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AUTHOR Bruntjen, Scott
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ABSTRACT

This study forecasts the probable percentage scores and letter grades that will be received by various types of academic libraries if the collection and staff formulas of the 1975 Association of College and Research Libraries (ACRL) Standards for College Libraries are used. The projected scores and grades are established through the use of information received from a nationwide random sample of libraries that come within the scope of the new standards. These collection and staff figures are accompanied by specific confidence and tolerance levels. An evaluation of the products of these formulas tends to substantiate the study hypotheses which states that the new standards are apt to move libraries toward a common level of mediocrity. Modifications needed to make the current formulas effective and suggestions for further standards' research are presented in the form of conclusions and recommendations. The study is based on survey data, as well as primary and secondary sources. Sixteen tables, a bibliography, and appendixes on the ACRL standards and the survey forms and techniques are included. (Author)

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AN EVALUATION OF THE COMPONENTS, CONSTITUTION, AND POTENTIAL EFFECTS OF THE COLLECTION AND STAFF FORMULAS OF THE 1975 ACRL STANDARDS FOR COLLEGE LIBRARIES

A Field Study

Presented to

the Faculty of the Graduate Library School

Simmons College

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Arts

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by

Scott Bruntjen

August 1975

"I would sooner tell you how many tons the Astor Library weighs, as how many volumes it contains."

--Dr. Joseph G. Cogswell

1786-1871

ABSTRACT

This study forecasts the probable percentage scores and letter grades that will be received by various types of academic libraries if the Collection and Staff Formulas of the 1975 ACRL Standards for College Libraries are used. The projected scores and grades are established through the use of information received from a nationwide random sample of libraries that come within the scope of the new Standards. These Collection and Staff figures are accompanied by specific confidence and tolerance levels. An evaluation of the products of these Formulas tends to substantiate the study hypothesis which states that the new Standards are apt to move libraries toward a common level of mediocrity. Modifications needed to make the current Formulas effective and suggestions for further Standards' research are presented in the form of conclusions and recommendations. Based on survey data and primary and secondary sources; 16 tables, bibliography, appendix.

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Chapter 1

INTRODUCTION

This paper presents a study and evaluation of the design and effectiveness of the two Formulas which comprise the primary portion of the Association of College and Research Libraries' (ACRL) new 1975 Standards for College Libraries.[1] The modifications needed to make these formulas workable are presented in the final chapter and are based upon the study's findings and conclusions. The research was undertaken because of the author's concern about the possible inadequacy of the portions of the Standards that assess collections and staffing. It is quite probable that without the implementation of the recommendations of this study the new Standards will not measure library quality appropriately.

In 1959 an ACRL Standards' Committee developed what were described by the Committee Chairman as "flexible standards based on firm principles." While the inexplicit language of the 1959 Standards has been somewhat tightened in the 1975 document, the purpose of the Standards remains one of providing "a means for assessing the adequacy of college libraries." The 1959 Standards contained general guidelines about the recommended size of a basic collection, the number of books per student, and minimum professional staffing. By employing what are described as "Formulas" the 1975 Standards have incorporated a new means to produce this evaluation of adequacy. Formulas are provided for evaluating Collections, Staffs, and Buildings. The two Formulas

that are of concern in this study (Collections and Staff) are summarized below and are presented in their entirety in Appendix A.

These Formulas need to determine and reflect library strengths and weaknesses if they are to assess library adequacy. This study hypothesizes that the two Formulas as constructed will not produce a useful measure of adequacy and, indeed, may hinder collection and staff building activities of certain libraries. An examination of the staff and collection of Ezra Lehman Memorial Library at Shippensburg (Pennsylvania) State College in light of the Standards reveals some possible but probably unthought of consequences of the Standards as written. Using the Standards this Library scores a grade of A on collections but only a grade of C on staffing. Intuitively, one senses that this Library has a good collection but that it needs more librarians. This correlation between intuition and grades seems to legitimate the construction of the new measurement device. The basic purpose of the Standards is to set minimum comparable standards of adequacy which are to guide academic libraries until about 1990. Such an important document cannot be judged on intuition and first impression. It needs to be considered more objectively and completely. Using the counting and weighting rules in the Standards' Staff and Collection Formulas, the following preposterous scenarios for Shippensburg State or for any library become quite plausible.

1) By counting one reel of microfilm as equal to one volume and five pieces of other microforms as equal to one volume (See Formula A), a library which bought the Readex microprint set of United States Depository Documents for the years 1956 to 1975 could add about 75,000 "volumes" to its collection count. This, plus the ultramicrofi che

FORMULA A—

The formula for calculating the number of relevant print volumes (or microform volume-equivalents) to which the library should be able to provide prompt access is as follows:

1. Basic Collection	85,000 vols.
2. Allowance per FTE Faculty Member	100 vols.
3. Allowance per FTE Student	15 vols.
4. Allowance per Undergraduate Major or Minor Field*	350 vols.
5. Allowance per Masters Field, When No Higher Degree Is Offered in the Field*	6,000 vols.
6. Allowance per Masters Field, When a Higher Degree Is Offered in the Field*	3,000 vols.
7. Allowance per 6th-year Specialist Degree Field*	6,000 vols.
8. Allowance per Doctoral Field*	25,000 vols.

A "volume" is defined as a physical unit of any printed, typewritten, handwritten, mimeographed, or processed work contained in one binding or portfolio, hardbound or paperbound, which has been cataloged, classified, and/or otherwise prepared for use. For purposes of this calculation microform holdings should be included by converting them to volume-equivalents. The number of volume-equivalents held in microform should be determined either by actual count or by an averaging formula which considers each reel of microform as one, and five pieces of any other microformat as one volume-equivalent.

Libraries which can provide promptly 100 percent as many volumes or volume-equivalents as are called for in this formula shall, in the matter of quantity, be graded A. From 80-99 percent shall be graded B; from 65-79 percent shall be graded C; and from 50-64 percent shall be graded D.

* See Appendix I, "List of Fields" [to be published].

Formula A on Collections also suggests a gross additions rate of 5% per year and permits a library to count volumes in neighboring libraries (defined as those within fifteen minutes) with which they have a formal cooperative arrangement.

FORMULA B—

The number of librarians required by the college shall be computed as follows:

For each 500, or fraction thereof, FTE students up to 10,000	1 librarian
For each 1,000, or fraction thereof, FTE students above 10,000	1 librarian
For each 100,000 volumes, or fraction thereof, in the collection	1 librarian
For each 5,000 volumes, or fraction thereof, added per year	1 librarian

Libraries which provide 100 percent of these formula requirements can, when they are supported by sufficient other staff members, consider themselves at the A level in terms of staff size; those that provide 75-99 percent of these requirements may rate themselves as B; those with 55-74 percent of requirements qualify for a C; and those with 40-54 percent of requirements warrant a D.

Formula B on Staffing defines a "librarian" as a person possessing a Masters degree from an ALA accredited school. It suggests that librarians should make up 25 to 35% of the full-time-equivalent staff and permits student assistants to be counted in FTE to determine the size of the total staff.

Library of American Civilization of about 20,000 volumes, could exceed Formula A's "Basic Collection" of 85,000 volumes. Such counting could have at least two possible effects:

a. It could artificially permit a substandard collection to satisfy at least the letter of the Standards.

b. It could act as a deterrent for future funding for libraries with collections that, under these counting rules, surpass the Standards.

2) By connecting the Staff and Collection Standards (See Formula B, one librarian for each 5,000 volumes added per year) a funder, who has under his or her control a library which surpasses the Collection Standard, could have that library meet the Staff Standard by decreasing the materials budget, thus decreasing the need for several librarians as counted by Formula B. In addition, as part time assistants (usually students) are to be counted as part of the full-time-equivalent library staff, the non-professional staff guideline of between two and three staff for each librarian could be met exclusively by student employment.

The following questions about the operations of the Standards come to mind:

1) What is the effect of large microform holdings on the collection scores of various libraries?

2) As the holdings of neighbor libraries may be included in a library's total volume count under certain conditions, what effect will this have on the scores and grades for collections?

3) Since non-print materials are not evaluated by the Standards, what will be the effect of an application of the Standards to a library

that has used much of its collection budget to purchase materials in forms other than print and has employed many professionals who have Masters level media training rather than a background in library science?

4) Because staff should be added only to process "volumes," who will process non-print materials?

5) Because of the interconnections of collections and staff and the lack of an explicit standard about the need to update the collection,[2] how many libraries will be placed in the position of increasing their staff scores by decreasing their book budget?

6) For a library that has relied on student employment for much of its support staff, what will be the effect on library programs and efficiency of a cut in student employment funds?

7) What will be the effect of an enrollment decrease on the collection and staff scores?

It seems that these questions might only be the tip of the problem which is better phrased as follows: Do the Standards provide for the type of report that is most needed at this time? Should the library profession ask for a redrafting based on, perhaps, outputs measured in user terms rather than on possibly unconnected or incorrectly linked inputs? The problem has developed, of course, because no one knows enough about the present conditions of the collections and staffing of college libraries.

In order to organize an examination of these types of questions, this study began with the following three primary objectives:

1) To determine and report current quantitative information about the collections and staffs of the institutions which will come under these new Standards.

2) To apply the Formulas on Collection and Staff by using current quantitative information. To present and examine the percent scores and the letter grades produced by the two Formulas.

3) To determine the effects of sub-elements within the two Formulas so as to better understand the operation and impact of the Formulas.

In the final chapter conclusions about the Collections and Staffing portions of the Standards will be drawn from the Findings based on the study's objectives. From these conclusions will come a set of recommendations and needed improvements for sections of the Standards' Formulas. These modifications are necessary if the Standards are to accomplish their goal of "assessing the adequacy of college libraries" based on "the specific objectives and programs of the institution that (the library) serves."

REFERENCES

[1]Throughout this paper the reference will be to the ACRL Ad Hoc Committee to Revise the 1959 Standards, "Draft: Standards for College Libraries; 1975 Revision," CRL News December 1974, pages 284-305. This Draft, with minor stylistic revisions, was approved by the ACRL Board of Directors on July 3, 1975. The "1959 Standards" were rescinded. A copy of the Standards is enclosed as Appendix A.

[2]The commentary on Standard 2 does note an annual gross growth rate before withdrawals of five percent is usually necessary. This statement, however, is not in the Standards portion of the document.

Chapter 2

STANDARDS: A BRIEF HISTORY

INTRODUCTION

The basic assumptions that underlie the 1975 College Library Standards are as follows:

1) Standards are necessary and feasible.

2) Good quality is not possible without certain minimum quantities of collections, staff, and physical facilities.

3) A single set of Standards cannot be made to fit the entire range of higher education.

4) Even within a homogeneous group of institutions, quantitative variation of Standards is needed to acknowledge different sizes, teaching philosophies, and goals if the individual libraries are to be compared to a single grading system.

5) Standards should be written so as to remain effective for at least fifteen years.

An understanding of the impact of the quantitative portions of the Standards that are concerned with Collections and Staffing requires an examination of these Standards within an historical context. A cursory reading of library literature soon reveals the cyclical nature of the discipline. Proposals of 1940, for example, reappear as new ideas a quarter of a century later. One of the most striking examples of this phenomena is illustrated by the similarities between a library evaluation plan advanced by Louis Shores in 1941[1] and the Clapp-Jordan

reactions to the 1959 Standards which were presented in 1965.[2] Both Shores and Clapp-Jordan advocated similar quantification approaches to evaluation that took into account the interrelated factors of user needs and literature requirements. The following section explores, in some detail, this reoccurring history which is the antecedent of the 1975 College Library Standards.

HISTORICAL DEVELOPMENTS

The history of Standards is marked by periodic shifts between quantitative and qualitative philosophies. Complicating this picture is the fact that these Standards have been promulgated by three independent groups: The American Library Association, the regional accrediting agencies, and the Carnegie Commission. Each adopted or proposed set of Standards for College Libraries is either a reaction against its predecessor, a compromise position between the previous Standards and a later disavowal of its logic, an outcome of economic necessity, or a combination of some of these points.

This look at the historical contexts of the Standards documents will permit the reader to better understand this repetitive history while comprehending the reasoning behind the wide acceptance of the assumptions that underly the 1975 Draft as listed above. The documents which make up the major portion of this history are the following:

American Library Association. Committee on Classification of Library Personnel. Budgets, Classification and Compensation Plans for University and College Libraries. Chicago: ALA, 1929 cited as Budgets.

The Carnegie Corporation. Advisory Group on College Libraries, College Library Standards. New York: The Commission, 1932 cited as Carnegie Standards.

American Library Association. Salaries, Staff and Tenure Board. Subcommittee on Budgets, Compensation and Schemes of Services for Libraries Connected with Universities, Colleges, and Teacher Training Institutions. Classification and Pay Plans for Libraries in Institutions of Higher Education. Volume 2: Degree-Confering Four Year Institutions. Chicago: ALA, 1943 cited as Classification and Pay Plans.

Association of College and Research Libraries. Committee on Standards. "Standards for College Libraries," College and Research Libraries, 20:274-280, July, 1959, cited as 1959 Standards.

ACRL Ad Hoc Committee to Revise the 1959 Standards. "Draft: Standards for College Libraries; 1975 Revision," CRL News, 35:284-305, December, 1974 cited as 1975 Standards.

1929: A quantitative approach

In 1929, after two years of study, the American Library Association accepted the report of the Committee on Classification of Library Personnel. This paper, known as Budgets, dealt with the proper uses of qualified professional library personnel. Using the constant base of dollars, the plan described eight classes of institutions as defined by total available budget. For each class, guideline dollar figures for all types of library expenditures were provided. As Helen Brown wrote later: "there was no squeamishness here regarding the use of quantitative standards."[3] Throughout the entire history of library Standards it seems that base figures for quantification have been developed through an examination and imitation of what was current practice at the time.

1932: The accreditation agencies, the Carnegie Commission, and a measure of quality

While the American Library Association was struggling with Standards for academic libraries, a parallel development was underway. In 1932, after three years of investigation based on current statistics, a recommended list of books (The "Shaw List"),[4] and after personal visits by Committee members to various libraries, the Advisory Group on College

Libraries of the Carnegie Corporation issued general qualitative Standards. These Standards consisted of twenty-one points which stressed "quality of both books and staff and...service of the college library to college teaching and to individual reading by students." Quality was based on the Shaw List and on the integration of the library into the overall educational program of the college. No quantitative measures were attempted.

Regional accrediting agencies quickly followed with Standards based on the Carnegie Commission document and philosophy. Prior to the 1930's Standards for accreditation had required only a professionally administered library of at least 8,000 volumes and an annual expenditure of $5 per student. After 1934, the measure of an academic library had shifted to a qualitative approach.

In 1941 Louis Shores, while summing up the basic arguments about types of Standards then present, highlighted four basic areas of disagreement in the philosophy of measurement of libraries.

Quantitative v. qualitative standards.

Too high (what should be) v. too low (Minimum program).

Too detailed v. too general.

Library profession as a science v. the profession as an art.

