DOCUMENT RESUME

ED 049 527 EA 003 390

TITLE	An Empirical Study of the Evaluation of Grant Applications Under the Higher Education Facilities Act of 1963. A Rating Technique for Decisionmaking.
INSTITUTION	New York State Education Dept. , Albany. Bureau of Research in Higher and Professional Education.
PUB DATE	70
NOTE	58p.
EDRS PRICE	EDRS Price MF-$0.65 HC-$3.29
DESCRIPTORS	*Educational Facilities, *Federal Aid, Federal Legislation, Financial Support, *Grants, *Higher Education, *Project Applications, School Funds, Statistical Studies

ABSTRACT

This statistical study examines the criteria used to evaluate applications for grants under Title I of the Higher Education Facilities Act of 1963, and investigates the appropriateness of using a panel of judges composed primarily of college administrators in application evaluation. (Author/LLR)

AN EMPIRICAL STUDY OF THE EVALUATION OF GRANT APPLICATIONS UNDER THE HIGHER EDUCATION FACILITIES ACT OF 1963

A Rating Technique for Decisionmaking

The University of the State of New York
THE STATE EDUCATION DEPARTMENT
Bureau of Research in Higher and Professional Education
Albany, New York 12224
Fall 1970

THE UNIVERSITY OF THE STATE OF NEW YORK

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FOREWORD

Many individuals have contributed to this publication, among them were Donald D. Brown, Associate in Higher Education and Sylvia L. Persico, Consultant to the Bureau of Research in Higher and Professional Education. The final responsibility for data collection and analysis and the preparation of this report was vested in Sang-Joo Lee, Consultant to the Office of Planning in Higher Education and Helen Bickel Wolfe, Acting Chief, Bureau of Research in Higher and Professional Education.

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I. INTRODUCTION

1. Background of the Study

To assist higher education, the Congress of the United States enacted the Higher Education Facilities Act of 1963. Title I of this Act made Federal funds available to public and private institutions to build urgently needed academic facilities and designated the Board of Regents of The University of the State of New York as the State Commission to administer the program in New York State.

The primary responsibility of the State Commission is to process applications from institutions and to determine relative priorities for proposed construction projects through standardized criteria and procedures. To do this, the State Commission adopted a State Plan for the facilities program[1] which stipulated the administrative rules for the Federal grants program at the State level. Using criteria and procedures prescribed in the State Plan, the Commission recommended grants totaling approximately $107 million to seventy-eight 4-year institutions during the past 5 years.

In the beginning of the program, a number of questions were raised concerning the application evaluation process. A first question pertained to the appropriateness of evaluative criteria. Although criteria set by the State Commission reflected the guidelines established in the Act,[2]

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[1] State Plan for the Higher Education Facilities Act of 1963, Albany: Office of Planning in Higher Education, State Education Department, 1966. See also the amended State Plan which was approved in July 1968.

[2] In the Higher Education Facilities Act of 1963, it is stated that grants were to be made, "To assist the Nation's institutions of higher education to construct needed classrooms, laboratories, and libraries in order to accommodate mounting student enrollments and to meet demands for skilled technicians."

only a limited number of specific institutional factors were included, and those factors were quantitative in nature. The question then, was what additional factors, either qualitative or quantitative, should be used to set priorities for project applications?

A second question concerned the evaluation procedure itself. The staff assigned to administer the Title I program cross-checked application data against other sources. Each institution received points for each criterion according to predetermined scales. The points accrued for all criteria and the priority of each proposed project was finally determined by numerical rank. This procedure insured a very high degree of objectivity in the evaluation of applications and enabled the State Commission to respond to any question or complaint about the results of its evaluation procedure. The accountability of the Commission's recommendations to the Office of Education in Washington was also enhanced.

However, to some administrators, the evaluation procedure seemed mechanical and statistically questionable. An institution of higher education is so complex and dynamic that quantitative evaluation may be insufficient. For example, identical totals from different scores on the various criteria may not accurately represent the same degree of space needs of institutions. Thus, the need for another way to evaluate was recognized. One suggestion was the use of a panel of impartial judges to rate institutions.

A third question related to the value of university personnel in the administration of the Grants Program. The State Commission had already appointed a special advisory committee on higher education academic facilities planning composed of higher education officials and lay leaders drawn from various fields in the State. This committee and a standing

advisory committee on higher education decided that the Commission could directly utilize the knowledge and experience of leaders in institutions of higher education for the evaluation of grants applications.

Lastly, a suggestion was made that the final decision on the distribution of facilities grants funds be based not only on the space needs of institucions, but also on their educational contribution to New York State. Whether this latter criterion is appropriate is largely judgmental; however, the educational contribution of institutions, and its relationship to space needs can be empirically studied.

Recognizing the importance of the foregoing questions, the Bureau of Higher Education Facilities Planning in the Office of Planning in Higher Education, which administers the Grants Program, requested an empirical study of the problem by the Bureau of Research in Higher and Professional Education.

2. Purpose and Significance of the Study

The primary purpose of this study is to examine the question of criteria used for evaluating applications for Grants made under Title I of the Higher Education Facilities Act of 1963 and to investigate the appropriateness of using a panel of judges, composed primarily of college administrators, in application evaluation. The judges' criteria evolved through the analysis of factors considered in rating institutions. The usefulness of the judges' ratings is determined by examining the validity, reliability, and objectivity of these ratings.

This study does not deal directly with the evaluative procedures presently used by the State Commission, but it does compare the Commission's criteria with those developed by a panel of judges. However, the focus of this study is on the analysis of the rating behavior of judges.

Although this study developed from the New York State Commission's responsibility in the distribution of Higher Education Facilities grants, the practical significance of the study may be extended beyond that responsibility. In recent years, both the Federal and State Governments have provided increasingly greater sums of money to colleges and universities in the United States, and predictions are that this role of government in funding higher education will continue, as shown in table 1.

Currently, an important issue in higher education is the concept of the administration of governmental aid programs. Specific questions are: (1) Should Federal aid be granted to states, institutions, or individuals in the institutions? (2) How should personnel administering government aid programs be organized at the different governmental levels?[3] (3) How should decisions on the distribution of the grants be made? (4) How can the impact of governmental aid on the educational community be assessed?[4] These are only a few of the questions being asked about governmental aid. As the demand for governmental aid increases and consequent implications for higher education become more profound, empirical knowledge in this area is needed. This study may provide such knowledge, particularly in regard to the third question, i.e., how should decisions on the distribution of grants be made?

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[3] This and the preceding question are critically discussed in Douglas M. Knight, et al. The Federal Government and Higher Education, Englewood Cliffs, N. J.: Prentice-Hall, 1960, pp. 165-175; Alice M. Rivlin. The Role of the Federal Government in Financing Higher Education, Washington, D.C.: The Brookings Institute, 1961, pp. 156-175.

[4] Clark Kerr. The Uses of the University, Cambridge: Harvard University Press, 1963, pp. 46-84.

Table 1

Sources of Funds for Higher Education*

/Amounts in Billions of Dollars/

Sources of Funds	1959-60		1968-69		1980-81 (Projected)	
	Amount	Percent	Amount	Percent	Amount	Percent
Student Tuition and Fees	1.2	17	3.6	18	7.0	18
Federal Government	1.0	14	4.8	24	10.9	28
State and Local Government	1.5	21	5.2	25	8.6	22
Gifts and Endowment Earnings	0.6	8	2.1	10	3.4	9
Income of Auxiliary Enterprises	1.1	16	2.4	12	3.5	9
Other	1.7	24	2.3	11	5.6	14
Total	7.1	100	20.4	100	39.0	100

*Adopted and adjusted from the following two sources: Robert A. Freeman. Crisis in College Finance, Washington, D.C.: The Institute for Social Science Research, 1965, p. 186; and Howard R. Bowen's estimations reported in The Chronicle of Higher Education, November 17, 1969, p. 4.

