.53	39.29	42.41	38.99
1953	31.22	38.53	43.07	37.36
1954	30.78	40.18	38.43	35.59
1955	30.13	40.38	37.72	34.15
1956	23.36	30.74	37.71	32.67
1957	27.22	29.31	32.21	32.06
1958	24.62	32.15	27.12	27.91
1959	22.08	27.80	26.57	25.63
1960	21.45	29.44	35.41	27.68
1961	22.55	31.86	33.08	28.69
1962	18.48	26.55	34.70	24.56
1963	20.41	21.93	24.27	22.76
1964	24.91	27.14	28.86	27.14
1965	23.95	31.72	31.54	28.13
1966	24.91	28.82	30.85	27.42
1967	26.28	26.44	28.27	26.64
1968	24.46	27.86	28.79	26.29
1969	25.09	24.14	27.87	25.69
1970	21.88	26.38	27.86	24.53
1971	21.97	26.06	28.86	25.22
1972	22.51	24.14	27.16	24.10
1973	23.58	26.06	26.96	24.19
1974	27.93	32.75	26.03	27.39
1975	27.29	36.54	24.92	26.38
1976	33.83	35.97	39.18	36.17
1977	34.06	40.29	39.58	36.56

TABLE 55

PLOT OF MEAN PERCENTAGE OF RETENTIONS IN GRADES 8-12 IN VIRGINIA

Year	High	Average	Low	State
1952	38.71	33.19	45.25	39.38
1953	41.16	33.18	47.97	39.63
1954	35.31	32.40	45.87	37.70
1955	39.63	27.63	42.03	34.52
1956	27.57	23.61	36.07	28.43
1957	32.80	28.68	38.15	32.60
1958	30.83	27.81	38.59	32.84
1959	28.74	30.66	38.99	32.81
1960	32.07	33.13	38.21	31.38
1961	27.13	27.79	39.33	31.03
1962	30.68	26.74	36.04	30.01
1963	29.69	32.43	36.06	29.86
1964	29.37	28.07	34.96	29.45
1965	24.58	26.87	36.42	28.58
1966	26.76	33.79	33.09	28.63
1967	24.30	29.41	32.62	28.10
1968	25.79	27.10	32.52	28.02
1969	26.85	27.06	32.83	26.98
1970	22.33	27.81	31.15	25.13
1971	31.86	23.02	28.27	24.08
1972	20.69	24.23	27.08	21.86
1973	19.38	19.28	26.14	20.25
1974	20.72	19.84	28.67	22.15
1975	19.32	19.83	26.16	21.99
1976	45.06	36.44	39.44	33.92
1977	34.53	32.88	40.71	33.61

TABLE 56

PLOT OF MEAN PERCENTAGE OF RETENTIONS IN GRADES K-12 IN SAMPLE DIVISIONS BY SIZE

Year	Large	Medium	Small	State
1952	21.06	39.76	47.93	39.38
1953	28.11	40.67	48.59	39.63
1954	25.56	39.99	45.46	37.70
1955	23.36	37.95	42.81	34.52
1956	20.42	33.02	34.27	28.43
1957	21.61	36.66	38.43	32.60
1958	19.20	35.21	39.10	32.84
1959	19.64	34.40	40.08	32.81
1960	23.73	35.43	39.80	31.38
1961	21.68	35.99	37.45	31.03
1962	22.12	32.29	36.26	30.01
1963	21.82	33.29	38.09	29.86
1964	20.90	32.03	35.39	29.45
1965	20.51	31.17	34.70	28.58
1966	21.84	31.66	34.83	28.63
1967	19.63	32.94	32.08	28.10
1968	20.48	33.47	31.26	28.02
1969	17.49	33.55	32.81	26.98
1970	17.44	32.44	30.30	25.13
1971	17.86	31.07	29.97	24.08
1972	15.61	32.53	25.38	21.86
1973	16.45	23.27	23.91	20.25
1974	18.66	25.97	26.13	22.15
1975	22.15	25.36	22.58	21.99
1976	30.48	34.35	44.77	33.92
1977	28.80	39.05	39.50	33.61

TABLE 57

PERCENTAGE OF ATTENDANCE IN GRADES K-7 IN VIRGINIA AND MEAN PERCENTAGE OF ATTENDANCE IN GRADES K-7 IN SAMPLE BY SCORE

Year	High	Average	Low	State
1952	94.00	93.40	91.27	92
1953	94.50	93.60	92.27	92
1954	93.75	93.60	92.72	93
1955	93.75	94.00	92.63	93
1956	94.50	94.40	92.54	93
1957	92.50	82.20	91.36	92
1958	94.00	94.60	93.63	94
1959	94.50	94.20	93.09	94
1960	94.75	94.60	93.36	94
1961	94.75	94.80	92.20	94
1962	95.00	94.40	93.81	94
1963	94.50	94.40	93.72	94
1964	95.00	94.00	94.00	94
1965	95.00	93.80	93.90	94
1966	94.80	94.40	94.09	94
1967	95.40	94.60	94.63	95
1968	95.20	94.00	93.01	94
1969	92.80	93.60	94.36	94
1970	94.60	93.80	93.81	94
1971	95.00	91.85	94.18	94
1972	95.40	94.00	94.45	94
1973	94.60	94.00	92.59	94
1974	94.60	94.40	94.18	94
1975	94.60	91.85	94.00	93
1976	94.40	94.20	94.18	94
1977	94.60	93.80	93.23	94