1943: The ALA and a return to minimum quantities

In 1943, the revised Classification and Pay Plans for various types of academic institutions changed the approach to totaling demands on the academic library. Instead of considering the total enrollment as the 1929 Standards had, the new Plans recognized different types of users (undergraduates, honor students, graduate students, etc.) as having different library needs. From this information and from other factors,

a "weighted service load" expressed in "service units" was developed for each library. Included were number, salary, and qualifications of the staff; size of the book collection; annual book budget; and hours of use. Throughout the work the Committee continually emphasized that these guidelines represented minimum figures, not an optimum size. This service load approach classed institutions by the service units that they required. With this basic information, formulas were developed to determine staff complement, individual salary, book collection size, and general budget requirements. For college libraries, the minimum book collection was to be fifty books for the first 800 service units with decreasing unit requirements based on a sliding scale of user needs. In no case, however, was the collection to fall below 40,000 volumes. These figures, like the salary classifications, were based on a study of current conditions in thirty-nine cooperating libraries. In application however, some librarians found that these Plans did not allow for all types of instances. Furthermore, the Standards were thought to be much too high to ever be attained.

Rivalry between quantity and quality; a prelude to 1959

The controversy around construction of Standards emanated essentially from the question: "How to measure what?" This problem was (and is) further confused by the lack of uniform statistical reporting definitions and mechanisms (for example: What is a "volume?") and by a lack of agreement about what method of reporting will give the most accurate reflection of the institution's capabilities. (Should one count volumes, or titles, or intellectual units?).

The "quality camp" continued to deride the concept that size can in some way be equated to library output. Consider these comments:

> Scholars were no longer content to be told that one library was larger than another; they also wanted to know something about its collections and service programs. (1951)[5]

> While a library containing several million volumes has unquestioned merit, its mere size is not positive proof of competence. (1964)[6]

> There is, however, no known evidence to demonstrate that size is correlated to quality or service in anyway. (1966)[7]

> The temptation to quantify should be avoided, as should formulas for size of new libraries or the number of volumes per curricula. In the long run this kind of standard will not produce good libraries. (1966)[8]

This "temptation to quantify," however, could not be avoided. Accrediting agencies, especially during the 1940's, moved from the quality to the quantity approach. Now they again looked and counted. Norman Burns, writing in the 1949 volume of College and Research Libraries, wondered if it were not of primary importance that the library had the material to support the curriculum and that this material would be used.[9] In a reference to accrediting agencies, he suggested that accreditation needed to begin with the objectives of an institution and then evaluate all of its aspects within these goals. This was little different from B. P. McCrum's work of the early 1930's which implied that the highest standard for a college library was a qualitative measure of its impact upon the college's educational program.[10]

1959: A combination of minimum quantity and quality

At the ALA Conference in Kansas City in 1957, the ACRL Committee on Standards was assigned the task of replacing the old Classification and Pay Plans. The 1959 College Library Standards, the first such comprehensive evaluation document for academic libraries ever issued by ALA, was the outcome of this work. These Standards were designed to be understandable by anyone while being brief enough to be used by busy

administrators. They were to "present flexible standards based on firm principles." This guidance was designed to reduce inequities which had resulted from either geographical differences or from college mission variations. One standard was to be laid down for all academic libraries regardless of program. Quantitative data were included only to reach a minimum rather than an optimum size and then only in what 1959 Standards Committee Chairman Hirsch described as the "essential areas" of professional staff, book collection size, and seating capacity. The Standards emphasized "the inescapable relationship between enrollment and size of collections."[11]

The accrediting agencies seemed to accept the 1959 Standards because they presented clear and succinct value statements. The agencies, indeed again, had changed the focus of their emphasis and were now interested in meeting self-set goals within a qualitative framework. Thus the 1959 Standards had presumably moved to the quality approach but in doing so they took along such quantitative residues as a defined minimum size (50,000 well selected volumes for the first 600 students), an optimum collection size of approximately 300,000 volumes, and the number of volumes needed based on a per student basis.

The question well raised recently by Daniel Gore is appropriate. Just what are the research findings or rationale that support the choice of minimum figures?[12] In 1959 it was fairly easy to visualize the need for three professional librarians (a chief librarian and heads of public services and technical processes). It is most interesting to note that the basic collection of a college in 1958 was established as 40,000 volumes the same figure advanced as appropriate in 1943. In 1959, one year later, this minimum had mysteriously grown to 50,000 volumes.[13]

1965: Questioning the quantification "formulas"

The 1959 Standards were conceived of as a statement of needs during a period of unprecedented growth. By 1965 the climate of opinion had shifted and questions were being raised about the adequacy of the formulas used to determine the quantitative aspects of the Standards. Verner Clapp and Robert Jordan developed new formulas for estimating the collection sizes required for minimum adequacy of college libraries. Feeling that if quantitative standards were not provided then budget and appropriating authorities would be forced to invent them, the authors saw the quantitative side of the 1959 Standards as necessary, but as inadequately conceived. The development of a formula to measure minimum collection size required an analysis of the "combined effect of the variables constituting the controlling factors in each case. Among the most important of these were:

student body size and composition.

faculty size.

the curriculum and levels of instruction.

the methods of instruction.

proximity to large libraries."[14]

While not perfect, the Clapp-Jordan formulas attempted to identify core literature requirements and to relate them to user needs.

1968: Questioning quantification as a measurement device

In 1968 an ad hoc committee of ACRL began a revision of the 1959 Standards, but in June 1971 the new "Guidelines for College Libraries" were rejected by the ACRL membership largely because of the absence of quantitative standards. Helen Brown (a member of the 1959 Standards Committee) wrote that the "disavowal of any quantitative data

base must lead a non-librarian to the conclusion that none in fact exists." Brown described the 1929 Budgets document of the ALA as born of economic necessity. The centrality of the library in the educational process is now well established, she noted, and the new economic crisis "creates an emergency situation for colleges and their libraries in which authoritative minimal standards of library practice and support are again indispensable."[15]

1975: A revision of earlier quantification formulas

From this milieu come the 1975 Revised Standards. The same questions are present today as were extant in 1941 when Louis Shores outlined the basic arguments in Standards construction. The 1975 Standards appear to be the 1959 Standards with a distinct "Clapp-Jordan" influence. Added to the 1959 document are: 1) acknowledgement of the differing needs of various types of institutions and their users; 2) the recognition of the validity of microforms and 3) notice of the effect of the geographical placement of the college on the library support provided.

Certain basic assumptions are present in the 1975 Standards. The Committee's working papers outline the following:[16]

1) that library standards are needed by the higher education community and are possible to develop;

2) that although sound programs of college library service must be based upon quality, good quality is not possible without certain requisite quantities of materials, staff members, and physical facilities;

3) that a single set of standards cannot be made to apply usefully to the entire range of higher education institutions;

4) that even within the relative homogeneity of institutions offering baccalaureate and masters level work, quantitative variation is mandated in any set of standards by institutional uniquenesses and idiosyncracies;

5) that even in today's rapidly changing higher education environment it should be possible to prepare standards that will serve for a minimum of fifteen years;

6) that the present draft should therefore accommodate anticipated environmental changes of a political, economic, technical, social, and pedagogical nature.

These assumptions imply that library outputs can only be measured at this time by an enumeration of minimal quantified inputs and that Standards can only bring together and concentrate the aggregrate experience and judgment of the academic library profession. In other words, Standards must continue to be experience based. This also implies that a rating of superior or excellent cannot be given because only "minimually adequate" staff, collections, and physical facilities can be determined. This further means that Standards should be adopted now so as to serve until about 1990 instead of undertaking research that would permit more effective measurement not of incomplete, selected inputs but of quantified outputs or other more appropriate measures.

A further problem in accepting this type of input Standard is that definitions for minimum figures and for formulas for the development of lists of homogeneous institutions can all be extracted from "current" practice as defined by the 1969 and 1971 U.S. Office of Education Library Statistics; that is, from data already five years old. It is further expected that these out-of-date estimates will not

serve adequately as the base for decisions made about libraries until about 1990.

Another assumption is that the correction factors of the "Clapp-Jordan" variety which are used in the 1975 Standards, work correctly. However, no test run of the Standards and their grading scales has even been attempted.

SUMMARY

The attempt in the 1975 Standards to identify a minimum quantified base that will predict a required potential for quality appears to be but another variation in the continuing history of College Library Standards. The procedures for quantification appear to be an accident of library history and available statistics. The Ad Hoc Committee on Standards has placed quantity in a one way relationship to quality:

> Quality and quantity are separable only in theory; it is possible to have quantity without quality; it is not possible to have quality without quantity defined in relation to the purposes of the institution.[17]

In the 1975 Standards the implied purposes of the measurements appear to be threefold:

1) Provide a needed precise definition of the quality base for a library's collection and staff.

2) By weighing the requirements in the Formulas, permit institutions of different types with different missions to be able to compare scores on the Staff and Collection Standards.

3) Encourage library funders to increase the quantity (thus quality) of their libraries' staffs and collection.

It is the purpose of this study to examine the effect of two

of the underlying quantitative Formulas of the 1975 Standards. Instead of using the out-dated statistics on libraries from the USDE as the data base, this study will attempt to project logical future developments of staffs and collections based on the counting rules of the 1975 Standards on collections and staffing. It will use current information as developed through a nationwide random sample. In short, it will determine whether or not the two 1975 Standards' Formulas will accurately represent minimum quantities of staff and collections. The basic hypothesis of this study is that these formulas are inadequate and poorly designed. The study will suggest modifications that might be made advantageously to the Standards before they become entrenched in the minds of academic librarians.

REFERENCES

[1]Louis Shores, "Evaluating Library Service to Higher Education," College and Research Libraries, 2:211-215, June, 1941.

[2]Verner W. Clapp and Robert T. Jordan, "Quantitative Criteria for Adequacy of Academic Library Collections," College and Research Libraries, 26:371-380, September, 1965.

[3]Helen M. Brown, "College Library Standards," Library Trends, 21:205, October, 1972.

[4]Charles B. Shaw, A List of Books for College Libraries (Chicago: American Library Association, 1931).

[5]Lawrence S. Thompson, "History of the Measurement of Library Service," Library Quarterly, 21:94, April, 1951.

[6]Charles Burdick, "The Library and the Academic Community," Library Resources and Technical Services, 8:159, Spring, 1964.

[7]James Krikelas, "Library Statistics and the Measurement of Library Services," ALA Bulletin, 60:497, May, 1966.

[8]Albert E. Meder, "Accrediting Agencies and the Standards," Drexel Library Quarterly, 2:213-219, July, 1966.

[9]Norman Burns, "Accrediting Procedures with Special Reference to Libraries," College and Research Libraries, 10:155-158, April, 1949.

[10]Blanche P. McCrum, Estimate of Standards for a College Library Planned for the Use of Librarians When Presenting Budgets to Administrative Boards, 2nd rev ed (Lexington, Virginia: Washington and Lee University, 1937).

[11]Felix E. Hirsch, "What is Past is Prologue," Drexel Library Quarterly, 2:199-201, July, 1966.

[12]Daniel Gore, "Zero Growth for the College Library, College Management, 9:12-14, August/September, 1974.

[13]cf the 1959 Standards to Felix E. Hirsch, "Facing the Future: On the Way to New College Library Standards," College and Research Libraries, 19:197-200, 262, May, 1958.

[14]Clapp and Jordan, op. cit.

[15]Brown, op. cit., p. 216.

[16]ACRL Ad Hoc Committee to Revise the 1959 Standards, "Working Papers" (Chicago: ACRL, 1974) (mimeographed).

[17]ACRL Ad Hoc Committee, "1975 Revised Standards," op. cit., p. 286.

Chapter 3

THE STUDY OBJECTIVES AND HYPOTHESIS

THE PROBLEM

The development of college library standards illustrates the historical dependence of various previous Standards Committees on the accidents of library history. In almost every case only past practice was analyzed by these Committees as a chart for the future. In earlier documents, however, the assumptions made and the counting rules followed did not seem to lead to a potential leveling of college libraries. In the case of the 1975 Revised Standards it appears likely that the Formulas for Collections and Staffing will have an adverse effect on the programs of college libraries.

Before the new Standards are accepted professionals need to be able to project accurately the effects that these new Standards will have so that they can judge the applicability of the Standards to their needs. The problems may be stated as follows: 1) What totals for collections and staff will be produced by the new Standards? 2) Will these totals be higher or lower than expected? 3) Will certain types or groups of institutions score significantly higher or lower than the average on the Standards related to collections and/or staffing? 4) What effect will certain changes (such as a decrease in student enrollment) have on library development activities? 5) Do certain portions of the Formulas (such as the impact of "neighboring libraries") skew library grades so

as to produce meaningless scales? The 1975 Document could be a tool to extol a college's resources or it could be part of a legitimate justification designed to improve recognized weaknesses. These uses are possible however only if the report developed by the Standards presents an accurate profile of the college library.

The internal tradeoffs made by the Ad Hoc Committee in the development of the Standards are not of concern in this study. From the funder's view, Standards, once accepted, exist only in the reports that they generate. For this reason it is desirable that professionals forecast and examine potential reports to determine whether or not they will accurately represent present library needs.

Using "Formula A" (Collections) and "Formula B" (Staff) it is conceivable that many libraries measured would meet or surpass the Standard for Collections but would fall short of the Standard for Staff. If this is true, it could put a librarian in the position of having to ask: "We have enough materials; provide us with the staff to help patrons use these resources." A hard-pressed funder could counter by observing the "oversupply" of materials and decrease the materials' budget so as to "free more staff" to meet the needs of the library's patrons. The commentary on the Standard on Collections notes that an annual growth rate of five percent is usually needed to maintain the "requisite utility" of a collection, but that commentary is not part of the portion of the Standards that a funder is likely to read.

Two basic problems are operable simultaneously: First, no current basic descriptive statistical information is available about college libraries. The last published United States Office of Education (USOE) library statistics that are in the hands of the profession are those

which reflect Fall, 1971 data.[1] The Library Surveys Branch of USOE is currently processing questionnaires which report Fall 1973 data, but even in preliminary form this information will not be available until the Fall of 1975. To further complicate the problem, not all of the pieces of information needed to complete the Formulas in the new Standards for Collection and Staff are available from the USOE published statistics.

The second problem is that while the Standards Committee did attempt to work through portions of the formulas using information that reflected the condition of college libraries in the Fall of 1971, no one, to date, has attempted to apply the total Formulas suggested for Collections and Staff to the present status of libraries so as to determine the potential positive and negative effects of the Standards.

THE OBJECTIVES OF THE STUDY

This study has three objectives:

1) To collect and present a national current random sample of collection and staff information with stated confidence levels so that any librarian may compare his/her institution with either a national score of all types of college libraries or with the score of a library with similar institutional characteristics.

2) To use Collection and Staff Formulas to rate the institutions in the sample. Through this use of the Standards library professionals will have a preview of operational problems of the Standards and probable ratings developed by the Standards.

3) To change various inputs (for example: to simulate a decrease in enrollment) so that library professionals will be able to observe the effect of the counting and weighting rules which are part of the formulas.

With the information developed by this study, modifications to the Standards will be recommended.