In a theoretical framework, it is possible to study the decision-making process using analytical techniques for assessing institutional evaluation criteria, with no anchor to reality. Unfortunately, empirical studies of the decisionmeking process in existing institutions of higher education are very rare. The present study is an attempt to fill this void.

II. THE PROBLEM

The purpose of this study is to examine the usefulness of a panel of judges in ranking the applications for facilities grants submitted by institutions of higher education. The three major aspects of the judges' ratings to be analyzed are the validity, reliability, and objectivity of the evaluation method. The examination of the judges' criteria for the evaluation of grant applications is dealt with in the section on validity analysis.

1. Validity

In psychometrics, the validity of a measurement tool or technique is the degree to which it measures what it is supposed to measure. This concept involves the identification of factors that account for any variation in measured values. With respect to such identification, the problem to be investigated is: What characteristics of institutions of higher education, as set forth in the study, influence the responses of impartial judges? The judges were asked to rate the space needs and the educational contribution of individual institutions. The specific questions relating to validity are:

A. What institutional factors are related to the judges' ratings of the space needs and the educational contribution of institutions of higher education?

B. What is the relationship between the scores achieved using judges' ratings and scores obtained through the rating procedures used by the State Commission?

C. What differences may be observed in the responses of judges as they rate institutional space needs and educational contributions?

D. To what extent are the judges' ratings actually related to identified institutional factors which they consider important?

2. Reliability

Reliability means the degree of consistency of the rating of the same object or institution made by individuals, or the degree of consistency of the ratings made by the same judges over a period of time. In this study, the first definition is used, i.e., the consistency of ratings made by a number of judges, which may also be called "interjudge consistency." As an additional measure, the variability of scores given to individual institutions is used as an indirect indicator of reliability. Specific questions relating to reliability are:

A. What is the variance of scores given by judges to individual institutions?

B. What is the internal consistency[5] of the judges' ratings?

3. Objectivity

The last aspect of the problem is the identification of any personal bias involved in ratings. Three factors which may hypothetically reduce the objectivity of ratings are indicated by these questions:

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[5] Determined by the Kruskal-Wallis one-way analysis of variance among subgroups of judges.

A. How does a judge's affiliation with a particular institution affect his rating of that institution?

B. How does the type of control of the institution with which a judge is affiliated affect his rating of an institution under the same type of control?

C. How does the geographical area of the institution with which a judge is affiliated affect his rating of an institution in the same area?

The fundamental emphasis of this study is investigative, not determinative. Therefore, the study does not intend to formulate hypotheses corresponding to specific questions prior to implementation of the empirical study.

Another facet of this study is methodological. Emphasis is placed on an analysis of the feasibility of a particular evaluation technique, i.e., rating by judges, in setting priorities under which institutions would receive Federal grants. Therefore, more attention is paid to the perceptions of judges than to standard determinants of the space needs or the educational contribution of institutions.

III. METHODS AND PROCEDURES

As an alternate method to the assessment of an institution's space needs based on quantitative criteria as established in the State Plan for the administration of the Higher Education Facilities Act of 1963, a panel of 34 judges was asked to rate 60 institutions based on their evaluative judgments of (1) actual space needs, and (2) the educational contributions of the institutions. Data sheets containing various institutional characteristics were provided to assist the judges in their ratings. Sort

ordering of the institutions from 1 to 60 was recorded. The judges' ratings were then statistically analyzed.

1. Selection of Judges

Thirty-seven administrators of colleges and universities with wide experience in higher education in New York State were initially selected from both public and private 2- and 4-year institutions. In accordance with the study plan, 30 persons of the initial 37 were selected to form the panel of judges; among them nine were presidents, 10 were vice presidents, five were deans of students, and six were institutional researchers. To this group were added four persons from the New York State Education Department, i.e., individuals included for comparison purposes. The selection of the 34 judges was in a measure arbitrary, restricted by the small number of judges needed and by the need to ascertain beforehand a willingness to serve. The judges chosen, therefore, were not necessarily representative of college and university administrators in New York State.

2. Characteristics of Institutions

The 60 institutions in this study were 4-year colleges and universities which applied for Federal facilities grants in the period from 1964 to 1967.[6] Among them, 46 are private and 14 are public institutions. They included, in almost equal numbers, metropolitan, urban, and rural institutions. Eleven have less than 1,000 full-time equivalent

[6]Only 4-year institutions are included in this study, although Title I of the Higher Education Facilities Act of 1963 covers public community colleges and public technical institutions as well as 4-year institutions.

(FTE)[7] students, 21 have between 1,000 and 1,999 FTE students, 21 have 2,000 to 9,999 FTE students, and seven have 10,000 or more FTE students.

The 60 institutions were not randomly selected from all the institutions in New York State, but were self-selected in the sense that they applied for the Federal facilities grant funds. However, the institutions represented an adequate range of student enrollment, institutional control, and geographical areas.

3. Institutional Data Sheet

Each judge was provided with 60 data sheets corresponding to the 60 institutions of higher education included in the study. Each sheet contained information related to the eight factors used by the State Commission for application evaluation, and data on 23 additional factors (table 2, and Appendix I). In the study, separate items of data are treated as independent variables; however, it cannot be assumed that they are the only factors which determined the ratings of the judges.

[7]FTE is defined as all full-time students and one-third of part-time students.

Table 2

Institutional Factors Indicated on Data Sheet

I. STATE COMMISSION FACTORS

1. Enrollment increase (percentage)
2. Enrollment increase (numerical)
3. Increase in instructional and library space (percentage)
4. Increase in instructional and library space (numerical)
5. Utilization of facilities
6. Date of most recent grant
7. Amount of previous grant
8. Evidence of a long-range plan

II. ADDITIONAL FACTORS

9. Control of institution
10. Type of community
11. Academic calendar
12. Endowment
13. Number of full-time students
14. Number of part-time students
15. Number of residential students
16. Number of nonresidential students
17. Number of in-State students
18. Number of out-of-State students
19. Number of faculty members
20. Faculty/student ratio
21. Number of faculty with doctorate
22. Average faculty salary
23. Provision for an honors program
24. Number of undergraduate degrees granted
25. Number of masters degrees granted
26. Number of doctorates granted
27. Number of volumes in the library
28. Number of volumes acquired yearly
29. Ratio of volumes/student
30. Type of institution
31. Scope of curriculum offerings

4. Procedures for Rating

The judges were asked to rate each institution twice on the basis of the information provided on the data sheets: (1) the extent to which the institution was fulfilling the congressional mandate, and (2) the extent to which the institution was contributing to the quality of higher education in New York State (Appendix II).

An instruction sheet, 60 data sheets, and an evaluation recording sheet were mailed to each judge. The instruction sheet set the rating procedures as follows:

Evaluation 1:

(1) Sort the 60 institutions into seven groups according to your judgment of the institution's space needs based on data supplied.

(2) After the sorting is completed, indicate the code number of each institution on the Recording Sheet for Evaluation from 1 (greatest need) to 60 (least need).

Evaluation 2:

(1) Sort the 60 institutions into seven groups according to your evaluation of the institution's contribution to higher education in the State.

(2) Record each institution's code number on the Recording Sheet as in (2) above.

For the sake of statistical analysis, the ordinal measure of institutional rankings was transformed into an interval measure based on the concept of normal distribution. As Appendix III shows, the Recording Sheet for Evaluation was designed to indicate the converted score of a

group of rankings--1 point for 1st-2nd, 2 for 3rd-9th, 3 for 10th-22nd, 4 for 23rd-38th, 5 for 39th-51st, 6 for 52nd-58th, 7 for 59th-60th. This transformation was made to insure a more valid arithmetical calculation in data analysis. In this scale, a low score indicated a high degree of space need or educational contribution, and a high score indicated a low degree of need. However, in presenting the data, a higher score earned indicates a higher degree of space needs or educational contribution.

