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LIBRARY PHYSICAL PLANT STANDARDS FOR JUNIOR COLLEGES.

CALIFORNIA COORD. COUNCIL FOR HIGHER EDUC.

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THE PLANNING STANDARDS FOR LIBRARY FACILITIES ARE INTENDED TO DETERMINE THE TOTAL FLOOR SPACE REQUIRED TO ACCOMMODATE A GIVEN SET OF LIBRARY FUNCTIONS. WHILE THESE STANDARDS DO NOT NECESSARILY PROVIDE A BASIS FOR ACTUALLY DESIGNING THE LIBRARY INTERIOR, THEY DO CLOSELY APPROXIMATE THE ACTUAL NEED FOR A GIVEN ACTIVITY AND, THEREFORE, MAY ASSIST IN DETERMINING THE GENERAL INTERIOR CONFIGURATION OF A COLLEGE LIBRARY. THE SPACE REQUIREMENTS ARE DEVELOPED FROM THE FOLLOWING PROCEDURAL STEPS--(1) THE FUNCTIONS OF A LIBRARY OPERATION ARE IDENTIFIED AND RELATED TO THE DEFINITIONS OF LIBRARY SPACE CURRENTLY USED IN EXISTING INVENTORY CLASSIFICATIONS, (2) THE EXISTING LITERATURE RELATIVE TO THE PLANNING OF UNIVERSITY AND COLLEGE LIBRARY FACILITIES IS REVIEWED FOR RELEVANCE TO THE PLANNING NEEDS OF CALIFORNIA'S JUNIOR COLLEGES, (3) EXISTING LIBRARY PLANNING STANDARDS FOR ALL SEGMENTS OF HIGHER EDUCATION IN CALIFORNIA ARE EXAMINED TO IDENTIFY PROBLEMS IN CAPITAL PLANNING AND ESTABLISH A COMPARATIVE BASIS FOR THE ACTUAL SELECTION OF SPECIFIC STANDARDS, AND (4) USING CONSULTANTS IN THE AREAS OF LIBRARY OPERATION AND FACILITY UTILIZATION. THIS REPORT PROVIDES A DETAILED EXAMINATION OF EACH STANDARD DEVELOPED AND THE FUNCTION FOR WHICH IT IS INTENDED TO SERVE. THE TOTAL LIBRARY SYSTEM IS DIVIDED INTO SUB-SYSTEMS FOR WHICH STANDARDS ARE PRESENTED AND COMPARED WITH PRESENT PRACTICES. FROM THESE GENERAL STANDARDS, THE REPORT OFFERS A SUMMARY OF THOSE FACILITY STANDARDS WHICH ARE RELATIVE TO THE CALIFORNIA PUBLIC JUNIOR COLLEGES. THE FINAL SECTION IS CONCERNED WITH THE APPLICATION OF THESE STANDARDS AND PRIMARILY, WITH A METHOD OF SPACE INVENTORY AND THE NUMBER OF YEARS BEYOND OCCUPANCY DATE FOR WHICH THE DEMAND LEVEL IS ESTABLISHED. PLANNING ALTERNATIVES ARE DISCUSSED AND ILLUSTRATED TO INDICATE POSSIBLE APPLICATIONS OF THE STANDARDS AND PROCEDURES. (BH)

LIBRARY PHYSICAL PLANT STANDARDS FOR JUNIOR COLLEGES

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INTRODUCTION

The following study of planning standards for library facilities in Junior Colleges represents an extension of Council examination of the overall question of facility utilization which began in Council Report 66-11, Space and Utilization Standards, California Public Higher Education. The latter report was examined by the Council at its September 1966 meeting and standards for utilization of instructional and office facilities in Junior Colleges were approved for recommendation to the State Board of Education. In January 1967, the Council approved staff study 67-3 which recommended a number of modifications in the method of state support to the public Junior Colleges for capital construction. An essential part of the modified method was based upon the establishment of planning standards for the utilization of capital facilities. Therefore, to permit comprehensive planning of capital outlay needs in Junior Colleges, utilization and space standards need now to be established for library and general supporting facilities. This report proposes such standards for the Junior College library.

It should be established at the outset that the space and utilization planning standards noted in this report are intended primarily for the purpose of determining a total floor space that is required to accommodate a given set of library functions. The standards are not necessarily intended to provide a basis for actually designing the library building interior. The standards do, however, closely approximate the actual need for a given activity, and, to that extent, they may be of assistance to those charged with the responsibility for determining the general interior configuration of a college library.

The examination of space needs in Junior College libraries was accomplished by four basic steps.. First, the functions constituting the library operation were identified and related to the definitions of library space currently used by the Department of Education to inventory such facilities. Second, the existing literature relative to the planning of university and college library facilities was reviewed for possible relevance to the library planning needs in California's public Junior Colleges. Third, existing library planning standards and utilization practices in all three segments of public higher education in California, along with similar practices in Junior Colleges in selected other states, were examined to (1) identify

possible problem areas in capital planning and (2) establish a comparative basis for the actual selection of specific standards.[1] Finally, several committees composed of technical experts in the areas of library operation and facility utilization were consulted at various stages of the study and offered valuable advice in the formulation of the standards proposed. Staff of the State Department of Education were also consulted due to their direct involvment in the administration of facility standards pertaining to the public Junior Colleges. Additional valuable advice was offered by John Dooley, coordinator of Library Services at San Mateo College and chairman of the Library Subcommittee of the California Junior College Association. (A listing of the membership of the above committees and Department of Education staff is included in Appendix A.) It should be emphasized, however, that while all suggestions were carefully evaluated, the specific standards as proposed in this study are the sole responsibility of the Coordinating Council staff.