THE HYPOTHESIS OF THE STANDARDS COMMITTEE

When considering the Formulas for Collections and Staff, it is difficult to determine the hypothesis of the Ad Hoc Committee. Neither the Committee report nor its working papers describe how the grading system for these two formulas was developed. It is interesting that even though a grading system was introduced, it does not grade degrees of excellence but, rather, degrees of below minimum adequacy. (A library that is minimally adequate is given a grade of A or 100 percent.) If the Ad Hoc Committee thought that it was using its grades to overlie and describe a normal distribution of scores, then the following expected number of libraries for each grade could be forecast. See Table 3.1.

For both Formulas the expected number of libraries that will receive each grade can be determined by using the Empirical Rule of statistics. Letter grade C, which is equal to ± 1 standard deviation of approximately 68 percent of the cases, is multiplied by the number of schools to which the standards apply. (The number of schools in the Carnegie Commission list, the listing to schools to which the Standards apply, is 1,172). Letter grades B and D should each receive approximately 13.5 percent of the cases while letter grades A and E should be equal to about 2.5 percent of the cases each. Thus the probability of receiving either a grade of A or B is 2.5 percent plus 13.5 percent or a probability of .16. Unexplained in the Standards' Formulas are potential scores that fall between two grades such as a score of 99.5 percent.

Table 3.1

The Committee's Expected Distribution of Grades

Grade	Percent Required for Grade	Expected Number of Libraries If Carnegie Classification Is Used. Total Number Equals 1, 172. (Note 1)
	Formula A--Collections	
A	≥ 100%	29.3
B	80-99	158.2
C	65-79	796.9
D	50-64	158.2
E (Note 2)	< 50	29.3
	Formula B--Staffing	
A	≥ 100%	29.3
B	75-99	158.2
C	55-74	796.9
D	40-54	158.2
E	< 40	29.3

Note 1: See discussion of Carnegie Classification below, page 31ff.

Note 2: The Standards stop with grade of D but as the percentage is not zero for D, a grade of E is implied.

It is obvious that the Committee hypothesized that libraries would score lower on the Staff formula than on the formula for Collections otherwise the required percentages for each grade would have been the same.

THE STUDY HYPOTHESIS

The hypothesis of this study is as follows:

> The 1975 Revised Standards will have a leveling effect on academic libraries; that is, they will bring some libraries up to the minimum (albeit perhaps artificially) while suppressing the collection and staff development activities of many libraries.

To support the investigation of the hypothesis, this study began with two working hypotheses:

1) Most (more than seventy percent) of the academic libraries which fall under the scope of these Standards will meet or surpass (that is, obtain an A or B rating) the Standard on Collections (Standard number 2).

2) Most (more than seventy percent) of the academic libraries which fall under the scope of these Standards will fail to adequately meet (that is, obtain a C rating or lower) the Standard on Staff (Standard number 4).

Expressing the hypotheses as binomial problems reduces the complexity of the tests. By using the expected score distributions of the Committee as developed in Table 3.1 and by expressing "success" as the achieving of a grade of A or B, the two competing hypotheses for each formula may be expressed as follows:

Committee:

1) The expected probability of an individual library's success on the Collection Formula equals .16.

2) The expected probability of an individual library's success on the Staff Formula equals .16.

Study:

1) The expected probability of an individual library's success on the Collection Standard is greater than or equal to .70.

2) The expected probability of an individual library's success on the Staff Standard is less than or equal to .30.

SUMMARY

The differences between the hypotheses of the study and those of the Committee permit a test to determine which hypothesis more accurately predicts the effects of the Standards Formulas. The next section of this paper will describe the methodology used to conduct that test.

REFERENCES

[1]U.S. Department of Health, Education, and Welfare. National Center for Educational Statistics, Library Statistics of Colleges and Universities; Institutional Data, Part A, Fall 1971 Basic Information on Collections, Staff, and Expenditures (Washington: Government Printing Office, 1972).

[2]Carnegie Commission on Higher Education, A Classification of Institutions of Higher Education; a Technical Report of the Carnegie Commission on Higher Education (Berkeley: The Commission, 1973).

Chapter 4

METHODOLOGY

STUDY DESIGN

While many previous Standards documents exist, none seem to be based on an objective task or mission analysis nor are they supported by a rigorous statistical study. Instead, the quantified portions seem, like Topsy, to "jes' grow." The statistical work that does underpin the 1975 Revised Standards is open to question. For a more complete review of the Committee's statistical efforts see Appendix B.

In order to look at the potential impact of the 1975 Revised Standards, this study has, as its first requirement, a definition and investigation of the total population to which these Standards shall apply. Using the Carnegie Commission's Classification of Institutions of Higher Education as the definitive list of the entire population, it was determined that eight strata existed within the group as a whole. (See Page 31 below for an identification of strata).

The standard deviation and the mean of the numbers of volumes in the book collections (as of 1971) for several sub-groups had been published by the Ad Hoc Committee in their working papers.[1] Knowing something about the variability among strata and being able to identify each member of the total population greatly simplified the sampling procedures. With an economic limitation of not more than 500 sample points, and with the fairly stable intrastratum variability, it was

decided to sample all members in stratum with a total population of less than thirty while sampling 38 percent of those strata that had thirty or more members. With this technique it was estimated that the final returns for each stratum would equal fifteen percent of the population. In all cases this figure was exceeded. (See Tables 4.2 and 4.3).

The survey was conducted between March and May, 1975. The 464 questionnaires requested information that would (1) permit the use of Standard Two--Collections (2) would permit the use of Standard Four--Staff and (3) would supply information on environmental factors such as annual Collection growth rate and total library budget so that various future conditions could be examined. The response rate, after the original request and one follow-up request, was approximately 58 percent. Answers to 254 usable responses were key punched on IBM cards and tabulated by means of a computer program. This tabulation provided information about the scores of each institution and then projected the impact of Formulas' sub-elements. The validity of the sample was ascertained by matching the known figures for 1971 for the entire population with the same information produced by the sample. For all strata the sample consisting of returns only was found significant (that is, it represented the total population) at the .05 level.

The information from the computer tabulation is reported in Chapter 5: Findings. Using this information the study reports on the objectives of the study: (1) the presentation of a national sample for comparative use (2) the identification of the expected groupings of scores using the proposed Standards and (3) the impact of Formulas' sub-elements. The presentation of the latter two objectives raises questions for further research.

THE SURVEY POPULATION

As is described in the Introduction to the Standards, the Committee meant for the Standards to assess "the adequacy of libraries serving liberal arts programs at the bachelor and masters degree levels." The Committee notes that "they may be applied also to libraries serving universities which grant fewer than ten doctoral degrees per year."[2] The decision to accept the Carnegie Classification of Institutions as the list of institutions homogeneous enough for Standards application was apparently not reached frivolously. In a working paper entitled "Typology of Institutions of Higher Education" Committee member James Pirie looked at several classificatory schemes and recommended the use of portions of the Carnegie listing which grouped schools within the Committee's area of interest. Pirie found that "the categories as given are definitive in the sense that they differentiate boldly among the almost dizzying variety of colleges endemic to the scene of American education. The distinctions made in the Carnegie Commission's classification are sufficiently comprehensive and precise to form a valid and indeed imaginative framework for our purposes."[3]

Specifically, the portions of the Carnegie listing chosen were:

1) Comprehensive Universities and Colleges I (CUC). This type of institution had a liberal arts program base but usually offered other programs. All had two professional or occupational programs and offered degrees through the Masters level but with little or no doctoral work. The 1970 enrollment was at least 2,000.

2) Comprehensive Universities and Colleges II. This list included many state colleges and others which had a liberal arts base

but also had one professional program. Again few programs above the masters level were in evidence. Enrollment cutoffs for public funded schools was 1,000 and private was 1,500.

3) Liberal Arts Colleges I (LAC). These colleges scored 5 or above on Austin's selectivity index or were included among 200 leading baccalaureate granting institutions in terms of numbers of their graduates receiving PhD's at 40 leading doctoral-granting institutions from 1920 to 1966. The criteria here was essentially a strong liberal arts program.

4) Liberal Arts Colleges II. Included all other four year liberal arts colleges not included in the above criteria.

The total number of schools listed within these criteria by the Carnegie Corporation is shown in Table 4.1 below:

Table 4.1

Number of Schools in Each Carnegie Commission Grouping

Type of Institution		Number of Institutions		
		Public	Private	Total
Comprehensive Universities and Colleges				
	Group I	223	98	321
	Group II	85	47	132
	Total	308	145	453
Liberal Arts Colleges				
	Group I	2	144	146
	Group II	26	547	573
	Total	28	691	719
	Grand Total	336	836	1172

For purposes of this study, the Carnegie Corporation Classification provided a complete listing of the total possible population. The institutions within the Carnegie document are listed by type (for example: Liberal Arts Colleges, I), are subdivided by type of control (Public or Private), and are then listed by state.

QUESTIONNAIRE DESIGN

In order to minimize the number of non-responses so as to provide a more reliable survey it was decided to use a one page instrument accompanied by an explanatory covering letter. Copies of the instrument and the letter are included in Appendix C. A self-addressed, stamped envelope was provided for the return of the questionnaire. To encourage librarians to respond, the covering letter promised that if the raw data were submitted to the study, then the investigator, as a by product of his research, would forward to the cooperating librarians a tabulation of their score on the Staff and Collection Standards. In addition, each librarian was told that he would also be provided with a description of his library's rank when it was compared to a national sample of schools similar to his. The due date for return of the questionnaires was set as April 2, 1975, about one month after the original mailing. A week later (April 7, 1975) a follow-up letter was sent to all schools that had as yet not responded. A copy of this follow-up letter is included in Appendix C. To encourage response to the follow-up librarians were asked to only fill out the portions of the questionnaire that related to users, staff, support, and other libraries (Questions J through V). The United States Office of Education (USOE) had stated that it would attempt to provide missing

data for questions A through I (Data was to be for 1973). Seven librarians responded to the follow-up in this manner, but most respondents included data for all questions.

The questionnaire sought to find information that was necessary to apply the Standards on Staff and Collections to the library completing the survey. Also included was a question on the percent of institution budget available for library support. This question was included to determine applicability of Standard 8, Budget, and particularly the statement that related budget to the "raising of a library's grade" on the Staff and Collections Formulas.

Two weaknesses in the final questionnaire were found after the survey was completed. Question Q asked for the number of librarians on the staff in Full Time Equivalents (FTE) using the Standards' definition of "librarian" as one who possesses "a graduate degree from an ALA accredited program." Question R asked for the number of "librarians" in FTE using the library's own local definition of "librarian" if different from that of the Standards. It was thought that libraries with librarians from unaccredited programs or libraries with librarians without the graduate degree would report this information here. Thus a library with three librarians according to the Standard definition and two librarians with unaccredited degrees was expected to report Question Q=3 and R=5. In some cases, however, the report came instead as Q=3 and R=2 thus making some of this information somewhat difficult to interpret. In the case of student assistants (Question T) many librarians did not know how many student assistants they have employed thus making the data spotty. A few respondents expressed difficulty in determining FTE faculty as they did not know whether to include

administrative personnel (for example: The College President). The Standards are not clear on this question.

In the original versions of the questionnaire, Question V was expressed in terms similar to questions A, B, and C. The pretest of the instrument, however, determined that many librarians would not know the number of volumes and volume equivalents that were available in nearby libraries and thus might skip the question. In the final form, the names of libraries were requested and these were then checked with published statistics of the USOE and the American Library Directory to determine a volume equivalent figure, which was then added to the library's collection total.

This study avoided questions that might have required either judgment or opinion. The questionnaire called only for quantitative data.

SAMPLING PROCEDURES

With each member of the total population listed and identified by name, many of the problems usually connected with random sampling were conveniently eliminated. The listings of the Carnegie Commission are not random in their make-up but, instead, are highly structured. Recognizing the possibility that estimates about the total population might not be as useful as statements about the parts (for example: about a Comprehensive University and College I, Privately financed), portions of the structure of the listing were left intact.

The total population of 1,172 schools was considered to exist as eight strata as listed below:

Stratum 1: Comprehensive Universitites and Colleges I: Public.

Stratum 2: Comprehensive Universities and Colleges II: Public.

Stratum 3: Comprehensive Universities and Colleges I: Private.

Stratum 4: Comprehensive Universities and Colleges II: Private.

Stratum 5: Liberal Arts Colleges I: Public.

Stratum 6: Liberal Arts Colleges II: Public.

Stratum 7: Liberal Arts Colleges I: Private.

Stratum 8: Liberal Arts Colleges II: Private.

Preliminary work indicated that the variance of several characteristics within strata might be fairly uniform; thus the major difference to contend with in the sampling was the variance in the number of potential cases in each stratum. It was decided that a sample size for the study of not more than 500 cases would be valid and economically feasible. Some of the strata, however, contained very few members (the least, Stratum 5, has a population of 2). For this reason these strata with less than 30 cases were covered in their entirety while those with 30 or more cases were sampled by taking approximately 38 percent of the total available. For those strata of 30 or more cases a table of random numbers was applied to the Carnegie listing so as to give each school within a stratum an equal chance of being chosen, thus removing any geographical bias that would have been present in a sequential sample. In all, 464 sample points were selected. Table 4.2 below presents the number of sample points and the number and percent of returns for each stratum.

Of the 276 responses some were not usable either because of incomplete information or because of notice that the school had closed. Table 4.3 identifies the number of questionnaires that were used in the final tabulation of the findings and conclusions.

Table 4.2

Tabulation of Cases and Returns

Strata	Total Population	Number Sampled	Returns Received	Received as Percent of Population	Received as Percent of Number Sampled
1	223	85	65	29.2%	76.5%
2	85	32	25	29.4	78.1
3	98	37	28	28.6	75.7
4	47	18	9	19.2	50.0
5	2	2	1	50.0	50.0
6	25	25	18	72.0	72.0
7	144	55	34	23.6	61.8
8	547	210	96	17.6	45.7

Table Summary: Of the 1,172 institutions that make up the total population; 464 questionnaires were sent and 276 were received for an overall return rate of 59.48%.

Table 4.3

Tabulation of Returns

Strata	Total Population	Number Sampled	Returns Used	Used as a Percent of Population	Used as a Percent of Number Sampled
1	223	85	61	27.4%	71.8%
2	85	32	24	28.2	75.0
3	98	37	28	28.6	75.7
4	47	18	8	17.0	44.4
5	2	2	1	50.0	50.0
6	25	25	16	64.0	64.0
7	144	55	33	22.9	60.0
8	547	210	83	15.2	39.5

Table Summary: Of the 1,172 institutions that make up the total population; 464 questionnaires were sent and 254 of the 276 returns used for an overall use rate of 54.7%.

Of the 22 questionnaires that were not used, 11 represented schools that had closed or merged since 1973. Ten of these were found in stratum 8

which indicates that for the total population of Liberal Arts Colleges II, Private about 26 (5 percent) closed in the last two years.