5. Methods of Statistical Analyses

Methods of statistical analyses used were single and multiple regression analysis and chi square techniques, whichever was most appropriate to the specific problem. Another technique used was the Kruskal-Wallis one-way analysis of variance.

IV. PRESENTATION AND ANALYSIS OF DATA

1. Validity of Ratings

In this section, the validity of the ratings by 34 judges was examined by an analysis of the data collected. The major focus of this section was: (1) to identify the institutional characteristics which related to the judges' ratings, and (2) to examine the appropriate criteria for the evaluation of facilities grants.

A. Factors Relating to Judges' Ratings

Each judge was asked to rate on a seven point scale: (1) the space needs of each institution, and (2) the quality of the educational contribution made by that institution. The judges were given data sheets listing items of institutional data, and were asked to rate on that basis, and also on their own knowledge and judgment of the institution. Therefore, it cannot be assumed that the judges' ratings were determined exclusively

by those factors presented in the data sheets. The judges' preconceptions of institutions, additional information which did not appear on the data sheets, personal bias, and other error factors may have been involved in the rating processes. In the analysis of this section, however, these are considered residual factors. The analysis is limited to the identification of relationships between judges' ratings and the institutional factors which are indicated in the data sheets.

The main purpose of the analysis was to investigate the institutional characteristics related to the judges' ratings, and for this, chi square technique was most appropriate. Correlation coefficient techniques can be used to determine the relationship between variables, but because of technical limitations, this method of analysis was not used.

(1) Space Needs

As table 3 indicates, the judges' perceptions of space needs were significantly related to a number of institutional factors. The greater the increase in enrollment, both in percentage and number that the institution projected into the future and the greater the amount of new facilities it proposed to construct, the higher the degree of need for space the judges tended to perceive for that institution. The institution which heavily utilized existing facilities, such as classrooms, libraries, and other instructional space, was more likely to be rated high in space needs. These findings were consistent with the assumptions underlying the criteria used by the State Commission. However, in the judges' ratings, there was a tendency to emphasize the existing size of the institution rather than the plans for institutional expansion.

Table 3

Significance of Contingency Relationships Between Institutional Properties and Judges' Ratings (by Chi Square Test)

Institutional Factors	Space Needs		Educational Contribution	
	X^2	Direction of Relationship[a]	X^2	Direction of Relationship[a]
1. Enrollment Increase:				
a. Percentage increase	5.10*	(+)	3.95*	(-)
b. Number of students added	23.99**	(+)	3.94*	(+)
2. Proposed Increase in Facilities				
a. Percentage increase	.26		3.60	
b. Number of sq. ft. to be added	4.27*	(+)	2.40	
c. Type of proposed facilities	.62		1.60	
3. Utilization of Facilities				
a. Classroom	6.86**	(+)	.00	
b. Laboratory	3.17		7.91**	(-)
c. Library	8.30**	(+)	.61	
d. Other instructional space	11.61**	(+)	1.14	
4. Enrollment (Number of Students)				
a. Full-time students	6.70**	(+)	6.70**	(+)
b. Part-time students	7.48**	(+)	3.82*	(+)
c. Residential students	.16		2.97	
d. Nonresidential students	3.94*	(+)	7.18**	(+)
e. In-State students	9.06**	(+)	7.18**	(+)
f. Out-of-State students	.00		4.60*	(+)
5. Faculty				
a. Number of faculty members	8.08**	(+)	8.97**	(+)
b. Faculty/student ratio	2.50		3.27	
c. Faculty with doctorate				
(1) in percentage	.06		8.39**	(+)
(2) in number	3.43		22.37**	(+)
d. Average faculty salary	.37		24.92**	(+)
6. Number of Degrees Granted				
a. Undergraduate	4.27*	(+)	9.00**	(+)
b. Masters	7.06**	(+)	8.86**	(+)
c. Doctorate	1.00		13.47**	(+)
d. Total	6.70**	(+)	6.70**	(+)
7. Library				
a. Number of volumes	.07		24.09**	(+)
b. Number of volumes acquired yearly	4.98*	(+)	18.69**	(+)
c. Ratio of volumes/student	2.86		.01	

(cont.)

Institutional Factors	Space Needs		Educational Contribution	
	X^2	Direction of Relationship[a]	X^2	Direction of Relationship[a]
8. Scope of Curriculum Offerings				
a. Number of academic disciplines	13.13**	(+)	6.70**	(+)
b. Number of academic areas	5.55*	(+)	15.43**	(+)
9. Grants Received Previously				
a. Date	--		--	
b. Amount	--		--	
10. General Characteristics				
a. Type of control	.37		3.35	
b. Type of community	.07		3.08	
c. Type of institution	10.25**	(with (+) grad. program)	7.02**	(with (+) grad. program)
d. Amount of endowment	.01		9.45**	(+)
e. Academic calendar	--		--	
f. Long-range plan	9.45**	(with (+) partial plan)	.14	

*P 05 (level of significance)

**P 01 (level of significance)

[a](+) signifies that the institutional factor indicated in the far left column is positively correlated with the judges' ratings; (-) indicates a negative correlation.

This emphasis on size was also observed in the fact that larger institutions, with more students and faculty members, produced more graduates, acquired more library books, and offered a wider range of educational programs at both the undergraduate and graduate levels and obtained higher scores for space needs. Figures 1, 2, and 3 reveal that institutional size was the most significant variable in the ratings. The numerical data on enrollment increase, proposed facilities, and faculty are more highly related to the scores for space needs perceived by judges than the same data expressed in percentages or ratios. The figures, to a large extent depend on the size of the institutions, while the size factor is reduced in the percentage or ratio data.

The size factor was highly related to space utilization. The larger institutions more heavily utilized their existing facilities than the smaller ones. (See table 4-A.) It is noteworthy that institutions with a high score in space needs were more likely to have a partially prepared long-range plan than a complete plan. This is the reverse of the evaluation of the State Commission, which gives a higher score to the institution with a complete plan. This result may again be attributed to the size factor, since larger institutions were more likely to have partial plans. (See table 4-B.) Nevertheless, the size factor should not be overemphasized to the extent that other factors which are related to the space needs are ignored.[8]

[8]Although factor analysis may be applicable for identifying the clusters of factors which are related to space needs, the nature of the data did not permit use of such a technique.