TABLE 58

PERCENTAGE OF ATTENDANCE IN GRADES K-7 IN VIRGINIA AND MEAN PERCENTAGE OF ATTENDANCE IN GRADES K-7 IN SAMPLE BY SIZE

Year	Large	Medium	Small	State
1952	92.75	92.50	92.16	92
1953	93.75	93.00	92.83	92
1954	93.50	93.50	92.91	93
1955	93.75	92.75	93.16	93
1956	94.50	93.75	92.91	93
1957	92.25	78.50	91.91	92
1958	94.50	93.50	93.91	94
1959	94.00	94.00	93.41	94
1960	93.75	94.00	94.00	94
1961	90.81	94.00	94.00	94
1962	94.00	94.00	94.33	94
1963	94.25	94.25	93.91	94
1964	94.25	94.50	94.15	94
1965	94.50	94.75	93.84	94
1966	94.25	95.00	94.15	94
1967	95.00	95.00	94.69	95
1968	94.00	95.00	93.31	94
1969	94.25	94.75	93.38	94
1970	93.75	94.25	94.00	94
1971	94.00	95.00	93.40	94
1972	94.00	94.75	94.69	94
1973	93.50	93.75	93.26	94
1974	93.75	94.50	94.46	94
1975	90.56	94.25	94.38	93
1976	93.75	94.25	94.38	94
1977	93.25	91.53	94.53	94

TABLE 59

PERCENTAGE OF ATTENDANCE IN GRADES 8-12 IN VIRGINIA AND MEAN PERCENTAGE OF ATTENDANCE IN GRADES 8-12 IN SAMPLE BY SCORE

Year	High	Average	Low	State
1952	95.00	94.20	92.81	93
1953	95.25	94.60	94.00	94
1954	94.75	93.80	93.90	93
1955	95.25	94.40	94.18	94
1956	95.00	94.60	94.00	94
1957	94.25	93.40	92.90	93
1958	90.50	94.80	94.27	94
1959	95.50	91.44	94.45	94
1960	95.50	95.00	94.72	94
1961	90.90	94.80	94.54	94
1962	95.50	94.60	94.81	94
1963	95.50	94.60	94.63	94
1964	95.40	93.80	94.63	94
1965	95.00	93.80	94.09	94
1966	95.20	93.80	94.18	93
1967	95.00	93.60	94.54	93
1968	94.60	93.00	92.40	93
1969	94.20	93.80	93.72	93
1970	94.00	92.60	93.00	92
1971	93.80	92.60	93.00	92
1972	93.60	91.80	92.54	92
1973	93.20	91.60	91.54	91
1974	93.20	92.40	91.72	91
1975	92.80	88.76	92.27	90
1976	93.00	92.40	90.67	92
1977	92.80	92.00	92.09	91

TABLE 60

PERCENTAGE OF ATTENDANCE IN GRADES 8-12 IN VIRGINIA AND MEAN PERCENTAGE OF ATTENDANCE IN GRADES 8-12 IN SAMPLE BY SIZE

Year	Large	Medium	Small	State
1952	93.75	94.25	93.33	93
1953	94.00	94.75	94.41	94
1954	93.75	94.25	94.08	93
1955	94.50	95.00	94.25	94
1956	94.00	95.00	94.25	94
1957	92.25	93.50	93.58	93
1958	94.50	89.75	94.66	94
1959	94.50	95.00	93.35	94
1960	94.00	95.50	95.08	94
1961	94.00	95.25	93.38	94
1962	93.75	95.25	95.16	94
1963	93.75	95.00	95.08	94
1964	92.75	95.00	95.07	94
1965	93.00	94.50	94.53	94
1966	92.25	95.25	94.69	93
1967	92.25	95.25	94.84	93
1968	19.50	94.50	93.10	93
1969	91.75	94.00	94.46	93
1970	91.00	93.75	93.61	92
1971	90.50	94.00	93.61	92
1972	90.25	93.50	93.07	92
1973	89.75	92.75	92.38	91
1974	90.25	93.00	92.61	91
1975	91.25	92.75	91.29	90
1976	91.25	88.10	92.84	92
1977	90.75	92.75	92.53	91