The cutoff date for the acceptance of questionnaires was established as June 1, 1975. The data were then edited, keypunched using two IBM cards per institution, and verified by using a computer listing. During the editing phase, figures for question V: Neighboring Libraries, were added to the responses. The computer development of the scores, the grouping of grades, and the impact of various formula sub-elements are reported in Chapter 5: Findings.

STATISTICS AND TESTS

The reliability of the sample needed to be determined so that librarians could place some level of confidence in the findings reported in the study. Unlike many samples which are done to estimate an unknown total population, this study had the advantage of knowing the entire membership of the population (The Carnegie Classification document). In addition, the Ad Hoc Committee's working papers had developed information, in the form of means and standard deviations, about the size of the book collections in volumes, for various combinations of the strata. As this information described both the average and the variability of the population in relevant terms (items in the collections) and since it had been done by determining not a sample, but by using the actual figures for the population totals (as reported by the USOE for Fall, 1971) it was decided to match the reports of the Ad Hoc Committee with a report that would have been generated if only the sample returns used had been available. The basic descriptive table developed by the Committee is reproduced below as Table 4.4.

Table 4.4

Tentative Groups of Comprehensive Universities and Colleges I & II Based on Enrollment: Mean Library Size and Standard Deviation In Volumes for Comprehensive Universities and Colleges and for Liberal Arts Colleges[4]

		Enrollment	Mean Library Size In Volumes	Standard Deviation
Comprehensive Universities and Colleges	I	20,000+	472,000	258,000
	I	15,001-20,000	334,000	73,000
	I	10,001-15,000	277,000	93,000
	I	5,501-10,000	220,000	89,000
	I	2,001-5,500	138,000	79,000
	II	10,000+	195,000	48,000
	II	5,501-10,000	132,000	52,000
	II	1,000-5,500	104,000	58,000
Liberal Arts Colleges	I	All	169,000	104,000
	II	All	66,000	35,000

Tables 4.5A and 4.5B determine the same information as Table 4.4 but through the use of the sample instead of the population total. In all cases except four, the information produced by the sample reflects the total population with a significance level of .05. These four cases represent less than 3 percent of the total number of libraries.

As the population variability was known, the a significance level for the sample validity of each stratum could be computed by the use of the T, Z, and chi-squared tests. For the means, the hypothesis to be tested for the verification of the sample was the null hypothesis that there is no significant difference between the known mean of the population for this information and the mean produced by the sample for the same information.

(1) Null Hypothesis: Mean of population equals mean of sample against Alternative Hypothesis: Mean of the population is not equal to the mean of the sample.

$$H_o: u=\bar{y} \text{ against } H_a\ u\neq\bar{y}$$

For the variance, the hypothesis to be tested was the null hypothesis that there is no significant difference between the known variance of the population for this information and the variance produced by the sample for the same information.

(2) Null Hypothesis: Variance of population equals variance of sample against Alternative Hypothesis: Variance of population is not equal to the variance of the sample.

$$H_o: \sigma^2=s^2 \text{ against } H_a\ \sigma^2\neq s^2$$

The specific Z test used was that expressed by the formula:

(3) Z equals $\frac{\text{sample mean minus population mean}}{\text{population standard deviation divided by sample size}}$

$$Z=\frac{\bar{y}-u_o}{\sigma/n}$$

The specific chi-square formula used was that expressed by the formula:

(4) The chi-square density function with parameter n-1 is approximately equal to

(sample size minus 1) squared / population standard deviation

$$\frac{(n-1)^2}{\sigma} \qquad X^2_{n-1}$$

As is noted in Tables 4.5A and 4.5B the sample, at least for the number of volumes in the individual library, very closely approximates the known facts for the total population. For this reason it is suggested that the sample as presented is a valid and reliable indicator of the total population of each stratum. The specific values used to compute this confidence ~~level~~ are reported in Appendix D.

Table 4.5A

Mean Library Size of the Total Population as Portrayed By the Sample Using Groupings of Strata as Developed By the Ad Hoc Committee Working Papers

Group	Enrollment	Total Population Mean Library Size	Sample Mean Library Size	Significance Level of Sample
CUC I	10,001-15,000	277,000	323,556	.05
CUC I	5,501-10,000	220,000	226,142	.05
CUC I	2,001-5,500	138,000	148,940	.05
CUC II	1,000-5,500	104,000	94,161	.05
LAC I	All	169,000	152,242	.05
LAC II	All	66,000	67,010	.05

Table 4.5B

Standard Deviation of Library Size of the Total Population As Portrayed by the Sample Using Groupings of Strata as Developed by the Ad Hoc Committee Working Papers

Group	Enrollment	Total Population S.D. of Library Size	Sample S.D. of Library Size	Significance Level of Sample
CUC I	10,001-15,000	93,000	72,613	.05
CUC I	5,501-10,000	89,000	87,013	.05
CUC I	2,001-5,500	79,000	64,658	.05
CUC II	1,000-5,500	58,000	56,733	.05
LAC I	All	104,000	93,004	.05
LAC II	All	35,000	30,509	.05

SUMMARY

This Chapter has described the procedures used to design the study and has evaluated the validity of that design. Chapter 5 analyzes the information collected by the survey. The specific methodologies and statistical tests used to evaluate the collected data are described in that Chapter.

REFERENCES AND NOTES

[1]Association of College and Research Libraries. Ad Hoc Committee to Revise the 1959 Standards, "Working Papers" (Chicago, Association of College and Research Libraries, 1974) (mimeographed) The working papers consist of: Arthur Monke, "Academic Libraries: Into the Eighties;" David Kaser, "Foreign Standards for College Libraries," Herman L. Totten, "Identification of Library Elements in Statements of Accrediting Standards; A Review of the Literature;" David L. Perkins, "Possible Model Based on the Carnegie Commission Groupings;" James W. Pirie, "Typology of Institutions of Higher Education;" and Johnnie Givens, "Introduction." A later working paper was issued under the title of "Toward a 1975 Revision of the College Library Standards; Final Working Paper."

[2]See the Draft Standards page 284 (reproduced in Appendix A).

[3]James W. Pirie, "Typology of Institutions of Higher Education," Working paper of the Ad Hoc Committee to Revise the 1959 Standards for College Libraries (Chicago: ACRL, 1974) (mimeographed), p. 12.

[4]David L. Perkins, "Possible Model Based on the Carnegie Commission Groupings," Working paper of the Ad Hoc Committee to Revise the 1959 Standards for College Libraries (Chicago: ACRL, 1974) (mimeographed), p. 4. This work was done to show the validity of the Carnegie groups for Standards application.

Chapter 5

FINDINGS

INTRODUCTION

The findings of this study of the ACRL New Standards for College Libraries are based entirely on the 254 returns received from the national survey conducted during the Spring of 1975 as described in Chapter 4. The study has three primary objectives: 1) to gather and present descriptive data about library staffs and collections which are representative of the entire population of libraries on the Carnegie List in the categories of Liberal Arts Colleges and Comprehensive Universities and Colleges; 2) to use this descriptive data to apply the Standards, as currently written, to these representative libraries so as to observe the grades that these libraries will receive from the Standards; and 3) to observe the effects that major sub-elements of the Formulas have upon the grades and scores of these libraries.

The presentation of the findings is organized into three sections corresponding to the three objectives. First, the raw, ungraded, descriptive information is presented. Next, this information is used to determine individual library scores and grades. In this second section the numbers of libraries that attain each grade are presented. In the final section of this Chapter changes are made in the Formulas so that the contributions of the major sub-elements in the Formulas to the overall library grade may be identified. In each section the tabular data

which summarizes conditions by groups and formulas is followed by a narrative description of the major implications of these tables.

Tabulation of the data indicates that the following findings are probable if the New Standards are used.

FIRST SECTION; OBJECTIVE ONE

Objective One: To present a current, accurate, quantified description of the collections and staffs in college libraries on the Carnegie List using the counting rules and definitions of the New ACRL Standards.

An examination of the raw, quantified collection and staff information is of some utility if the libraries that are described are grouped by strata. The statistical variance inherent within such figures for the population as a whole is so great, however, that discussion of the whole for this ungraded data is, in most cases, meaningless. Tables 5.1 and 5.2 present the salient information for each of the eight strata. In these Tables "volume," "volume equivalent" and all other measures take on the definitions proposed by the Standards. For example, to arrive at the sizes of the collections, total bound volumes plus the number of microfilm reels are added to two-tenths of the number of other microforms.

A summation of Table 5.1 by strata would begin to describe collections and collection building activities while, perhaps somewhat obtusely, reflecting the size, goals, and educational philosophies of the various strata. The major implication of Tables 5.1, 5.2, and, indeed, of this entire first section is that this raw data cannot be used to effectively compare libraries either within a stratum or between different strata. A look at Stratum 7 (Liberal Arts Colleges I: Private), for example, shows that the average number of volumes in the collections of these schools is 174,750 but that the spread of cases away from this

Table 5.1

Collections and Collection Building Activities by Strata Using Raw Data

(Scope of Table: This Table presents a summary quantification that describes the sizes of the various collections in volume equivalents using the definitions of Formula A of the Standards. It presents the additions rate and the percent of the total institutional budget that is devoted to library support. It also illustrates the number of years required for those libraries that are not now at grade of A for Collections to reach a Grade of A. All data in this Table is ungraded by the Standards. Average (u) and Standard Deviation (S.D.) figures are presented to show central tendency and variation.)

Strata	Size in Volume Equivalents u	S.D.	Gross Percent Added Per Year u	S.D.	Number of Years for Libraries Not at Grade A to Reach Grade A u	S.D.	Number of Libraries That Will Require More Than Fifteen Years to Reach Grade A	Budget as % of Institution Total u	S.D.
1	287,593 vols	144,769 vols	8.0%	3.1%	6.9 yrs	9.6 yrs	4 libraries	5.6%	2.2%
2	185,625	111,974	12.0	6.1	13.4	12.8	6	5.6	2.3
3	227,714	100,358	5.2	2.0	42.1	145.7	3	4.5	1.8
4	103,875	32,607	5.5	1.6	7.4	6.9	0	4.2	0.9
5	Only two cases in the total population of this stratum.								
6	112,187	67,970	14.2	13.5	9.2	13.5	1	7.5	1.7
7	174,750	113,782	4.9	4.2	14.4	16.0	0	4.3	0.9
8	85,663	41,898	5.5	3.2	77.1	440.0	14	5.9	3.5

measure of central tendency is so great (standard deviation equals 113,782 volumes) that the mean cannot be employed as an estimate of the condition of the entire group. This strata adds, before withdrawals, an average of 4.9 percent of its collection every year. This is close to the five percent minimal figure suggested by the Standards Committee. Again, however, the variance (standard deviation equals 4.2 percent) is large. On the average it will take schools in this class not now at grade A, 14.4 years to reach a collection score of 100 percent if all conditions remain relatively stable. No school in this group however, will take more than 15 years to reach a grade of A on collections. These libraries accrue an average of 4.3 percent of the total institutional operating budget. In this case Stratum 7 is quite cohesive with the standard deviation for this figure being but 0.9 percent.

The wide range of cases away from the average figures within a single stratum, however, illustrates the need for some sort of library evaluation system if libraries are to be compared. To say that one library has 200,000 volumes while another has 400,000 is not to say that the second is twice as effective as the first even if only quantitative data are being considered.

A comparison of one stratum with the others using this type of figures would be even more misleading than accepting the average as representing the majority of cases within a stratum. This mistake would come from the fact that these figures do not take into account the size or purpose of the institutions. It would appear, for example, that Stratum 8 (Liberal Arts Colleges II: Private) schools are better funded than are libraries in Stratum 7. They do receive an average of 5.9 percent of the institutional budget and do add on the average 5.5 percent of the collection each year. The more appropriate point is: a percent of

what base? For both collections and total budget the base totals are smaller in Stratum 8 than they are in Stratum 7; hence the Stratum 8 percentages are likely to be the larger.

One of the purposes of the Standards is to adjust so as to permit such comparisons either within or between strata. How well those correction factors operate will be discussed below under Objectives Two and Three. Here the important implication is that the raw data for these schools, although interesting, cannot be used to describe a norm nor to compare schools. This seems to legitimize the assumption that Standards are necessary if schools are to be compared with quantified data.

Table 5.2, the compilation of figures by strata for staff, also begins to illustrate the differences among various types of institutions. In every case local definitions of "librarian" increases the number of persons in such roles. In Stratum 1 (Comprehensive Universities and Colleges: I: Public) the greatest use of the local definition of librarian comes from the combination of audio-visual centers with libraries, while in the smaller institutions indications are that persons from unaccredited library schools or persons without Masters of Library Science degrees are recognized by the title "librarian." There is remarkable similarity of staff composition among strata. The percentage of staff that represents librarians (using the Standards definition) holds quite close to 25 percent of the total staff. In almost all cases student assistants, in full-time-equivalents make up a sizable portion of the total library staff. In a few instances student assistants comprise the entire supporting staff.

MAJOR IMPLICATIONS OF THE FINDINGS FOR OBJECTIVE ONE

1) Raw, ungraded, or otherwise unevaluated statistical information

Table 5.2

Staff Size and Importance of Standards' Definition of "Librarian" by Strata Using Raw Data

(Scope of Table: This Table presents a summary quantification that describes the size of the various staffs using the Standards' Definition of "librarian" and then using the local definition of "librarian." As in Table 5.1, Average (u) and Standard Deviation (S.D.) figures are presented to show central tendency and variation.)

Strata	Number of Librarians by Standards' Definition u	S.D.	Number of Librarians by Local Definition u	S.D.	Percent of Libraries Using Local Definitions	Librarians as Percent of the Total Staff u	S.D.
1	11.4	6.3	12.9	7.2	44.3%	24.9%	6.3%
2	8.9	5.6	10.5	5.7	37.5	23.9	7.8
3	8.7	4.6	9.8	4.6	29.6	26.5	6.8
4	3.3	1.5	4.6	1.9	37.5	25.4	10.7
5	Only two cases in the total population of this stratum.						
6	6.6	3.9	7.5	6.0	18.8	23.9	8.4
7	4.8	2.9	5.3	2.7	35.5	27.2	8.5
8	2.8	1.4	3.4	1.5	39.5	25.7	9.6

about library collections and staffs is not an effective tool for the comparison of libraries even though the schools may be grouped homogeneously.

2) Within homogeneous groups of schools the following trends about library collections and staffs are evident:

a) Schools in Stratum 7 have more volumes than would be expected given their size while schools in Stratum 8 have fewer volumes than would be expected.

b) Within fifteen years (the projected life of the Standards) most schools will probably be at Grade A for Collections.

c) Many libraries (more than one-third) use a definition of "librarian" that is different from that of the Standards.

d) As an average the schools meet or surpass the 5 percent guideline figures for a gross additions rate.

e) The schools closely approximate the 25-35 percent guideline figure for librarians as a percent of the total staff.

f) The libraries fall short of the 6 percent guideline figure for the portion of the total budget allocated for library support.

3) Although these "trends" of point two above are in evidence, the use of "average" figures developed from raw data are apt to be misleading because of the wide variation contained even within homogeneous groups.