Figure 1: Relationship between Enrollment Increase and Space Needs

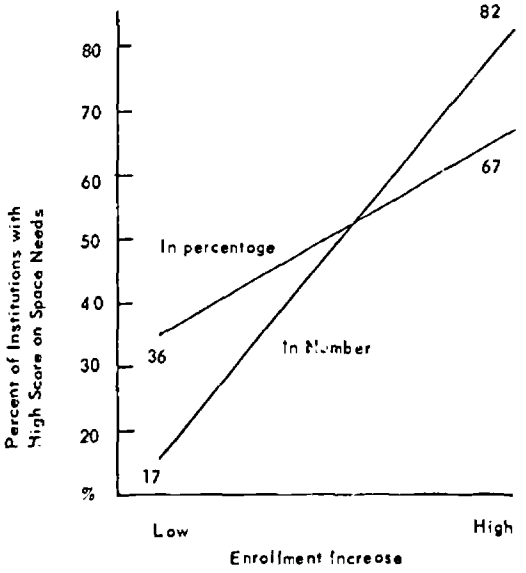

Figure 2: Relationship between Facilities Increase and Space Needs

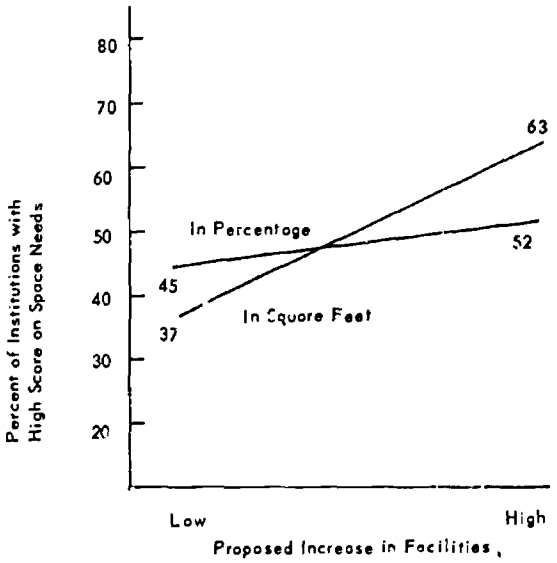

Figure 3: Relationship between Size of Faculty and Space Needs

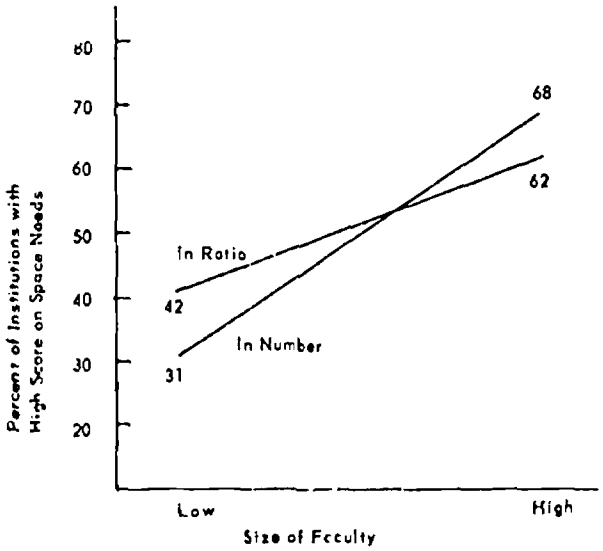

Table 4-A

Relationship Between Number of Full-Time Students and Utilization of Classroom Facilities

		Full-Time Students	
		less than 2,000	more than 2,000
Utilization of Classroom	High	12	20
	Low	19	9

Table 4-B

Relationship Between Number of Full-Time Students and Completeness of Long-Range Plan

		Full-Time Students	
		less than 2,000	more than 2,000
Long-Range Plan	Complete	14	7
	Partial	17	22

(2) Educational Contribution

An examination of table 3 shows that enrollment increase is highly related to the judges' perceptions of an institution's educational contribution. Table 3 shows that the increase in the number of students is positively related to the rating, but the percentage of student increase is negatively related to it. This finding implies that the size factor is operative in the evaluation of the educational contribution. Since

"prestige" institutions are large, the total number of students increased may be great but the percentage increase may be relatively small.

Institutions which, according to the judges' perceptions, made the greatest contributions to education in New York State were likely to have large numbers of students and faculty, many graduates, more library books, and a wider scope of educational programs. They were also institutions with graduate programs and large endowments. In the opinion of these judges, the "best" institutions of higher education were large modern "multiversities."[9] This seems to reaffirm a relationship between institutional size and reputation which is shown in Cartter's study[10] which presents two important concepts regarding that relationship, i.e., the concept of "optimal size" and the concept of the "interrelatedness" of closely allied academic departments. He suggested that an enrollment of around 20,000 students was optimum in achieving a good academic reputation and an economical operation. The "interrelatedness" refers to the idea that a strong academic department very often requires the support of other closely related departments.

Institutions which have large amounts of well-utilized laboratory facilities rate high on their contribution to education, but the utilization of other types of facilities is not important in the judges' ratings. Another factor which evidently influenced judges' ratings of

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[9]Clark Kerr. The Uses of the University, Cambridge, Massachusetts: Harvard University Press, 1963.

[10]Allan M. Cartter. An Assessment of Quality in Graduate Education, Washington, D.C.: American Council on Education, 1966, pp. 106-117. There are many differences between Cartter's study and the present study. One of the important differences is that his study is concerned with the evaluation of selected academic departments at graduate level, while the present study deals with institution-wide evaluation. However, the findings of both studies seem to be comparable in a limited sense.

institutional contributions is the number and the percentage of faculty holding doctoral degrees. That is, the greater the number and the proportion of doctorates, the higher the institutions were rated. Finally, a positive relationship existed between average faculty salary and the judges' ratings of an institution's educational contribution.[11]

A word of caution is advised when interpreting these findings; particular institutional factors or characteristics may not be directly related to the actual space needs or the educational contributions of institutions, but rather to the judges' perception of these needs and contributions. Thus, it should not be assumed that the space needs or the educational contributions perceived by the judges were identical with the actual need or contribution.

In summary, institutional size was an important factor in the judges' ratings for both space needs and educational contributions of institutions. Also, in the rating of space needs, the rate of enrollment increase and the degree of space utilization are important, although to a lesser degree than institutional size. When the educational contribution of institutions was rated, the utilization of laboratory facilities, the proportion of faculty with doctorates, and the average faculty salary were important factors.

Whether or not to include the factor of an institution's contribution to education as a criterion for evaluating applications for Federal grants is not a problem for scientific investigation. Were that criterion to be included, however, the evaluation would be more favorable to larger institutions. In this country, there has been a general trend to award

[11] Cartter's study shows that the correlation coefficient between faculty compensation and the quality of graduate programs is 0.873, or a high positive correlation. See Allan M. Cartter, op. cit., p. 112.

Federal grants to the largest and most prestigious institutions;[12] larger institutions, because of their ability to initiate and maintain research projects and services, are more attractive as recipients of Federal funds. If it is hoped that the use of a panel of judges would make possible a more equitable distribution of Federal grant funds for construction of academic facilities among institutions of various sizes and types, the importance of institutional size and factors affected thereby should be reduced in the evaluation. The rating of institutional space needs by the panel of judges is more influenced by the size factor than is the scoring of the State Commission.

The State Commission considers certain criteria to be higher related to space needs while the judges do not. These are: (1) the percentage increase in total campus space to be provided by the proposed facility, (2) the extent of utilization of laboratory facilities, and (3) any Federal facilities grant funds received prior to the present application. But the existence of a completed long-range campus master plan is negatively related to the judges' ratings, while it is positively related to the ratings of the State Commission.

B. Comparison Between Judges' Ratings and State Commission's Evaluation

One of the indirect ways to test the validity of a measurement technique is to compare it with others which are supposed to measure the same criteria. The questions to be considered here are: (1) what relationship

[12] Adopted from Robert A. Freeman, Crisis in College, Washington, D.C.: The Institute for Social Science Research, 1965, p. 145. In 1960, 94 percent of Federal grants went to 100 institutions out of more than 2,000 in the United States.

exists between the judges' ratings of institutions seeking Federal facilities grant funds and the evaluations of the State Commission, and (2) how do institutional rank orders obtained by both evaluative methods compare? High correlations between the two sets of scores and rankings may indicate that both methods measure similar aspects of institutions.

On analyzing the data, it was found that a statistically significant ($p < .001$) correlation existed between the judges' ratings of space needs and the evaluations of the State Commission (table 5).

Table 5

Relationship Between Judges' Ratings and Commission's Evaluations

Analysis Used	Relationship	
	Space Needs	Educational Contribution
(1)	(2)	(3)
Correlation Coefficient	.585	.042
Coefficient of Determination (r^2)	.343	.002
F - Ratio	30.23	.10
P	.001	Not Significant

The expected variance of both evaluations was 34 percent. This indicates that 34.3 percent of the variance of the judges' ratings was determined by the same factors which determined the State Commission's evaluations, but conversely, about two-thirds of the total variance of both evaluations was determined by the different factors. (See table 5.)