TABLE 61

HIGH SCHOOL GRADUATES IN VIRGINIA AND MEAN HIGH SCHOOL GRADUATES IN SAMPLE BY SCORE

Year	High	Average	Low	State
1952	160.75	106.40	119.60	19656
1953	174.50	126.40	179.72	21212
1954	187.50	133.40	134.09	22501
1955	196.75	154.00	138.54	25953
1956	225.00	148.80	135.63	24723
1957	213.25	160.40	152.09	25450
1958	310.25	154.40	158.54	26542
1959	374.25	187.00	152.45	30262
1960	418.50	217.80	195.63	34521
1961	398.20	199.60	189.90	33316
1962	404.25	214.80	249.18	34197
1963	457.75	251.20	302.27	39173
1964	563.25	319.20	382.81	49482
1965	547.00	311.00	377.90	49409
1966	569.50	304.20	385.36	50104
1967	542.00	316.00	395.27	50942
1968	561.00	334.00	400.94	53392
1969	565.50	345.80	433.36	56006
1970	618.75	344.60	451.18	57455
1971	516.80	343.60	492.54	59695
1972	485.60	358.00	474.27	59322
1973	489.80	350.80	496.45	60471
1974	488.40	333.20	519.27	61976
1975	519.40	364.12	537.09	62541
1976	508.20	380.20	539.67	63001
1977	489.60	400.00	540.63	62124

TABLE 62

HIGH SCHOOL GRADUATES IN VIRGINIA AND MEAN HIGH SCHOOL GRADUATES IN SAMPLE BY SIZE

Year	Large	Medium	Small	State
1952	289.00	160.25	71.91	19656
1953	256.00	177.00	131.25	21212
1954	268.50	191.50	87.66	22501
1955	298.00	191.25	93.66	25953
1956	301.25	194.50	96.08	24723
1957	297.75	225.75	102.83	25450
1958	396.00	227.25	105.33	26542
1959	503.50	187.75	112.00	30262
1960	582.50	289.25	119.00	34521
1961	572.50	247.50	116.65	33316
1962	743.50	274.25	113.41	34197
1963	913.75	311.75	125.83	39173
1964	1152.25	377.50	161.75	49482
1965	1153.75	359.00	154.08	49409
1966	1158.00	384.25	155.75	50104
1967	1134.75	414.25	158.33	50942
1968	1191.50	428.75	153.61	53392
1969	1271.25	442.50	158.58	56006
1970	1353.50	466.50	156.75	57455
1971	1426.50	465.00	165.69	59695
1972	1380.75	485.50	151.53	59322
1973	1416.50	478.00	160.46	60471
1974	1448.00	504.00	154.76	61976
1975	1534.75	524.75	160.58	62541
1976	1560.50	515.60	159.53	63001
1977	1502.50	556.00	166.23	62124

TABLE 63

MEAN PERCENTAGE OF HIGH SCHOOL DROPOUTS IN GRADES 8-12 IN VIRGINIA AND SAMPLE BY SCORE

Year	High	Average	Low	State
1952	.	.	.	.
1953	.	.	.	.
1954	.	.	.	.
1955	.	.	.	.
1956	.	.	.	.
1957	.	.	.	.
1958	.	.	.	.
1959	27.39	26.18	26.35	.
1960	25.50	21.85	25.49	.
1961	26.35	22.27	28.76	24.31
1962	22.88	20.95	25.79	22.21
1963	22.24	19.53	23.10	.
1964	23.32	21.19	19.43	22.35
1965	21.49	22.05	23.82	22.48
1966	23.47	21.72	23.64	26.23
1967	20.22	19.50	21.99	21.71
1968	19.82	18.38	19.83	19.80
1969	20.19	20.95	19.31	19.96
1970	21.27	20.93	19.95	20.84
1971	16.82	14.63	19.70	19.30
1972	18.49	18.04	23.20	20.59
1973	17.56	20.47	23.43	21.65
1974	16.81	19.71	22.16	19.80
1975	18.36	20.33	22.12	20.24
1976	19.76	20.49	23.80	21.51
1977	17.79	20.19	24.41	22.83

TABLE 64

MEAN PERCENTAGE OF HIGH SCHOOL DROPOUTS IN GRADES 8-12
IN VIRGINIA AND SAMPLE BY SIZE

Year	Large	Medium	Small	State
1952	.	.	.	.
1953	.	.	.	.
1954	.	.	.	.
1955	.	.	.	.
1956	.	.	.	.
1957	.	.	.	.
1958	.	.	.	.
1959	25.15	28.78	26.20	.
1960	21.36	27.11	24.79	.
1961	35.16	25.46	24.06	24.31
1962	31.37	22.40	21.90	22.21
1963	20.99	23.13	21.98	.
1964	20.65	22.52	20.05	22.35
1965	22.40	23.42	22.87	22.48
1966	23.96	23.41	22.73	26.23
1967	23.90	20.21	20.32	21.71
1968	19.77	18.97	19.52	19.80
1969	21.13	19.17	19.74	19.96
1970	20.49	18.79	21.07	20.84
1971	19.87	17.96	17.01	19.30
1972	18.80	19.30	21.95	20.59
1973	22.05	22.67	20.66	21.65
1974	21.25	20.15	20.00	19.80
1975	18.94	22.53	20.79	20.24
1976	20.38	23.37	22.13	21.51
1977	23.07	20.55	21.76	22.83