4) A set of Standards that takes into account the factors that contribute to the inherent variations of even supposedly homogeneously grouped schools are necessary if one is to attempt to compare libraries through a measurement of quantified inputs.

While Tables 5.1 and 5.2 do give a picture of the current situation in college libraries, it is impossible to use the data to legitimately compare one library with another. The Standards, with their size, users, and program correction factors, should remove some of the inequities and thus allow for more relevant comparisons. Section Two below will explore the projected totals for these same schools using the percentages and grades as assigned by the Standards.

SECOND SECTION; OBJECTIVE TWO

Objective Two: To predict the distribution of percentage scores and letter grades that may be expected to be received by various types of institutions on the Formulas for Collections and Staffing.

A computer program was written which determined the scores for the two Formulas. This program: 1) figured the percentage score and letter grade on both Formulas for each library responding to the questionnaire; 2) presented the letter grades in summary form by Formula and stratum; and 3) computed the mean and standard deviation for the percentage score for each Formula by stratum. This information is summarized in Tables 5.3 (Collections) and Table 5.4 (Staff) below. The basic logic and a complete description of the computer program is outlined in Appendix E.

While this information does permit analysis of the grades received by stratum, it does not allow for a discussion of the grades received for the population as a whole. The basic problem here is that during the independent sampling of each of the eight strata some groups became either over or under represented depending upon their survey response rates. To eliminate this problem the output from Tables 5.3 and 5.4 was reproduced in machine readable form and was used as input

Table 5.3

Letter Grades and Summary Percentage Scores Received on Collections Formula

(Scope of Table 5.3: This table was developed using the computer program discussed in the text. It presents the number (and percent) of schools in each stratum that received a specific letter grade. In addition to these grade distribution totals, the average percentage score and its standard deviation are listed by stratum. This table portrays how the two Formulas will grade libraries. The differences betwen the mean and standard deviation percentage scores of the two Formulas will serve the basis for part of the inquiry in Section Three of this Chapter.)

Strata	Number and Percent of Libraries Receiving Each Letter Grade[1] A	B	C	D	E	Mean %[2] Score	S.D. of % Score
1	21(34.4%)	16(26.2%)	13(21.3%)	8(13.1%)	3(04.9%)	111.20%	107.36%
2	5(20.8%)	4(16.7%)	7(29.2%)	6(25.0%)	2(08.3%)	136.73	282.46
3	10(35.7%)	8(28.6%)	4(14.3%)	5(17.9%)	1(03.6%)	109.19	61.93
4	4(50.0%)	2(25.0%)	0	1(12.5%)	1(12.5%)	495.71	969.30
5	1(100.%)	0	0	0	0	Note 3	
6	4(25.0%)	4(25.0%)	2(12.5%)	4(25.0%)	2(12.5%)	153.04	301.64
7	21(63.6%)	6(18.2%)	3(09.1%)	1(03.0%)	2(06.1%)	181.78	158.40
8	21(25.3%)	18(21.7%)	16(19.3%)	18(21.7%)	10(12.0%)	132.68	187.65

Note 1: As explained above (page 3) "grade" refers to the letter grade received by the library.

Note 2: "Percent score" refers to the percentage obtained by the library on the Standard before the grade was assigned based on that percent of Standard score.

Note 3: Only two cases and one return preclude this information for this Stratum.

Table 5.4

Letter Grades and Summary Percentage Scores Received on Staff Formula

(Scope of Table 5.4: This table was developed using the computer program discussed in the text. It presents the number (and percent) of schools in each stratum that received a specific letter grade. In addition to these grade distribution totals, the average percentage score and its standard deviation are listed by stratum. This table portrays how the two Formulas will grade libraries. The differences between the mean and standard deviation percentage scores of the two Formulas will serve the basis for part of the inquiry in Section Three of this Chapter.)

Strata	Number and Percent of Libraries Receiving Each Letter Grade[1]					Mean %[2] Score	S.D. of % Score
	A	B	C	D	E		
1	2(03.3%)	5(08.2%)	21(34.4%)	18(29.5%)	15(24.6%)	59.88%	53.48%
2	2(08.3%)	3(12.5%)	12(50.0%)	4(16.7%)	3(12.5%)	63.44	23.76
3	3(10.7%)	7(25.0%)	8(28.6%)	6(21.4%)	4(14.3%)	64.28	25.96
4	0	0	5(62.5%)	0	3(37.5%)	49.08	19.43
5	0	1(100.0%)	0	0	0	Note 3	
6	3(18.8%)	2(12.5%)	4(25.0%)	4(25.0%)	3(18.8%)	67.45	27.76
7	7(21.2%)	7(21.2%)	9(27.3%)	6(18.2%)	4(12.1%)	98.08	136.44
8	7(08.4%)	19(22.9%)	24(28.9%)	14(16.9%)	19(22.9%)	61.38	31.16

Note 1: As explained above (page 3) "grade" refers to the letter grade received by the library.

Note 2: "Percent score" refers to the percentage obtained by the library on the Standard before the grade was assigned based on that percent of Standard score.

Note 3: Only two cases and one return preclude this information for this Stratum.

for a second analysis program. Using the Statistical Package for the Social Sciences (SPSS)[1] a strata weighting procedure was developed for this second analysis so that the returns from the questionnaire could be made to represent the population as it is known to exist as a whole. In addition, the scores were re-coded into a binomial expression of success and failure so that the working hypotheses discussed above (see page 26) could be tested. In light of the basis hypothesis of this study, a grade of A or B was coded as "success" while a grade of C or lower represented "failure." The weighted summary with descriptive statistics for both Formulas is presented as Table 5.5.

The re-coded (success and failure) weighted summary notes that on Formula A (Collections) all schools together with proper weights assigned achieved success (at least a grade of B) 56 percent of the time with the following descriptive statistics. Coding an A or B as success (equal to 1) and a C, D, or E as failure (as equal to 2), the mean was 1.44; the mode was 1; and the standard deviation using an n-1 weighting factor was .497. For Formula B (Staff) all schools together with proper weights assigned achieved a failure rate (that is a grade of C, D, or E) of 72.5 percent with the following descriptive statistics. Using the same coding as for Formula A above, the mean was 1.725; the mode was 2; and the standard deviation was .447.

MAJOR IMPLICATIONS FOR THE FINDINGS FOR OBJECTIVE TWO

Briefly stated, the major implication of this entire section and of Tables 5.3 through 5.6 is that the grades received by the schools in the sample tend to substantiate the study hypotheses and reject the Committee hypotheses.

Table 5.5

Weighted Summary with Descriptive Statistics for Formulas A and B

(Scope of Table: Using the weighted figures as described in the text, this Table presents information descriptive of the population as a whole. Coding A=1, B=2, C=3, D=4, and E=5, the Table presents the number of libraries for the population as a whole that will receive each letter grade for each Formula. In addition, descriptive statistics describe the distribution of these grades around a central point.)

	Number of Libraries				
	A	B	C	D	E
Formula A. The Collections					
Absolute Frequency	110	74	58	57	29
Relative Frequency (%)	33.5	22.5	17.7	17.3	9.0
Cumulative Frequency (%)	33.5	56.0	73.7	91.0	100.0
Mean equals 2.459					
Mode equals 1					
Standard deviation equals 1.345					
Formula B. The Staff					
Absolute Frequency	30	60	106	63	68
Relative Frequency (%)	9.1	18.3	32.4	19.3	20.8
Cumulative Frequency (%)	9.1	27.5	59.9	79.2	100.0
Mean equals 3.242					
Mode equals 3					
Standard deviation equals 1.233					

As the information presented above is based on a random sample, confidence intervals need to be developed for the Formula A 56 percent figure and for the Formula B 27.5 percent success figure. Using the following formula a confidence coefficient of .95 can be constructed for the information provided by the weighted, re-coded sample. For Formula A this interval will be as follows:

$\bar{y} \pm Z_{\alpha/2}\sigma/\sqrt{n}$
$1.44 \pm (1.96)\ (.497)/\sqrt{327}$
$1.44 \pm .054$
confidence interval of the mean of 1.386 to 1.494.

This corresponds to a success percentage interval of approximately 51 percent to 61 percent. This information permits a more correct restatement of the first study working hypothesis as follows:

1) Ninety-five times out of a hundred 56 percent or minus 5 percent of the academic libraries which fall under the scope of these Standards will meet or surpass (that is, obtain an A or B rating) on the Standard on Collections (Standard number 2).

For Formula B, using the same formula for the confidence interval, it can be determined that this interval which encloses the success rate is approximately 22 percent to 32 percent. Again this information permits a more correct restatement of the second working hypothesis as follows:

2) Ninety-five times out of a hundred 27.5 percent plus or minus 5 percent of the academic libraries which fall under the scope of these Standards will meet or surpass (that is, obtain an A or B rating) on the Standard on Staff (Standard number 4).

In the second case the information does not cause rejection of the working hypothesis of this study as written while at the same time it does better define the limits of its usefulness. Both confidence intervals substantiate the trend of the study's hypotheses while causing a rejection of the Ad Hoc Committee's hypotheses. The percentage of success and failure for each Formula by strata is presented below in Table 5.6.

The information provided in response to this second objective permits a more precise definition of the two working hypotheses that have guided this study. Objective Three will look at elements within the Formulas to determine what effect various sub-elements of the grading have on the overall scores.

Table 5.6

Success Rates for Formulas A and B By Strata Based on Re-Coded, Weighted Data

(Scope of Table: This Table was developed by a Z or t test depending upon sample size. It presents "success percents" or the percent of a stratum that received a grade of A or B on each of the two Formulas. The Confidence Intervals (C.I.) were developed for each stratum based on the same formula and procedure as described in the text for the population as a whole.)

	Formula A		Formula B	
Strata	% Success	C.I.	% Success	C.I.
1	60.7%	48.3--73.1%	11.5%	4.5--19.6%
2	37.5	16.6--58.4	20.8	3.3--38.3
3	64.3	45.4--83.2	35.7	16.8--54.6
4	75.0	36.3--100.0	100.0	----
5	Only one case precludes information for this stratum			
6	50.0	19.5--80.5	31.3	5.7--56.7
7	81.8	68.4--91.6	42.4	18.6--52.8
8	47.0	36.2--57.8	31.3	21.2--41.4

THIRD SECTION; OBJECTIVE THREE

Objective Three: To identify the effects of major sub-elements in the Formulas on Collections and Staffing so as to analyze the degree of appropriateness of the construction of the Formulas. To determine if any significant correlation exists between the scores and grades on Formula A and Formula B.

Several modifications were made to the original counting rules to isolate the effects of the Formulas' sub-elements so as to describe their individual impact on the overall Formulas' scores and grades. The actual method used to make these changes is described in Appendix E. After each change, the information obtained from the original questionnaire

was run through the modified program. The principal changes that were made are the following:

1) elimination of the effects of neighboring libraries.

2) elimination of the effects of microforms.

3) elimination of both neighboring libraries and microforms.

4) decrease of student FTE by ten percent.

5) decrease of materials acquisition by thirty percent.

6) decrease of materials acquisition by ninety percent.

The output from these six modifications produced serveral important findings that developed a number of the recommendations of Chapter 6. These outcomes are summarized by Tables 5.7 and 5.8 and are discussed in narrative form below.

Certain sub-elements of the Formulas affect some strata more than others. An example is the impact of the loss of microforms and, to a lesser degree, the loss of the support of neighboring libraries upon the Collections of Stratum 1. With both of these factors removed, the percent of A grades on the Collection Standard drops from 34.4 percent to 3.3 percent. Compare this with the effect on the libraries in Stratum 7. Here the percent with grade of A on the Collection Standard decreases but only a total of 9.1 percent (from 63.6 percent to 54.5 percent). The implication of this finding is that the newer, more recently funded public supported Comprehensive Universities and Colleges I (Stratum 1) have purchased heavily in the microform market while the older, well established Private Liberal Arts Colleges I (Stratum 7) have not done so. In addition, these newer Colleges of Stratum 1 have tried to use cooperative arrangements to their advantage more than the group of Stratum 7. A glance at Stratum 8 however, illustrates the dependence of the Collections of the second group

Table 5.7

Percent of "Success" and "Failure" on Collection and Staff Formulas under Various Conditions for the Entire, Weighted Population

(Scope of Table: This Table summarizes the effects of the basic modifications to the major Formula sub-elements. From this Table one can determine the amount sub-elements contribute to the overall Collection and Staff grade. As in other Tables, grades have been re-coded into success and failure. The percents that are expressed are for the population as a whole after proper weighting has taken place.)

	Success Percent	Failure Percent	Success Percent Change from Standards as Written
FORMULA A (Collections)			
Standards as written	56.0%	44.0%	
Cut Student FTE by 10%	57.2	42.8	up 1.2%
Cut acquisitions	56.0	44.0	no change
No microforms counted	48.0	52.0	down 8.0
No neighbor libraries counted	44.0	56.0	down 12.0
No microforms and no neighbors counted	34.0	66.0	down 22.0
FORMULA B (Staff)			
Standards as written	27.5	72.5	
Cut acquisitions by 90%	39.4	60.6	up 11.9
Cut student FTE by 10%	31.6	68.4	up 4.1
Cut acquisitions by 30%	31.3	68.7	up 3.8
No microforms counted	29.5	70.5	up 2.0
No neighbors counted	27.5	72.5	no change

Table 5.8

Means and Standard Deviations of Raw Percent Scores Obtained by Formula and Strata Under Certain Conditions

(Scope of Table: This Table uses the percentage scores as opposed to letter grades of most of the other Tables to show the effects of the sub-elements in the two Formulas. For each strata the mean (u) and standard deviation (S.D.) of the percentage scores are shown. All figures have been rounded to the nearest whole number.)

Strata	As Written		No Neighbors		No Microforms		Cut Acquisitions by 90%		Cut Students by 10%	
	u	S.D.	u	S.D.	u	S.D.	u	S.D.	u	S.D.
FORMULA A (Collections)										
1	111%	107%	84%	25%	97%	108%	111%	107%	114%	111%
2	137	282	73	31	125	283	137	282	141	295
3	109	62	86	30	104	61	109	62	112	63
4	496	969	72	25	493	969	496	969	504	985
5	Only one case precludes this information									
6	153	302	74	24	146	302	153	302	158	314
7	182	158	134	76	176	157	182	158	185	161
8	133	188	73	32	130	188	133	188	134	190
FORMULA B (Staff)										
1	60	53	60	53	61	54	72	58	63	56
2	63	24	63	24	64	24	76	27	67	25
3	64	26	64	26	66	28	74	32	67	27
4	49	19	49	19	50	21	55	23	52	23
5	Only one case precludes this information									
6	67	28	67	28	68	28	89	39	70	27
7	98	136	98	136	99	136	108	139	100	136
8	61	31	61	31	62	31	65	32	63	32

of private liberal arts colleges on neighboring libraries. (Collection A grades decrease from 25.3 percent to 12.0 percent). It may be that a lack of funds in recent years has forced these colleges to find other means to support their programs. While it is difficult to measure the relevancy of either microforms or the collections of neighboring libraries, a check of individual cases shows that every library that reported support from a neighboring library automatically received a grade of A on its Collection evaluation. The implication is that "neighboring libraries" are an extremely important part of the Collection Formula. Chapter 6 will conclude that this sub-element needs to be carefully examined and re-written before it may be permitted to influence the library Collection evaluation effectively.