In contrast to the above finding, there seems to be no significant relationship between the State Commission's ratings and the judges' ratings of the educational contributions made by institutions

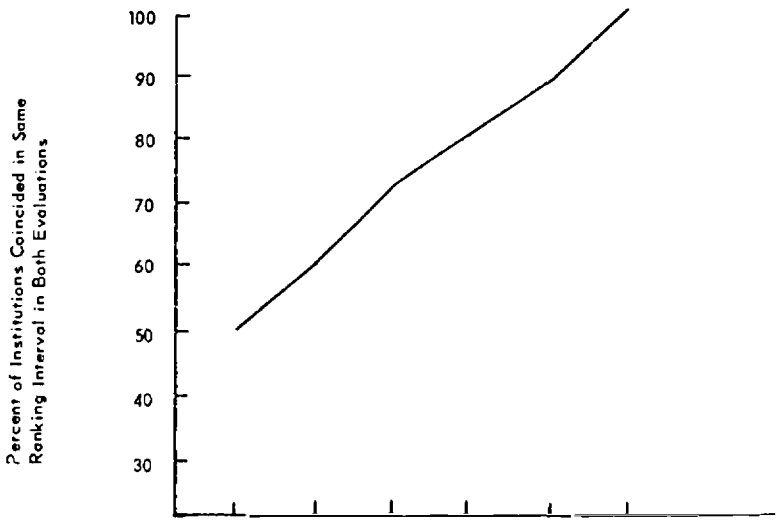
applying for facilities grants. This seems to confirm that educational contributions made by the applying institutions were not taken into account in the State Commission's evaluation of space needs.

However, at this point, it is important to compare the institutional rankings obtained by the two different evaluative procedures because Federal grants are often made on the basis of rankings rather than numerical scores. This is done by determining the degree of correlation between the two sets of institutional rankings developed by the State Commission and the judges. All 60 institutions were arranged in the order of the total scores earned in each of the two evaluations, and then two rankings were assigned to each institution.

As figure 4 indicates, five institutions fell within the upper 10th ranking of the total number of institutions on both evaluation methods; 12 institutions fell within the upper 20th ranking; 22 institutions fell within the upper 30th ranking, and so forth to the 60th ranking, with all institutions included. At this point, there is no standard with which to judge this correlation rate. However, there is a probability that the judges' ratings and the Commission's scoring agree with each other in the half of the institutions receiving Federal grants, if only 10 institutions are selected as grantees out of 60 institutions.

An important question remains: What is the major factor causing such a discrepancy between the two evaluation methods? Although a complete analysis of the problem is impossible at this point, an examination of the characteristics of institutions with wide differences between their rankings may shed some light on the question.

Figure 4: Coincidence Rate of Institutional Rankings Earned by Judges' Rating and Commission's Scoring



Number of Inst.	5	12	22	32	44	60
Percent of Inst.	50	60	73	80	88	100

The disparity in the rating of institutions listed in table 6 indicates that the State Commission's and the panel of judges' evaluative methods use different institutional factors in assessing space needs. The institutions which were highly rated by the judges and had low scores in the Commission's evaluation were, in general, relatively large in size, well-known, and located in urban centers. Conversely, the institutions with high scores in the Commission's evaluation, but ranked low by the judges, have opposite characteristics: they are smaller in size, less well-known, and located in rural areas.[13] This seems to reaffirm the finding

[13]There are some exceptions to the statement. For example, Barnard is a small college located in a metropolitan area.

Table 6

List of Institutions With Widely Different Rankings in Judges' Ratings and Commission's Scoring*

High in Judges' Ratings - Low in Commission's Scoring	High in Commission's Scoring - Low in Judges' Ratings
(1)	(2)
1. SUNY - Stony Brook	1. Briarcliff College
2. Adelphi University	2. Hamilton College
3. New York University	3. St. Lawrence University
4. Syracuse University	4. Houghton College
5. Yeshiva University	5. Barnard College

*Rating on the space needs of institutions

in the preceding section, i.e., institutional size is an important factor in the judges' ratings. Although the geographical area in which institutions were located seemed to be related to the judges' ratings, that relationship is not definitely confirmed. No evidence of such a relationship was found in the preceding section. (See table 3, item 10-b.) The large institutions were concentrated in metropolitan centers, while medium and small sized institutions were scattered throughout the State.

C. Relationship Between Judges' Ratings of Space Needs and Educational Contribution

A third problem for investigation in this study is the relationship between the judges' ratings of an institution's space needs and its contribution to higher education in the State. The data analysis showed that the judges' ratings of these two institutional aspects were positively correlated with each other; although the correlation coefficient is moderate ($r = .340$), it is statistically significant. (See table 7.) The correlation found may be interpreted in three ways: first, one of

the two variables may actually affect the other variable, i.e., the educational contribution of an institution causes the increase in the space needs or the reverse; second, a third common factor, e.g., the size factor may simultaneously affect both variables; third, a "halo effect" may be involved in the ratings in such a way that the judges' perceptions of one variable may influence their perceptions of the other.

Table 7

Relationship Between Judges' Ratings of Institutions' Space Needs and Educational Contribution, by Subgroups of Judges

Types of Judges	Number of Judges	Correlation Coefficient	P
Presidents	9	.565	
Vice Presidents	10	.407	
Deans of Students	5	.313	
Institutional Researchers	6	.020	
State Education Department Officials	4	.260	
TOTAL	34	.340	

It is difficult to determine which interpretation is appropriate [illegible], in preceding sections some evidence was found to support the second thesis regarding the effect of a common factor; institutional size has been identified as a common factor in the judges' rating of both space and educational contributions.

The results of the analysis reported in table 7 offer some evidence for the third hypothesis, i.e., the "halo effect." Different subgroups of judges showed differential degrees of relationship between their ratings of the two variables. Presidents and vice presidents showed a higher relationship; deans of students and the State Education Department officials show a lower, but still significant relationship. On the other hand, no significant relationship is found between the two variables in responses by institutional researchers. Relationships between space needs and educational contributions of institutions may exist. However, different subgroups of judges tended to perceive these relationships differently. It appeared that the more strongly the judges were committed to particular institutions, the more likely their ratings were influenced by the "halo effect."

D. Relationship Between Judges' Ratings and Institutional Factors Considered Important

In making their ratings, the judges were asked to specify what they felt were the three most and the three least important factors from among those indicated on the institutional data sheets. Factors shown in table 8 are listed in the order of frequency indicated by the judges.

In general, the institutional factors considered most important by the judges were positively correlated with their ratings of institutions, with the exception of two factors, i.e., faculty/student ratio and the library volumes/student ratio. There was no significant relationship between these factors and the way in which an institution's educational contribution was rated, although the judges indicated that these factors were important in the rating process. On the other hand, factors indicated by the judges as least important were actually related to the judges' ratings (tables 3 and 8). For example,

Table 8

List of Institutional Factors Which Judges Consider Most and Least Important for Their Ratings

	For Rating of Space Needs	For Rating of Educational Contribution
Most Important	1. Utilization of existing facilities	1. Number of faculty with doctorate
	2. Enrollment increase in percentage	2. Number of volumes acquired per annum
	3. Proposed facilities increase in percentage	3. Faculty/student ratio
	4. Scope of curriculum offered	4. Ratio of library volumes/student
Least Important	1. Faculty factors	1. Utilization of facilities
	2. Number of resident and nonresident students	2. Type of facilities for which grant application was made
	3. Number of degrees granted	3. Number of degrees granted
	4. Offering an honors program	4. Type of community

number of faculty members, nonresidential students, and degrees granted were significantly related to the rating of space needs. The utilization of laboratory space and the number of degrees granted were related to the judges' ratings given for educational contributions. It appears that these relationships could be attributed to the factor of institutional size.

How valid, then, are the judges' choices of the most and the least important factors in their ratings? To what extent are their ratings actually determined by these factors, if at all? To investigate these problems, a multiple regression analysis was applied.[14]

[14]Extremely deviant cases were excluded from the analysis because they appeared to damage the normality of distribution. Thus, 50 cases were used in the analysis.

First, six institutional factors were chosen from an analysis of their relationship to the judges' ratings of space needs. These factors are listed in table 9. The multiple relationship between space needs and these six institutional factors produced a statistically significant correlation (r = .803). Among the six factors, the proposed percent increase in facilities and the utilization of laboratory facilities exerted no substantial influence on the judges' ratings of space needs. Even when these two factors were excluded from the analysis, the relationship of space needs to the remaining four factors was found to be significant.

Table 9

Multiple Correlation Coefficients Between Judges' Ratings of Space Needs and Institutional Factors Considered Important[1]

x_1	x_2	x_3	x_4	x_5	x_6	r	P**
*	*	*	*	*	*	.803	.001
*		*	*	*	*	.802	.001
		*	*	*	*	.711	.001
*		*		*	*	.802	.001
		*		*	*	.710	.001
				*	*	.695	.001

[1] x_1 - The rate of enrollment increase
x_2 - Rate of proposed facilities increase
x_3 - Classroom utilization
x_4 - Laboratory utilization
x_5 - Library utilization
x_6 - Other instructional space utilization

*Indicates the inclusion of the variable in calculating the multiple correlation coefficient.

**The significance level of each correlation coefficient determined by F test.

The factors relating to facilities utilization were the most important for determining perceptions of space needs of institutions.[15] (With all four factors relating to facilities utilization, r = .711; excluding the utilization of laboratories, r = .710.) The degree of utilization of library and other instructional space is related to perceptions of space needs (r = .695). These two factors alone determined about half of the variance of the judges' ratings of space needs (table 9).

Secondly, the rating of the educational contributions of institutions was highly correlated with institutional factors which the judges considered important (r = .[illegible]5). The first factors related to the faculty of the institutions, i.e., faculty/student ratio; the percent and the number of faculty holding doctoral degrees. The relationship between these factors and the rating of educational contributions was .724. However, the other factors relating to volumes in the library were also highly correlated with the rating of educational contribution (table 10).

[15] As stated earlier, the factor of facilities utilization is, in turn, related to the factor of institutional size.

Table 10

Multiple Correlation Coefficients Between Judges' Ratings of Educational Contribution and Institutional Factors Considered Important[1]

x_1	x_2	x_3	x_4	x_5	x_6	r	p**
*	*	*	*	*	*	.845	.001
*	*	*				.724	.001
			*	*	*	.684	.001
	*	*	*	*		.822	.001
	*	*				.707	.001
			*	*		.678	.001

[1] x_1 - Faculty/student ratio
x_2 - Percent of faculty with doctorate degree
x_3 - Number of faculty with doctorate degree
x_4 - Number of books possessed by library
x_5 - Number of books acquired yearly by library
x_6 - Number of books per student

*Indicates the inclusion of the variable in calculating the multiple correlation coefficient.

**The significance level of each correlation coefficient is determined by F test.

Even if the two factors which produced a lower single correlation coefficient (faculty/student ratio and the number of library books/student) were eliminated from the analysis, a statistically significant multiple correlation of the remaining four factors and the rating of educational contribution would remain. The multiple correlation coefficients between the educational contribution and the two faculty factors, i.e., the number and percent of faculty with doctoral degrees and two library factors, i.e., the number of books possessed and yearly acquired by the library, are respectively .707 and .678.

2. Reliability of Ratings

The second major problem of the present study was concerned with examining the reliability of the judges' ratings. The two specific questions to be investigated were: (A) How did the ratings of the judges vary on institutional scores? and (B) How did the different subgroups of judges vary in their ratings of the various types of institutions?

A. Variation of Judges' Ratings

The most elementary measure of the variation of a distribution is the range of scores. The range is the distance between the lowest and the highest scores, and indirectly indicates the degree of consensus among the judges' ratings. The highest possible range of scores which an institution can receive is six. The lowest possible range is zero, as in the case when all 34 judges agree to give a certain score to an institution.

Table 11 indicates that the ranges for individual institutions were from 3 to 6 and about 30 of the institutions received scores with ranges of 5 or 6 in both ratings. The ranges of the other 30 were between 3 and 4.

Table 11

Range of Scores Given to Individual Institutions By Judges

Ratings	Variables	Range			
		3	4	5	6
Rating of Space Needs	Number of Institutions	4	26	23	7
	Percent of Institutions	7	43	38	12
Rating of Ed. Contribution	Number of Institutions	8	25	21	6
	Percent of Institutions	13	42	35	10

Although there is no significant difference between the ranges of both ratings, it appeared that there was a slightly greater agreement among the judges on the educational contribution than on the space needs of institutions. In the data collected, a tendency was found, although it was not statistically significant, to disagree more widely on the space needs and educational contribution of the larger institutions than on the smaller ones.

Again, there is no theoretical norm with which the obtained ranges can be compared. However, it appears that agreement among the judges is so low that decisions on grant distributions should be made with caution when a small number of judges are rating.

B. Difference in Ratings Among Judge Subgroups

The Kruskal-Wallis one-way analysis of variance was applied to determine how the judge subgroups varied in their ratings of institutions. If they varied significantly, the interpretation could be that the ratings were inconsistent among the different subgroups of judges and, therefore, less reliable. Consequently, a null hypothesis that there would be no significant difference among the various judge subgroups in their ratings was tested.

First, the judges were divided into five groups according to their job titles; presidents, vice presidents, deans of students, institutional researchers, and State Education Department staff. Secondly, the institutions were grouped into public and private institutions. The latter were again divided into three groups by institutional size; small, medium, and large. Then the average scores of each judge's ratings of the different types of institutions were calculated. Lastly, the Kruskal-Wallis technique was used to determine the difference among the five groups of judges.

The results (table 12) showed that there was no significant difference among the judge subgroups in their ratings of any type of institution and in their evaluation of space needs and educational contributions of institutions. Therefore, regardless of their positions, the judges rated institutions consistently within and between subgroups. This also means that the different judge subgroups can be considered as drawn from the same population with respect to their ratings of institutions and suggests that different types of administrators in higher education could be used for institutional evaluation without any significant differences appearing in the results.

Table 12

Values of Chi Square and Significance Level of Differences in Ratings Among Judge Subgroups, by Types of Institutions

Institution	Space Needs		Educational Contribution	
	X^2	p	X^2	p
Public	3.43	$.30<p<.50$	4.05	$.30<p<.50$
Private	4.21	$.30<p<.50$	4.08	$.30<p<.50$
Small	6.49	$.10<p<.20$	4.68	$.30<p<.50$
Medium	5.51	$.20<p<.30$	3.92	$.20<p<.50$
Large	3.84	$.30<p<.50$	2.78	$.50<p<.70$

It appears that the total judge reliability was very high while the scores of the individual judges for individual institutions varied widely. These findings suggest that when a rating technique for decision-making is used, the number of judges involved in the rating is of great importance.

3. Objectivity of Ratings

The third major problem of this study was to examine the objectivity of the judges' ratings. Since some judges were more closely associated with certain institutions than others, an attempt was made to determine whether this personal affiliation of judges with a particular institution affected their rating of those institutions. Three implicit hypotheses were that a judge would award favorable ratings[16] to, (1) the institution which employs him, (2) the institution which is under the same type of authority which controls his institution, and (3) the institution located in the same geographical area in which his institution is located.