SUMMARY OF FINDINGS RELATED TO OBJECTIVE THREE

An examination of the distribution of letter grades highlights a summary of the major ways that individual strata may be effected by these Formula sub-elements. These findings and their implications are outlined below:

Stratum 1: Comprehensive Universities and Colleges I: Public.

The Collection Formula grade for this group is greatly affected by the presence of the resources of cooperating libraries and by the inclusion of microforms. This suggests that these libraries depend heavily on less traditional ways of meeting a patron's informational needs. The staff grades are little affected by a cut in acquisitions or by a decrease in student FTE, factors which were seemingly designed to be reflected by the counting rules for both Formulas. These libraries reported the most dissatisfaction with the exclusion of non-print

materials noting that large portions of their collections and staff were excluded from evaluation and thus credit on the Standards.

Stratum 2. Comprehensive Universities and Colleges II: Public.

As with Stratum 1, the loss of neighboring libraries groups the grades on Formula A closer to a central tendency. In this stratum this is evidenced by a decrease in the percentage score mean from 136.73 percent to 73.23 percent and by a decrease in this percentage score's standard deviation from 282.46 to 30.85. (Table 5.8). A loss of microforms has the effect of reducing the mean percentage score on Formula A while continuing a wide variance. This suggests the acceptance of microforms by this group is not as universal as it is in Stratum 1. Loss of both neighboring library support and microforms results in a very low grade on Formula A for this grouping. The staffing grades are affected by a slight decrease in numbers of students while the decrease of materials acquisition raises grades considerably. This implies that these correction factors are more effective for this grouping than they were for Stratum 1.

Stratum 3. Comprehensive Universities and Colleges I: Private.

On Formula A these schools are affected by the loss of neighbors, but not as dramatically as in the previous two cases. The same is true for the loss of microforms. Staffing scores were raised by the loss of students, but the cut in the acquisitions rate has less effect on the staffing scores of these institutions than it has had on previous groups.

Stratum 4. Comprehensive Universities and Colleges II: Private.

Stratum 5. Liberal Arts Colleges I: Public.

These two groupings have too few cases per strata to permit a discussion of trends.

Stratum 6. Liberal Arts Colleges II: Public.

On Formula A these schools are less affected by the support of neighboring libraries and the counting of microforms than were the previous cases. Their staffing scores fluctuate greatly with small enrollment changes and with decreases in acquisitions rates.

Stratum 7. Liberal Arts Colleges I: Private.

These older, well funded private institutions are little affected by the loss of the support of neighboring libraries or by the loss of microforms. While their staff scores tend to increase with a small student full-time-equivalent decrease, they are little affected by a massive cut in the rate of acquisitions.

Stratum 8. Liberal Arts Colleges II: Private.

These libraries, especially the higher scoring ones, are affected on Formula A by a loss of the support of neighboring libraries, but they are little affected by a loss of microforms. Their staffing scores have little relationship to student enrollment and acquisitions rates. This might be accounted for in part by the fact that in this Stratum both of these bases tend to be quite small.

In the summary picture, some portions of the Formulas seem to cause more change than other portions. Table 5.7 illustrates the point that neighboring libraries contribute highly to the grade on the Collections Standard by moving 12 percent of the libraries from "failure" to "success." While cooperative use of resources is certainly within the best interests of the patron, the "neighboring library" section in Formula A needs to be more tightly worded so as to include only collections or portions of collections that support the primary missions of the library that is under evaluation. The wording of the Standards, "It is less important

that a college hold legal title to a large quantity of library materials than that it be able to supply them quickly--say within fifteen minutes--as by contract with an adjacent institution.... [It must take care to insure that they] are relevant," lends credence to the basic hypothesis of this paper.

Like neighbors, microforms contribute heavily to the probability of success of an individual library on the Standard on Collections. The point, again is not that these materials are invalid in the college library but, instead, that they, like all collection items, need to be evaluated strictly in light of their appropriateness to the collection. The main difficulty of the Collection Standard is that while the Formula appears to have an exact "scientific" basis, little is said about relevancy, appropriateness, or qualitative measurement. Interestingly enough, the survey has found that only 3.9 percent of the libraries responding to the study reported the weeding of any microfilm during the last year and fewer (2.3 percent) of the libraries reported the weeding of any microform other than microfilm.

In the case of the Staff Standard a change in student enrollment had little effect on the grade of an individual library while, as predicted, a drop in materials acquisition did raise the "success" probability of a library's staff grade (up 11.9 percent overall). It appears that in some cases a library that is over a score of A on Collections could raise its staff score by decreasing its acquisitions rate. If this were done by a library that relied heavily upon neighbor libraries to obtain its A collection grade, the library might even remain within the five percent annual growth guideline since this growth is based only upon items owned by the individual library. This situation characterizes a number of institutions in Stratum 8.

To summarize, the implications of these findings are that:

1) The most powerful portion of the Collection Standard is the effect of neighboring libraries; in these libraries the relevancy of materials is difficult, if not impossible, to measure.

2) The second most powerful Collection sub-effect is microfilm; a resource that few libraries weed and one whose relevancy is difficult to measure.

3) The Staff Standard for most strata is unresponsive to changes in numbers of patrons; the Standards have not achieved needed correction in this area.

4) The connections between the Collections and Staff Standards permit a library to improve artificially the score on Staff by cutting down the size of Collections.

5) The findings substantiate the basic hypothesis of the study.

> The 1975 Revised Standards tend to have a leveling effect on academic libraries; that is, they bring some libraries up to the minimum, while potentially suppressing the collection and staff development activities of many libraries.

A cross-tabulation was run between the grades on Formula A and those for Formula B under all conditions (ie: for individual strata, for the population as a whole, for the population as a whole re-coded into success and failure) to determine whether or not there was any significant correlation between the two Formulas. Although it might seem logical to voice such comments as: "a library which scores high on collections will score high on staff" (a well supported library) or: "A library which scores high on collection will score low on staffing" (they spend everything for books) or other similar comments, this study failed to find correlations under any relevant conditions to substantiate any

such relationships. An example of the typical type of cross-tabulation test performed on re-coded, weighted total population data is reproduced below as Table 5.9. One would expect, if the Formulas are a valid evaluation instrument, to find some type of correlation between these two Formulas. The fact that none exists raises another question as to the validity of the Standards' Formulas.

SUMMARY

Findings in this Chapter lend support to both the basic and working hypotheses of this study. It appears from these findings that the new Standards will jeopardize legitimate staff and collection development activities of the libraries they evaluate. This study finds that the new Standards may hurt libraries and need to be rewritten. While a quantitative measurement of library effectiveness is probably possible, the new Standards will not provide such a measure. The next Chapter will detail specific conclusions about the Standards and recommendations regarding improvement of them.

NORMAL A BY B RECONVERTED AND WEIGHTED 06/12/75 PAGE 2

FILE DAPAPERF (CREATION DATE = 06/09/75) RECODED TO BINOMIAL HYP TEST
SUBFILE SONE STWO STHREE SFOUR SFIVE SSIX SSEVEN SEIGHT

* * * * * * * * * * * * * * * * * * C R O S S T A B U L A T I O N O F * * * * * * * * * * * * * * * * *
NOGRADEA GRADE ON FORMULA A--NORMAL CONDITIONS BY NOGRADEB GRADE ON FORMULA B--NORMAL CONDITIONS
* PAGE 1 OF 1

NOGRADEA	NOGRADEB: COUNT / ROW PCT / COL PCT / TOT PCT	SUCCESS 1.00	FAILURE 2.00	ROW TOTAL
SUCCESS 1.00	COUNT	44	140	183
	ROW PCT	23.9	74.2	56.0
	COL PCT	48.5	58.4	
	TOT PCT	13.3	42.4	
FAILURE 2.00	COUNT	46	98	144
	ROW PCT	32.1	67.9	44.0
	COL PCT	51.5	41.2	
	TOT PCT	14.1	29.9	
COLUMN TOTAL		90	237	327
		27.5	72.5	100.0

CORRECTED CHI SQUARE = 2.38856 WITH 1 DEGREE OF FREEDOM
PHI = 0.08541
CONTINGENCY COEFFICIENT = 0.08510
KENDALL'S TAU B = -0.09235
KENDALL'S TAU C = -0.08182
GAMMA = -0.20423
SOMER'S D = -0.10265

Table 5.9

Cross-Tabulation Test Between Formulas A and B

REFERENCES

[1]Norman Nie, Dale H. Bent, and C. Hadlai Hull, SPSS: Statistical Package for the Social Sciences (New York: McGraw-Hill Book Company, 1970).

Chapter 6

CONCLUSIONS AND RECOMMENDATIONS

INTRODUCTION

This paper describes the first extensive evaluation of the Collections and Staff Formulas which are part of the new ACRL Standards for College Libraries. The findings of the study support the following conclusions and recommendations concerning specific portions of these new Standards and they underline the two basic causes of the inadequacy of the current Standards and their Formulas; ambiguity and poor design. This Chapter recommends ways that these Standards may be improved.

CONCLUSIONS

Because of ambiguous wording the Standards are difficult to apply. Because of incomplete and poorly designed sub-elements and an ineffective grading system, the Formulds are not able to produce an evaluation for one library that permits that library to be compared correctly with other libraries. The specific conclusions that follow will point out the design errors and ambiguities in the Formulas that cause these instruments to fail. The recommendations of the second section of this Chapter will take the position that some type of quantitative evaluation and comparison of libraries is possible and that the Standards' Formulas could be effective to the limits of an input measurement device, if certain changes are made.

1) Certain wording in the Standards is ambiguous and makes the application of the Formulas difficult.

a) The proper employment of the "volume equivalent" is not discussed. Formula A describes the use of the volume equivalent as follows: "For purposes of this [Formula A] calculation microform holdings should be included by converting them to volume equivalents." Formula B, however, mentions only "volumes" when discussing the proper size of collections for staff size calculations. Thus, while it is not clear, the language of the Formulas tends to support the use of "volume equivalents" for Formula A only. Logic, however, dictates the use of "volume equivalents" in Formula B if it is to be used in Formula A. If a piece of microform is equal to a part of a volume once it is in the collection, then it should be included in the acquisitions rate and should be considered for the determination of the number of staff members available for the processing and use of these resources. This study was run using the "volume equivalent" method in both Formulas. If this is not what the Committee intended, then the reader should refer to the "no microforms" tables when analyzing the outcomes of Formula B.

b) Certain portions of the Standards depend upon the number of full-time-equivalent faculty, but no definition of "faculty" is presented. The proper method of counting "administrative faculty" such as the college president or the college librarian is not described, thus making the FTE faculty figure difficult to determine. The lack of definition makes comparison among libraries subject to individual interpretation and consequently comparison becomes suspect.

2) The Formulas' letter grade system of evaluation is meaningless. The description of the Standards as a determinant of the

"requisite resources services, and facilities for a minimal library program" leads to a problem in the interpretation of a grade. If the basic concept is to design a Formula which, through the use of a threshold score of 100 percent, will identify minimally adequate libraries using a quantitative scoring system, then the interpretation of this percent should be a division of success (100 percent or more) and failure (less than 100 percent). Using the present grading apparatus of the Committee, a score of A can be interpreted as representing a "minimally adequate library" but the scores of B, C, and D are meaningless and a score of less than D is not allowed for. In this study such a percentage score was assigned the letter grade of E.

3) The Formulas' percentage scores are not distributed as expected and are of limited comparison value. The range of percentage scores on Formula A for the sample is 16 percent to 2,848 percent while on Formula B the range is zero percent to 800 percent. This study has validated the fact that libraries score higher than the Committee evidently expected. The average percent scores of libraries in all strata exceeds 100 percent on the Collections Formula thus limiting the value of the Formula's score as a description of the adequacy of library resources.

4) The correction factors for library size, type of patrons, library goals, and the homogeneous grouping of libraries, which are supposedly designed to make the library scores comparable, do not function correctly. The existence of the great range and variation in scores within and among strata and the failure of the "correction factors" to affect staff and collection scores equally in all strata further illustrate the fact that the Formulas are improperly designed.

5) The neighboring library sub-elements skews the collection evaluation without adequate relevancy safeguards. Every time the collections of a neighboring library are reported, the collection score automatically reaches a grade of A. The Formula commentary suggests that only relevant items are to be included in the neighbor's count but no mechanisms are included to make certain that the items in these collections are related to the goals of the evaluated library.

6) The lack of a specific currency or relevancy test for items in the collections permits libraries to artificially raise their collections' scores by not removing out-dated materials from their collections. Data collected by the sample suggests that few items, regardless of age or usefulness, are removed from the collections. By basing the Formulas entirely upon the gross size of the collection, the Formulas penalize a library which weeds properly.

7) The lack of the inclusion of certain demands and resources inhibits the Standards from an examination of the total library. The Standards do not give a complete accounting of the capabilities and needs of the evaluated library.

a) The exclusion of non-print materials has a deleterious effect on libraries in certain groupings, especially Stratum 1. This is illustrated by the fact that a great part of the collections of these libraries is not counted nor evaluated by the Standards and by the fact that many of the professional staff members (for example; media specialists) are excluded by the Staff Standard. These exclusions serve to provide an incorrect picture of the resources, acquisitions rate, processing workloads, and staff available in these libraries.

b) The exclusion of certain classes of valid library users, such as alumni, college staff members, and community users, provides an inaccurate accounting of the demands placed upon the library. These groups need to be included if they contribute to the mission and/or goals of the library as established by the institution which it serves.

RECOMMENDATIONS

The conclusions to this work supported the study's basic hypothesis which states in effect that the Standards as written will help defeat library programs because they tend to force all libraries to the same level of mediocrity. This is well summed up by the Committee members who state that minimum adequacy equals a grade of A! The recommendations which follow take the tack that some sort of quantitative measure needs to be a part of the evaluation of a library if it is to be compared to other libraries. It is recognized that a realistic quantitative measurement of program outputs expressed in terms of patron needs would be more effective. Library research, however, has not yet reached a level of sophistication to support the development of such a measure that would be accepted by the professionals of the discipline.

Recommendations for short range corrections to the Standards

1) Remove the ambiguity from the wording of the Formulas so that they may be applied in a way that permits comparison among libraries. The satisfaction of this requirement can be met only with a pretest of the Standards after all other suggested modifications have been made.

2) Change the letter grade system to one that recognizes success or failure. As long as the Standards' Formulas are designed to describe "minimum adequacy" all that is useful is a percent of the Standards' score

and a division of this percent into success (minimally adequate) and failure (below minimal adequacy).

3) Validate the percentage scale. A validation of the Formulas requires an independent measure of minimal adequacy. As in all previous quantitative Standards documents, the base figures chosen have no supporting rationale. To legitimize these Standards the Committee should choose a representative sample of libraries in each stratum. It should measure the percent of minimal adequacy through a qualitative analysis of the sample libraries. The Committee should then apply the quantitative Standards to these libraries and adjust the base figures and formulas until the Standard's percent score closely approximates the independent qualitative measure. If this can be done then librarians will have some basis of knowing the extent of the validity of the Standards. If this process cannot be accomplished, it serves to point up the questionable relationship of quality and quantity.