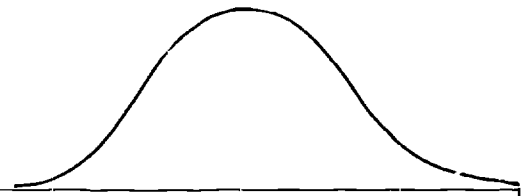
A. Affiliation With Institution and Ratings

Among the 34 judges, 15 were directly affiliated with one of the institutions under study: five presidents, four vice presidents, four deans of students, and two institutional researchers. The four judges from the State Education Department were excluded. To determine whether personal bias was involved in the judges' ratings of their directly affiliated institutions, their ratings were compared with the ratings of the other judges. To do this, each score given to an affiliated institution was transformed into a z scale value by using the mean and standard deviation of the ratings of all the judges for that institution. Table 13 shows the distribution of the z deviate values. The figures in the table indicate the frequency of ratings which fall in a probability area marking off the two middle 45 percent and the two and 5 percent areas.

[16] A favorable rating means to give a high score for the space needs and educational contribution of the institution.

Table 13

Distribution of z Scores Earned by Judges' Ratings of Affiliated Institutions



	Judge Groups	5%	45%	45%	5%
Space Needs	Presidents	-	1	4	-
	Vice Presidents	-	3	1	-
	Deans of Students	1	2	1	-
	Institutional Researchers	-	-	2	-
	Total	1	6	8	-
Educational Contribution	Presidents	-	1	3	1
	Vice Presidents	-	3	1	-
	Deans of Students	-	2	2	-
	Institutional Researchers	-	-	2	-
	Total	-	6	8	1

In general, there was no clear evidence that the judges would favor their own institutions either in terms of space needs or educational contributions, but there is a slight tendency to give higher scores to their own institutions. It is interesting to note that four out of five

presidents and the two institutional researchers in both ratings consistently gave their own institutions higher than average scores, while three out of four vice presidents assigned lower scores to their institutions. Since the number of the judges in each category was small, a more conclusive analysis could not be made.

B. Type of Control and Ratings

In considering whether the judges rated favorably those institutions under the same type of control as their own, the analysis was limited to the ratings of the State controlled institutions. The scores of State institutions, given by the judges who worked in one of those institutions, were transformed into z deviate value scores through the same procedures as in the previous analysis.

Table 14

Distribution of z Scores Earned by Rating Institutions Under Same Type of Control

Evaluation	5%	45%	45%	5%
Space Needs	6	54	60	12
Education Contribution	5	50	71	6

As table 14 shows, no significant evidence was found that administrators affiliated with State universities were biased in their ratings of those institutions. However, there was a slight tendency for their ratings to favor the State controlled institutions.

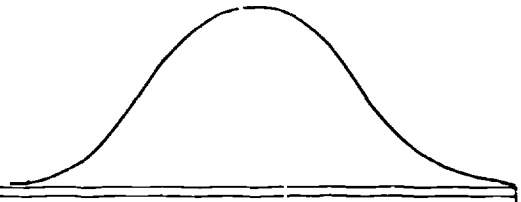
C. Geographical Location and Ratings

Did the geographical area with which the judge was affiliated affect his ratings of institutions in the same area? To test this issue, the 60 institutions under study were divided according to 13 geographical areas of New York State. Then the scores, which each institution in a given area received from the judges, were converted into z deviate scores, as described in section A. The distribution of the z scores are shown in table 15. The results show that, although there is no striking evidence of bias due to the geographical factor, there is a general tendency to favor the institutions in the same area with which the rater is affiliated.

In summary, the three hypothetical factors: i.e., the affiliation with an institution, the type of control, and the geographical area were not found to create a serious bias in rating. However, it was found that the judges consistently tended to favor in their rating those institutions with which they were affiliated.

Table 15

Distribution of z Scores Earned by Rating Institutions
In Same Geographical Area



	Judge Groups	5%	45%	45%	5%
Space Needs	Presidents	0	9	11	1
	Vice Presidents	2	17	18	2
	Deans of Students	1	5	10	0
	Institutional Researchers	2	7	12	2
	Total	5	38	51	5
Educational Contribution	Presidents	2	7	10	2
	Vice Presidents	4	13	22	0
	Deans of Students	1	5	9	1
	Institutional Researchers	2	6	14	1
	Total	9	31	55	4

V. SUMMARY AND CONCLUSIONS

1. Summary

This study was motivated by the possibility of improving the evaluation processes by which the State Commission, for administration of the Higher Education Facilities Act of 1963, determined the relative priorities of applications for Federal grants. The primary purpose of this study was to explore the possibility of developing more appropriate criteria and procedures for application evaluation. More specifically, this study attempts to determine the feasibility of an application rating method which utilizes a group of institutional leaders as a panel of judges.

For the implementation of the study, 30 judges from institutions of higher education and four judges from the State Education Department were selected. Data sheets were prepared, to provide the judges with specific information on each institution. Each data sheet contained 31 items of institutional data: eight items currently used in the State Commission's evaluation and 23 additional ones. Sixty self-selected institutions were included for the judges' ratings, i.e., 4-year colleges which had made application for Federal facilities grant funds.

The judges were asked to rate, on the basis of information supplied in the data sheets, two aspects of the 60 institutions: (1) the extent to which an institution needed additional academic facilities and (2) the extent to which the institution contributed to higher education in New York State. A recording sheet for the evaluation was provided for ranking the institutions, and at the same time, for indicating the interval scale value of the ordinal rankings. A scale transformation was made based on the concept of a normal distribution, to make arithmetic

calculation possible. The data collected were statistically analyzed; the primary techniques used were regression analysis and chi square.

Institutional size was found to be the most significant factor affecting the judges' perceptions of the space needs of institutions. The institutional factors which were, to a great extent, dependent on insitutional size were highly related to the rating of space needs, e.g., increase in number of students, increase in facilities space by proposed construction, number of students enrolled, number of faculty members, number of degrees granted, number of books acquired yearly, and scope of curriculum offerings.

In addition to those factors relating to the size of institutions, other factors were found to be significantly related to the rating of space needs, e.g., rate of enrollment increase, degree of facilities utilization, and the preparation of a long-range campus plan.

The emphasis on size represents one of the important differences between the State Commission's evaluation and the judges' ratings. In the Commission's evaluation, the size factor is deliberately controlled so as not to dominate the evaluation by including only a limited number of size-related factors and assigning a limited scale value to each criterion. This difference was more clearly shown by the finding that the institutions which were high in the judges' ratings and low in the Commission's evaluation were large institutions, while the institutions which were low in the judges' rating and high in the Commission's evaluation tended to be small institutions.

The statistical correlation between the Commission's evaluation and the judges' ratings of space needs was moderately high. But if 10 institutions were chosen by each of the two evaluation methods according to the institutional rankings, only five institutions would be selected by both the judges and the State Commission.

Although most factors used as criteria in the State Commission's evaluation procedures coincided to some extent with those perceived by the judges[17] as being indicators of space needs, a considerable discrepancy appeared between the two evaluations. This discrepancy can be attributed for the most part to an overemphasis of the size factor in the judges' ratings.

The rating of the educational contribution of institutions was also greatly influenced by the size of the institution. The judges tended to favor large institutions for their contribution to education in New York State. The better rated institutions, in general, had larger numbers of students and faculty members, produced more graduates, possessed and procured more library books, and provided a wider scope of educational programs. Those institutions also tended to have larger endowments and to anticipate greater enrollment increases. These findings are consistent with both the general impression and the research findings that institutional prestige or reputation is highly related to institutional size.