4) Add a quantified relevancy adjustment. The literatures of most fields have different but identifiable useful life spans. The Standards, as written, penalize the library which properly removes the nonrelevant material from its collection. The 1959 Standards recognized that a college library collection which approached 300,000 volumes had reached its optimum size. A more useful approach than an arbitrary optimum size would be to apply a depreciation factor to the volume equivalent collection size based on the useful life of the material. In the first year of the Standards' use the librarian would have to survey his/her collection by subject to determine the percent of materials in each discipline. Next, the distribution of imprints by age within each subject would need to be determined. This information alone would be

useful for the acquisitions department and for the college's faculty. By applying the various literatures' expected half-lives, the percent of material in the collection that is relevant in the first year could be determined. The remainder of the material represents "noise" in the system and should be removed. Using the relevant material as the base collection, the percent of the Standard's score could be determined as described by the Committee's Formulas. In the second year the collection would grow not by the current gross additions rate but by that rate minus the number of volumes that became obsolete in that year. With a large collection even a large gross additions rate might result in a decrease of relevant materials. As an information system which has obsolete material in it is less efficient to operate and use than one which contains only relevant materials, a collection score bonus could be given for the appropriate weeding of the collection. This system would need to be more complex than the present system, the score determination would require more effort upon the part of the librarian, and the new system would require an independent verification of validity as discussed under point 3 above. This depreciation factor, however, should begin to provide a more accurate analysis of the potential usefulness of the collection and a better description of the necessary staff size. Such an adjustment would require more exact collection relevancy knowledge and it would thus place more importance on the library's ability to purchase current materials.. A relevancy adjustment for neighbor libraries' collection with relevancy based on needs of the evaluated library's patron needs, would end the skewing produced by this measure of cooperative arrangements in the current Formulas.

5) Provide a measure for non-print volume equivalents and permit the inclusion of media specialists as part of the professional staff. The Ad Hoc Committee notes that volume equivalents cannot be designed for non-print items at this time. Until such non-print items can be incorporated into the collection measure, the Formulas are useless. The simpler part of this recommendation is to change the definition of professional staff so as to include media specialists who are on the same educational and responsibility level as professional librarians.

6) Provide for the inclusion within the Formulas for the valid patron groups of administrative faculty, college staff, alumni, and community users if their demands fall within the library's basic mission. Many resources in many libraries are collected for and used solely by these groups. The service to alumni (especially in private colleges) and to community users (especially in public colleges) forms a significant portion of the library's service to its parent institution. These demands need to be incorporated into the Formulas just as students and faculty have been.

Recommendations for further research

This study has shown that the immediate need in Standards' research is for the improvement of the new ACRL Standards. This improvement needs to include the development of a "relevancy multiplier," a "volume equivalent" for non-print materials, and a modification and validation of the formulas of the Standards based upon their correlation with the findings of an independent qualitative test of the evaluated libraries. This work must be done before the Formulas can become an accepted portion of any new Standards.

The longer range primary need is for the development of quantity based Formulas that are able to match actual and potential outputs of libraries with the needs of the patrons of those libraries. Quantification of inputs can be employed only as a stop-gap measure of library performance and potential. Until output performance measurers can be produced, no Standards, other than ones which portray potential for minimum adequacy, are feasible. Minimum adequacy is a poor method of measuring a Standard of excellence.

SUMMARY

The history of college library Standards suggests an inevitable tension and vacillation between qualitative and quantitative measurement devices. This 1975 set of Standards does not end this question about the correct measurement philosophy. The lack of effective qualitative checks upon the quantified inputs permits a "basic collection" of the new Standards to be composed entirely of microprinted U.S. Depository Documents and the ultra-microfiche Library of American Civilization, all housed in a neighboring library. Such a situation is ridiculous but is entirely feasible under the new Standards.

The original hypothesis of this study recognized the threat of mediocrity that is imposed upon academic libraries by the new Standards. The large number of schools that score in excess of 100 percent, the impact of neighboring libraries and microforms, the lack of credit for media specialists and non-print materials, the wide variation in percent scores and letter grades, and the lack of an effective relevancy standard all support this hypothesis. The substantiation of the trends of the study's working hypotheses and the rejection of the letter grade

distribution projected by the Committee supports the fear that the new Standards will cause a movement toward mediocre libraries.

It is true that new Standards are needed for College Libraries but there first needs to be a more substantial measure of quality and a determination of the measurement device validity before any new Standards can positively affect college library activities. The professionals of the discipline must improve and correct these 1975 Standards before their use will do anything but detract from college library activities.

BIBLIOGRAPHY

American Library Association. Committee on Classification of Library Personnel. Budgets, Classification, and Compensation Plans for University and College Libraries. Chicago: ALA, 1929.

_____. Salaries, Staff and Tenure Board. Subcommittee on Budgets, Compensation and Schemes of Services for Libraries Connected with Universities, Colleges, and Teacher Training Institutions. Classification and Pay Plans for Libraries in Institutions of Higher Education. Volume 2: Degree-Confering Four Year Institutions. Chicago: ALA, 1943.

Association of College and Research Libraries. Ad Hoc Committee to Revise the 1959 Standards. "Draft: Standards for College Libraries; 1975 Revision," CRL News, 35:284-305, December, 1974.

_____. _____. "Working Papers." Chicago: ACRL, 1974. (Mimeographed.)

_____. Committee on Standards. "Standards for College Libraries," College and Research Libraries," College and Research Libraries, 20:274-280, July, 1959.

Brown, Helen M. "College Library Standards," Library Trends, 21:204-218, October, 1972.

Burdick, Charles. "The Library and the Academic Community," Library Resources and Technical Services, 8:157-160; Spring, 1964.

Burns, Norman. "Accrediting Procedures with Special Reference to Libraries," College and Research Libraries, 10:155-158, April, 1949.

Carnegie Commission on Higher Education. A Classification of Institutions of Higher Education; a Technical Report of the Carnegie Commission on Higher Education. Berkeley: The Commission, 1973.

Carnegie Corporation. Advisory Group on College Libraries. College Library Standards. New York: The Commission, 1932.

Clapp, Verner W. and Robert T. Jordan. "Quantitative Criteria for Adequacy of Academic Library Collections," College and Research Libraries; 26:371-380, September, 1965.

Gore, Daniel. "Zero Growth for the College Library, College Management, 9:12-14, August/September, 1974.

Hirsch, Felix E. "Facing the Future: On the Way to New College Library Standards," College and Research Libraries, 19:197-200, 262, May, 1958.

_____. "What is Past is Prologue," Drexel Library Quarterly, 2:199-201, July, 1966.

Koch, Theodore Wesley. On University Libraries. Evanston: Privately Printed, 1924.

Krikelas, James. "Library Statistics and the Measurement of Library Services," ALA Bulletin, 60:494-499, May, 1966.

McCrum, Blanche P. Estimate of Standards for a College Library Planned for the Use of Librarians When Presenting Budgets to Administrative Boards. 2nd rev ed., Lexington, Virginia: Washington and Lee University, 1937.

Meder, Albert E. "Accrediting Agencies and the Standards," Drexel Library Quarterly, 2:213-219, July, 1966.

Nie, Norman, Dale H. Bent, and C. Hadlai Hull. SPSS: Statistical Package for the Social Sciences. New York: McGraw-Hill Book Company, 1970.

Shaw, Charles B. A List of Books For College Libraries. Chicago: American Library Association, 1931.

Shores, Louis. "Evaluating Library Services to Higher Education," College and Research Libraries, 2:211,215, June, 1941.

Thompson, Lawrence S. "History of the Measurement of Library Service," Library Quarterly, 21:94-106, April, 1951.

U.S. Department of Health, Education, and Welfare. National Center for Educational Statistics. Library Statistics of Colleges and Universities; Institutional Data, Part A, Fall 1971 Basic Information on Collections, Staff, and Expenditures. Washington: Government Printing Office, 1972.

APPENDIX A

Appendix A (pages 82 through 91) is a reprint of material that is available through the ERIC System as ED 104 368.

APPENDIX B

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ACRL Ad Hoc Committee to Revise the 1959 Standards for College Libraries

Working Paper

POSSIBLE MODEL BASED ON THE CARNEGIE COMMISSION GROUPINGS

by

David L. Perkins

Mr. Pirie's working paper, TYPOLOGY OF INSTITUTIONS OF HIGHER EDUCATION, describes several grouping schemes, of which the Carnegie Commission scheme seems to consider the largest number of factors in defining viable groupings of institutions. The Commission uses type of program, number of programs and size to differentiate the Liberal Arts groups from the Comprehensive Universities and College groups. Below the Commission's four types of concern to us are listed with the criteria that define them; the criteria bear repetition because of their complexity.

COMPREHENSIVE UNIVERSITIES AND COLLEGES I

a) Liberal arts program
b) Other programs
c) Masters degrees usually offered
d) Limited doctoral programs if any
e) two or more professional or occupational programs
f) more than 2,000 enrollment (1970)

COMPREHENSIVE UNIVERSITIES AND COLLEGES, II

a) Liberal arts program
b) one or more professional or occupational programs
c) If private had more than 1,500 enrolled (1970)
d) If public had more than 1,000 enrolled (1970)

U. S. Office of Education Library Statistics of Colleges and Universities; Data for Individual Institutions yields a mean volume count of 169,000 for the Liberal Arts I libraries and 66,000 for the Liberal Arts II group. However, no statistically significant difference in library size was found between the Comprehensive Universities and Colleges I and II groups. Since Comprehensive Universities and Colleges I and II have such a wide spread of student enrollment (from a low of 1,000 students to a high of over 33,000), it was possible to develop sub-groupings based on student enrollment within the Comprehensive Universities and Colleges I and II classes that do show statistically significant differences in library size; these categories are shown in Table I.

Table I shows a clear relationship between enrollment and library size in volumes for the sub-categories of Comprehensive Universities and Colleges I and II. As student enrollment increases within these classes so does library size in volumes. The differences between the sub-categories based on enrollment are statistically significant at the .001 confidence level. The standard deviations displayed for the ten groups in Table I show the dispersion of library sizes in volumes around the means of the various groups. The groups showing the largest standard deviations are the Liberal Arts I and the Comprehensive Universities and Colleges I groups with more than 20,001 enrollment. This result is not surprising considering the goal emphasis of the Liberal Arts I institutions and the large size range (20,001 to 33,632) for the 20,001 plus Comprehensive Universities and Colleges I class. Also clearly demonstrated is the difference in library resources between the Liberal Arts I and II classes. The goals of the Liberal Arts I colleges emphasize selectivity in accepting

applicants and good performance of their graduates in graduate schools and this is reflected by relatively strong library resources. A comparison of the Liberal Arts I list with the Cass and Birnbaum selectivity list shows 87% of the Liberal Arts I Colleges appeared on the Cass and Birnbaum list, independently confirming the selectivity of the Liberal Arts I colleges.

TABLE I

TENTATIVE GROUPINGS OF COMPREHENSIVE UNIVERSITIES AND COLLEGES I & II BASED ON ENROLLMENT; MEAN LIBRARY SIZE AND STANDARD DEVIATION IN VOLUMES FOR COMPREHENSIVE UNIVERSITIES AND COLLEGES AND FOR LIBERAL ARTS COLLEGES:

	ENROLLMENT	MEAN LIBRARY SIZE IN VOLUMES	STANDARD DEVIATION
Comprehensive Universities and Colleges	I 20,001+	472,000*	258,000
	I 15,001-20,000	334,000	73,000
	I 10,001-15,000	277,000	93,000
	I 5,501-10,000	220,000	89,000
	I 2,001-5,500	138,000	79,000
	II 10,001+	195,000	48,000
	II 5,501-10,000	132,000	52,000
	II 1,000- 5,500	104,000	58,000
Liberal Arts Colleges	I enrollment ranges from 101 to 8,772 mean=1,273	169,000	104,000**
	II enrollment ranges from 53 to 6,730 mean=872	66,000	35,000**

* The data shown here were derived from the 1971 edition of the U.S. Office of Education's Library Statistics of Colleges and Universities; Institutional Data.

** These standard deviations are based on data derived from the 1969 edition of the work cited above. They may be slightly low due to the increase in mean library size in volumes evidenced by the two groups from 1969 to 1971.

MICROFORM MATERIALS

The 1959 ALA Standards for College Libraries did not allow for inclusion of microform materials in assessing college library adequacy. The increased use and availability of these materials during the past decade forces us to consider an inclusion of microform materials in any count of library "volumes". A recent standards compilation, (New York State. The State Education Department. Report of the Advisory Committee on Planning for the Academic Libraries of New York State, 1973, "Guidelines for Assessing the Adequacy of Academic Libraries in New York State," pp. 17-31) counted microform as "volumes" in the following manner:

> "Volume" rather than "title" is recommended as the basic counting "unit of library resources", inasmuch as library statistical accounts are usually kept in terms of "volumes". One "unit of library resources" is:
>
> a. One volume: A physical unit of any printed, typewritten, handwritten, mimeographed, or processed work containing in one binding or portfolio, hardbound or paperbound, which has been cataloged, classified, and/or made ready for use.
>
> b. One reel of microfilm
>
> c. Eight microcards
>
> d. Eight sheets of microfiche
>
> e. Four sheets of microprint
>
> f. One-seventh sheet of ultrafiche

This approach allows the inclusion of microform material in a library's "volume" count. Its numerous categories are perhaps too specific for the purpose of drawing national standards, and are not consistent with the

U. S. Office of Education statistics, which counts reels of microform but lumps all other microtext materials together. (U.S. Office of Education Library Statistics of Colleges and Universities: Data for Individual Institutions, 1971). One way of counting microforms is outlined below:

> "Volume" rather than "title" is recommended as the basic counting "unit of library resources", inasmuch as library statistical accounts are usually kept in terms of "volumes". One "unit of library resources" is:
>
> a. One volume: A physical unit of any printed, typewritten, handwritten, mimeographed, or processed work containing in one binding or portfolio, hardbound or paperbound, which has been cataloged, classified, and/or made ready for use.
> b. One reel of microfilm
> c. All other microtext material.
> (five pieces equal one volume)

Counting microform in a manner consistent with the U.S. Office of Education statistics allows use of their figures to determine means for classes including microform materials. The division by five for microcards, microfiche, microprint, and ultrafiche is a compromise figure designed to approximate the volume values for a collection that holds some of each type of microform.

BIBLIOGRAPHY

Cass, James and Max Birnbaum
Comparative Guide to American Colleges for Students, Parents and Counselors. New York, Harper & Row, 1972.

Clapp, Verner W. and Robert T. Jordan
"Quantitative Critera for Adequacy of Academic Library Collections," College and Research Libraries 26:371-80 (Sept. 1965).

McInnis, R. Marvin
"The Formula Approach to Library Size: An Empirical Study of Its Efficacy in Evaluating Research Libraries"
College and Research Libraries 33:190-198 (May 1972).