Several other factors relating to the rating of educational contribution were also found. For example, the lower the rate of enrollment increase and the degree of laboratory utilization, and the higher the proportion of faculty holding a doctoral degree and the average faculty salary, the higher the rating of the educational contribution of the institution.

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[17] Among the factors used in the Commission's evaluation, rate of increase in instructional and library space, and degree of utilization of laboratory facilities were not related to the judges' ratings of space needs. There was a negative relationship between evidence of a long-range plan and space needs. The date and amount of previous grants received were not subjected to statistical analysis because of the limited number of institutions having received previous grants.

Whether or not to consider the educational contribution of institutions as a criterion for evaluating applications for Federal grants is not a matter for scientific investigation. However, if that criterion is included, the evaluation would favor larger institutions.

It is interesting to note that of the four institutional factors which the judges considered most important in rating educational contribution (table 8), only two were actually operative (table 3). Yet, of the factors considered least important some were actually operative in the judges' ratings. Evidently the judges had difficulty reconciling their theoretical statements with their empirical evaluation.

The scores assigned to institutions by individual judges varied greatly, but the reliability of the scoring by the 34 judges as a group was very high. This suggests that reliability increases in proportion to the number of judges on the panel. No significant difference was found among the different subgroups of judges in their ratings of the various types of institutions.

In this study, no significant bias was involved in the judges' ratings. All three variables regarded as factors which could create bias in the rating, i.e., institutional affiliation, type of control, and geographical location of institution were not found to be significant.

2. Conclusions

If decisions concerning distribution of Federal grants were made on the basis of judges' ratings on space needs, large institutions would be favored. This tendency would be augmented if the educational contribution of the institutions were included as a criterion for the evaluation of applications.

If Federal grants for construction of educational facilities were to be equally distributed among institutions of various sizes, evaluative criteria which reflect institutional size should be controlled or eliminated. The evaluative procedures of the State Commission are less affected by institutional size than are the rating techniques tested in this study.

Criteria used for evaluation by the State Commission were indicated to be valid by institutional leaders who participated in this study. However, the judges indicated that the degree of laboratory utilization and the evidence of long-range planning were not important factors for determining the space needs of institutions. According to the judges' ratings, evaluative criteria which could be added to the existing criteria are size-related factors.

Although the judges' personal association with institutions was found as only a potential source of bias in this study, precautions should be taken in planning the rating procedures to eliminate even this possibility. It also appears that any type of high-level administrator in higher education institutions could be used for institutional evaluation without making any significant difference in the final analysis.

This study established as adequate the quantitative factors used by the State Commission to assess applications for Federal facilities funds. The use of a panel of judges to inject qualitative factors into the process does not significantly improve the evaluation.

A P P E N D I X E S

Appendix I

NAME _____ CODE NUMBER 001

Control of institution Private Type of Community Metropolitan

Academic calendar Semester Endowment $1,700,000

STUDENTS

Full time 3,617 Part time 585

Residential 750 Nonresidential 3,452

In-State 3,795 Out-of-State 407

Enrollment increase (4-yr.) 717

Enrollment increase (4-yr.-%) 21.5%

FACULTY

Number 230

Faculty/student ratio 1:25

Number with doctorate 140 (61%)

Average salary $8,917

HONORS PROGRAM Yes

DEGREES GRANTED (1964)

Undergraduate 773

Masters 153

Doctorate 9

Total 935

FACILITY APPLIED FOR Science Building

Proposed increase in instructional and library space 29,212 sq.ft.

Percentage increase in instructional and library space (present to projected) 20.3%

LIBRARY

Number of volumes 137,000

Number acquired yearly 10,000

Ratio of volumes/student 33:1

UTILIZATION OF EXISTING FACILITIES (See reverse side for explanation)

Classroom utilization .69

Laboratory utilization .91

Library utilization 7.30

Other instructional space utilization 12.48

TYPE OF INSTITUTION Undergraduate and Graduate

DATE OF MOST RECENT GRANT None

AMOUNT OF PREVIOUS GRANTS None

LONG-RANGE PLAN AVAILABLE Partial

CURRICULUM

Undergraduate Programs:

Liberal arts and sciences, business, physical education, home economics, languages

Masters Programs:

Applied science, biology, business, chemistry, English, math, physics, psychology, sociology, speech, theater

Doctoral Programs:

Chemistry, math, physics, psychology

Classroom utilization:

$$\frac{\text{(Square feet of total assignable general classroom space)}}{\text{(Student clock hours of classroom instruction)}} = \_\_\_\_\_$$

Laboratory utilization:

$$\frac{\text{(Square feet of total assignable instructional laboratory space)}}{\text{(Student clock hours of laboratory instruction)}} = \_\_\_\_\_$$

Library utilization:

$$\frac{\text{(Square feet of total assignable library space)}}{\text{(Full-time enrollment)}} = \_\_\_\_\_$$

All other institutional space utilization:

$$\frac{\text{(Total all other instructional space)}}{\text{(Full-time enrollment)}} = \_\_\_\_\_$$

Appendix II

INSTRUCTIONS

You have been provided with 60 data sheets corresponding to 60 institutions of higher education which have applied for grants under provisions of the Higher Education Facilities Act of 1963. Combining the information on the sheets with your judgment, please make two evaluations of the institutions according to the following procedures:

EVALUATION ONE

1. Judge each institution on the basis of the information provided on the data sheets. Sort the 60 institutions into 7 groups; the Recording Sheet for Evaluation shows the division of institutions for each of the seven groups. The institutions should be sorted according to the EXTENT TO WHICH YOU THINK THE INSTITUTION IS FULFILLING THE CONGRESSIONAL MANDATE.

   > To assist the Nation's institutions of higher education to construct needed classrooms, laboratories, and libraries in order to accommodate mounting student enrollments and to meet demands for skilled technicians and for advanced graduate education.

2. Once the sorting into 7 groups has been completed, enter the code numbers of the institutions (code number is found on the upper right-hand corner of data sheet) on the Recording Sheet for Evaluation. The results of this sorting should be recorded under the column titled "Evaluation One." The 2 institutions which you regard as best fulfilling the Congressional mandate would be recorded under Group #1, the next 7 institutions which best fulfill the mandate would be recorded under Group #2. Continue to record the code numbers of the institutions until all 60 code numbers have been listed.

BEFORE BEGINNING THE SECOND EVALUATION, PLEASE RESHUFFLE THE DATA SHEETS

EVALUATION TWO

1. Proceed to make a second rating of the institutions on the basis of the EXTENT TO WHICH YOU THINK THAT THE INSTITUTION IS HELPING TO IMPROVE THE QUALITY OF HIGHER EDUCATION IN NEW YORK STATE. Once again sort the 60 institutions into 7 groups.

2. After the sorting has been completed, enter the code numbers of the institutions on the Recording Sheet for Evaluation. The results of this sorting should be recorded under the column titled, "Evaluation Two." Continue to record the code numbers of the institutions until all 60 code numbers have been listed.

3. On the reverse side of the Recording Sheet for Evaluation, please list the 2 variables which were most useful in making your decisions and the 2 variables which were least useful. Please specify variables for both sorts.

4. Please sign the enclosed reimbursement forms and return 2 with the evaluation sheet. It will not be necessary to return the data sheets. Thank you for your cooperation.

Appendix III

RECORDING SHEET FOR EVALUATION OF

HIGHER EDUCATION FACILITIES APPLICATION GRANTS

GROUP	Evaluation One List Code Numbers
1. High (2)	
2. (7)	
3. (13)	
4. (16)	
5. (13)	
6. (7)	
7. Low (2)	

GROUP	Evaluation Two List Code Numbers
1. High (2)	
2. (7)	
3. (13)	
4. (16)	
5. (13)	
6. (7)	
7. Low (2)	