New York State. The State Education Department.
Report of the Advisory Committee on Planning for the Academic Libraries of New York State, 1973, "Guidelines for Assessing the Adequacy of Academic Libraries in New York State, pp. 17-31.

Ostle, Bernard
Statistics in Research: Basic Concepts and Techniques for Research Workers. Ames, Iowa State University Press, 1963.

U. S. Office of Education
Library Statistics of Colleges and Universities: Data for Individual Institutions, 1971.

APPENDIX C

Box 551
Sturbridge, Massachusetts 01566
March 7, 1975

Dear Colleague:

I am interested in determining how the newly proposed ACRL Standards for College Libraries will rate your staff and your collections. I feel that the development of the rating formulas in the Standards may have been based on out-of-date or inadequate statistical information. I need your help in gathering a few facts about your library. If you have not had a chance to see the draft Standards, they are reported in the December, 1974, issue of CRL News.

To show my appreciation for your assistance in this project, I will analyze your data and provide you with a tabulation showing your library's rating according to the Standards and your library's rank when it is compared to a national sample of schools similar to yours. I hope that this will give you immediate useful budget planning information. From the figures which you help me collect I will attempt to accurately predict how the new Standards, if accepted, might affect our long range efforts in gaining or maintaining adequate and legitimate staff and collection development budgets.

I have no connection with the Standards Committee. This project will benefit my institution and will be submitted in partial fulfillment of the requirements for the Doctor of Arts degree of the School of Library Science, Simmons College.

I appreciate the giving of your time to complete the questionnaire. As the survey is based on a national random sample, only a high rate of return will permit me to make sound projections. If you have only estimated figures, the information will still be useful to me although I would like to know which of the figures are estimates.

I hope that you will be able to return this questionnaire in the addressed, postage paid envelope provided before April 2, 1975.

Sincerely,

Scott Bruntjen

Scott Bruntjen
Head, Reference Department
Shippensburg (PA) State College

Box 551
Sturbridge, MA 01566
April 7, 1975

Dear Librarian:

About a month ago I asked you to help me gather some basic descriptive information about your library so that I could project the potential impact of the newly proposed ACRL Standards for College Libraries. If our letters have crossed in the mail, I thank you for your cooperation. The report that I promised you will be mailed to you as soon as it has been prepared.

While I still need your input, I do realize that for many of us this time of year is filled with budget and staffing activities. If you do not have time to work with the entire questionnaire, I will appreciate your concentration on items J through V. The U.S. Office of Education has offered to supply statistical data for 1971 and 1973 so that I may attempt to approximate answers about your library for the first nine questions.

I have enclosed a duplicate copy of the questionnaire. I hope that you will be able to return it before April 25, 1975, in the postage paid, addressed envelope I provided earlier.

Sincerely,

Scott Bruntjen

Scott Bruntjen
Head, Reference Department
Shippensburg (PA) State College

Please place your responses on the appropriate blanks on this sheet. Consider ONLY TOTALS for your own institution. (Note: Non-print collections are not evaluated by the Standards.)

COLLECTIONS:

A. Number of BOUND volumes including BOUND periodicals in your collections: A_____

B. Number of microfilm REELS: B_____

C. Number of physical PIECES of microform other than microfilm: C_____

VOLUMES ADDED IN THE LAST YEAR (Please use your own reporting year):

D. Number of BOUND volumes including BOUND periodicals added last year: D_____

E. Number of microfilm REELS added: E_____

F. Number of physical PIECES of microform other than microfilm added: F_____

VOLUMES WITHDRAWEN LAST YEAR:

G. Number of BOUND volumes including BOUND periodicals withdrawen last year: G_____

H. Number of microfilm REELS withdrawen: H_____

I. Number of physical PIECES of microform other than microfilm withdrawen: I_____

USERS:

J. Total number of faculty members in full time equivalents (FTE): J_____

K. Total number of undergraduate students in FTE: K_____

L. Total number of graduate students in FTE: L_____

M. Total number of undergraduate major and minor fields offered: M_____

N. Total number of Master fields when no higher degree is offered in the field: N_____

O. Total number of Sixth year Specialists degree fields offered: O_____

P. Total number of Doctoral degree fields offered: P_____

STAFF:

Q. Number of librarians on the staff in FTE using the Standards' definition of "librarian" as one who possesses "a graduate library degree from an ALA accredited program:" Q_____

R. Number of "librarians" in FTE using your own local definition of "librarian" if different from that of the definition of the Standards. R_____

S. Number of FTE support staff (Do not include librarians or student assistants): S_____

T. Number of student assistants in FTE: T_____

SUPPORT:

U. Percent of the institution budget spent on library programs excluding capital and overhead costs: U_____

OTHER LIBRARIES:

V. If there are any libraries with which you have a formal cooperative arrangement and from which a user of your library may obtain materials in a short time (15 minutes or less) write the name(s) of it (them) here:

Please make any comments on any part of the Standards on the reverse and return this page to:

SCOTT BRUNTJEN
BOX 551
Sturbridge, Massachusetts 01566

Library Number:

APPENDIX D

Appendix D

DETERMINATION OF SAMPLE CONFIDENCE LEVELS

Comprehensive Universities and Colleges; Strata 1 and 3; Enrollment of 10,001 to 15,000.

population mean = 277,000
sample mean = 323,556
population standard deviation = 93,000
sample standard deviation = 72,613
sample size = 9

for mean T = 1.923

test statistic for .05 level of significance; two tailed test, 8 degrees of freedom = plus or minus 2.365.

Do not reject null hypothesis (ie: sample mean = population mean)

For variance X^2 = 4.88

test statistic for .05 level of significance; two tailed test, 8 degrees of freedom = reject H_o if larger than or equal to 17.53 or smaller than or equal to 2.18.

Do not reject null hypothesis (ie: variance of population = variance of sample).

Comprehensive Universities and Colleges; Strata 1 and 3; Enrollment of 5,501 to 10,000.

population mean = 220,000
sample mean = 226,142
population standard deviation = 89,000
sample standard deviation = 87,013
sample size = 21

for mean Z = .316

test statistic for .05 level of significance; two tailed test, sample size of 21 = plus or minus 1.96.

Do not reject null hypothesis (ie: sample mean = population mean)

For variance X^2 = 19.12

test statistic for .05 level of significance; two tailed test, 20 degrees of freedom = reject H_o if larger than or equal to 34.17 or smaller than or equal to 9.59.

Do not reject null hypothesis (ie: sample variance = population variance)

Comprehensive Universities and Colleges; Strata 1 and 3; Enrollment of 2,001 to 5,500.

population mean = 138,000
sample mean = 148,940
population standard deviation = 79,000
sample standard deviation = 64,658
sample size = 50

for mean Z = .979

test statistic for .05 level of significance; two tailed test, sample size of 50 = plus or minus 1.96.

Do not reject null hypothesis (ie: sample mean = population mean)

For variance X^2 = 32.82

test statistic for .05 level of significance; two tailed test, 49 degrees of freedom = reject H_o if larger than or equal to 71.42 or smaller than or equal to 32.36.

Do not reject null hypothesis (ie: sample variance = population variance)

Comprehensive Universities and Colleges; Strata 6 and 8; Enrollment of 1,000 to 5,500.

population mean = 104,000
sample mean = 94,161
population standard deviation = 58,000
sample standard deviation = 56,733
sample size = 31

for mean Z = -.945

test statistic for .05 level of significance; two tailed test, sample size of 31 = plus or minus 1.96.

Do not reject null hypothesis (ie: sample mean = population mean)

For variance X^2 = 28.70

test statistic for .05 level of significance; two tailed test, 30 degrees of freedom = reject H_o if larger than or equal to 46.98 or smaller than or equal to 16.79.

Do not reject null hypothesis (ie: sample variance = population variance)

Liberal Arts Colleges I; Strata 5 and 7.

population mean = 169,000
sample mean = 152,242

population standard deviation = 104,000
sample standard deviation = 93,004
sample size = 33

test statistic for .05 level of significance; two tailed test, sample size of 33 = plus or minus 1.96.

Do not reject null hypothesis (ie: sample mean = population mean)

For variance $X^2 = 25.60$

test statistic for .05 level of significance; two tailed test, 32 degrees of freedom = reject H_o if larger than or equal to 59.34 or smaller than or equal to 24.43.

Do not reject null hypothesis (ie: sample variance = population variance)

Liberal Arts Colleges II; Strata 6 and 8.

population mean = 66,000
sample mean = 67,010
population standard deviation = 35,000
sample standard deviation = 30,509
sample size = 101

test statistic for .05 level of significance; two tailed test, sample size of 101 = plus or minus 1.96.

Do not reject null hypothesis (ie: sample mean = population mean)

For variance $X^2 = 75.98$

test statistic for .05 level of significance; two tailed test, 100 degrees of freedom = reject H_o if larger than or equal to 129.56 or smaller than or equal to 74.22.

Do not reject null hypothesis (ie: sample variance = population variance)

APPENDIX E

Appendix E

COMPUTER PROGRAM USED TO SCORE QUESTIONNAIRES

This program, which was developed to score and grade the questionnaires, was written with the assistance of Dr. William Gould of the Shippensburg State College Computer Center. The program computes the numbers of staff members and volumes that a library should have according to the Standards' Formulas. Next, it compares these figures to the numbers actually reported. The comparisons are expressed as percentages of the required figures. The program stores these figures and develops a mean and standard deviation of the percentage score by stratum for each Formula. The program then compares the individual percentage figures with the percent requirements for each of the five letter grades and assigns the proper grade for each Formula for each library.

The program prints a summary table of the numbers of each letter grade by stratum with the accompanying percentage score's mean and standard deviation. After this summary table, each school is sorted by strata and identification number. Individual letter grades and percent figures for each Formula are then printed for each library.

In order to permit the analysis of sub-elements in each of the Formulas as described in Section Three of Chapter Five, the program was written so that simple modifications could be made to the computational portions of the program. A copy of the program is reproduced on the following pages.

```
      PROGRAM [illegible]
      REAL [illegible]
      INTEGER [illegible](8,2),M(8,2)
      INTEGER FORM(20)
      REAL SS(8,2),S(8,2),K(8,2)
      DATA LA,LB,LC,LD,LF/'A','B','C','D','F'/
      DO 6 I=1,8
      DO 7 J=1,2
      K(I,J)=0
      SS(I,J)=0
      S(I,J)=0
      DO 8 MM=1,8
    8 GR(I,MM,J)=0
    7 CONTINUE
    6 CONTINUE
      READ(5,1001)FORM
 1001 FORMAT(20A4)
   70 READ(5,FORM,END=60)ID,IR,IP,ILO,ILB,ILP,IF,IS,IO,IM,IHS,IY,
     2 ID,IL,ISO,ISTRAT,ILN,ICN
      IF(ICN.NE.2)GO TO 70
      IV=ID+IR+(.2*IP)+ISO
      IA=85000+(100*IF)+(15*(IS+IO))+(350*IM)+(6000*IHS)
     1  +(20000*ID)+(9000*IY)
      A=(FLOAT(IV)/FLOAT(IA))*100
      IV=IV-ISO
      IF(A.LT.50)GR(ISTRAT,5,1)=GR(ISTRAT,5,1)+1
      IF(A.GE.50.AND.A.LT.65)GR(ISTRAT,4,1)=GR(ISTRAT,4,1)+1
      IF(A.GE.65.AND.A.LT.80)GR(ISTRAT,3,1)=GR(ISTRAT,3,1)+1
      IF(A.GE.80.AND.A.LT.100)GR(ISTRAT,2,1)=GR(ISTRAT,2,1)+1
      IF(A.GE.100)GR(ISTRAT,1,1)=GR(ISTRAT,1,1)+1
      SS(ISTRAT,1)=SS(ISTRAT,1)+A*A
      S(ISTRAT,1)=S(ISTRAT,1)+A
      K(ISTRAT,1)=K(ISTRAT,1)+1
      IG1=LF
      IF(A.GE.50)IG1=LD
      IF(A.GE.65)IG1=LC
      IF(A.GE.80)IG1=LB
      IF(A.GE.100)IG1=LA
      IFTE=IS+IO
      IF(IFTE.GT.10000)GO TO 41
      NLR=IFTE/500
      IF(MOD(IFTE,500).NE.0)NLR=NLR+1
   42 NLR=NLR+IV/100000
      IF(MOD(IV,100000).NE.0)NLR=NLR+1
      IADD=ILB+ILR+.2*ILP
      NLR=NLR+IADD/5000
      IF(MOD(IADD,5000).NE.0)NLR=NLR+1
      GO TO43
   41 NLR=20+((IFTE-10000)/1000)
      IF(MOD((IFTE-10000),1000).NE.0)NLR=NLR+1
```

```
      GO TO 42
   43 B=(IL/FLOAT(NLR))*100
      IF(B.LT.40)GR(ISTRAT,5,2)=GR(ISTRAT,5,2)+1
      IF(B.GE.40.AND.B.LT.55)GR(ISTRAT,4,2)=GR(ISTRAT,4,2)+1
      IF(B.GE.55.AND.B.LT.75)GR(ISTRAT,3,2)=GR(ISTRAT,3,2)+1
      IF(B.GE.75.AND.B.LT.100)GR(ISTRAT,2,2)=GR(ISTRAT,2,2)+1
      IF(B.GE.100)GR(ISTRAT,1,2)=GR(ISTRAT,1,2)+1
      SS(ISTRAT,2)=SS(ISTRAT,2)+B*B
      S(ISTRAT,2)=S(ISTRAT,2)+B
      K(ISTRAT,2)=K(ISTRAT,2)+1
      IGR2=LE
      IF(B.GE.40)IGR2=LD
      IF(B.GE.55)IGR2=LC
      IF(B.GE.75)IGR2=LB
      IF(B.GE.100)IGR2=LA
      WRITE(7,200)ISTRAT,ILN,A,IG1,B,IGR2
  200 FORMAT(I1,1X,I3,6X,F8.2,4X,A1,6X,F8.2,4X,A1)
      GO TO 70
   60 DO 61 I=1,8
      DO 61 J=1,2
      SS(I,J)=SS(I,J)-((S(I,J)**2)/K(I,J))
      SS(I,J)=SQRT(SS(I,J)/(K(I,J)-1))
      XM(I,J)=S(I,J)/K(I,J)
   61 CONTINUE
      WRITE(6,500)
  500 FORMAT('1')
      DO 81 I=1,8
   81 WRITE(6,600)I,(GR(I,J,1),J=1,5),K(I,1),XM(I,1),SS(I,1)
      WRITE(6,700)
  700 FORMAT('0')
      DO 82 I=1,8
   82 WRITE(6,600)I,(GR(I,J,2),J=1,5),K(I,2),XM(I,2),SS(I,2)
  600 FORMAT(' ',I2,5(2X,I3),2X,I3,2X,F8.2,2X,F8.2)
      STOP
   75 WRITE(6,400)ISTRAT,ILN
      STOP 75
  400 FORMAT('0',I1,I3)
      END
```