Section II of this study consists of a detailed examination of each standard and the function which it is intended to serve. This is followed, in Section III, by a summary of the specific planning standards proposed for Junior College library facilities. The final section (IV) explores two of the many planning ramifications which might arise in the application of the proposed standards.

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1 This review of current practice, along with planning standards currently used by the segments and advocated in the literature, is contained in Council study 66-11, Space and Utilization Standards, California Public Higher Education, Section III.

SECTION II

RELATIONSHIP OF SPACE STANDARDS AND LIBRARY FUNCTIONS

Library Functions

The space standards are intended to accommodate those library operations which have been traditionally provided on the college campus: (1) storage of bound and unbound materials used by students; (2) provision of reading areas for students wishing to use library materials which are close at hand; (3) the cataloging and other necessary processing of materials and the reference and bibliographical services demanded by students and (4) miscellaneous displays. As in the past, these functions are accommodated in the following space categories (in their respective order): (1) stack and open stack, (2) study hall and carrel, (3) library service, and (4) museum.[1]

In the modern college library there are also other kinds of activities which must be of direct concern to those planning facilities. For instance, there is a growing tendency, especially in the Junior Colleges, to house campus audio-visual services in the central library facility. Such installations may be of the more traditional variety which provide for the storage and circulation of projectors, films, and other equipment and materials or may include television, photography, graphics, and other activities as well. Due to the variation from college to college in the use of such media, there appears to be little value in attempting to establish a standard for the "usual" audio-visual facility. We would only suggest that where such facilities are included in the library building they should be provided accommodations which are based upon the objectives of service concerned. These accommodations must be calculated over and above the allowances provided by the standards pertaining to the "traditional" functions.

The programmed learning facility constitutes still another activity which commands increasingly larger portions of library area in newer facilities. These facilities are quite variable in size and function though usually designed around the concept of stations which are equipped for nearly instantaneous access to information that is centrally stored. Very often, in practice, these facilities are operated as a part of the overall audio-visual service. The programmed-learning arrangements are as yet of relatively undetermined potential in the instructional process but certain direct values to particular instructional departments may be readily identified, such as in the case of a listening-station facility for a language laboratory use. When the using instructional departments may be readily identified, prorated portions of the learning facility should be charged to these departments as part of instructional capacity allowances. As part of the audio-visual facility, the listening

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[1]Definitions of the type of area included under each of these categories appear in Council study 66-11.

rooms, booths, or similarly equipped stations, should be provided as accommodations which are excluded from the "traditional space" allowances in the library. One listening-station or equipped carrel, for example, generally requires more floor space than the normal library reading station.

Housing the Collection (stack and open stack)

Standard: .10 assignable square feet (asf)[1] per volume (of which approximately 75% would house bound items, with 25% for unbound items.)

It is not particularly difficult to determine the floor space requirements for bound materials, given knowledge of the types of shelving currently available. Much of the college library collection, however, consists of unbound items such as periodicals, maps, newspapers, microfilm and other documents. The difficulty of establishing a standard unit for such material and then determining its floor space requirements is obvious. Most of the literature relating to library planning has advocated between .067 and .10 assignable square feet per bound volume. Little is said concerning the specific needs of unbound materials.

Recent practice in California public Junior Colleges has ranged on the average between .08 asf (during 1963) and .12 asf per volume (during 1965) for reported stack and open stack areas, although there was considerable variation from college to college.[2] (Data examined in Council study 66-11, indicated the average storage practice for 78 non-California Junior Colleges in 1963-64 approximated .09 asf per volume.)

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[1]The assignable square feet include those areas which are "useable" for the functions described. Not included in this useable category would be such areas as the main lobby (excluding card catalogue area), elevators, stairs, walled corridors, restrooms, and areas accommodating building maintenance services.

[2]The standard deviations of the 1963 and 1965 samples examined were quite large resulting in coefficients of variation both greater than 70%. This typifies the difficulty in evaluating data pertaining to the use of library facilities at any point in time. It is highly improbable that very many Junior Colleges would demonstrate (at any given point in time) what might be considered optimum utilization of the library facility. More typically, a college will have recently occupied the facility and report "excess" space (representing reasonable lead time in facility construction) or the college will be operating in a "deficiency" situation awaiting the planning and/or construction of additional facility. In either case, the data must be reviewed rather critically.

If one were to assume a facility configuration which is representative of the usual Junior College library, i. e., one in which the majority of stack areas are of the open variety containing study stations either between or around the shelving:

(1) 125 volumes per single-faced section
(2) 9.0 asf per single-faced section
(3) range spacing of approximately 5 feet
(4) center aisle of at least 5 feet
(5) aisles of 3 feet between carrels and ranges,

then the average stack area, with carrels adjoining, would require 0.072 asf per volume.[1]

Short of attempting to compute the space requirements of representative units of unbound materials (a very difficult task at best), a sufficiently accurate approximation of need would appear to be one in which the above measure as determined for bound volumes (.072 asf) is expanded to conform to the best estimate of average actual practice in the Junior Colleges (.10 asf per bound volume) and, thereby, include a provision for unbound materials. The result is that unbound materials are allocated floor space at the rate of .028 asf per bound volume, or occupy approximately one-fourth of the total stack area. This would appear to be sufficient provision for the typical Junior College situation.

Area for Reading Stations (study hall and carrel)

Standard: 25 assignable square feet per station

California public Junior Colleges have recently provided between 25 and 27 assignable square feet, on the average, per reading station in the library. The State Colleges and University provide an average of 25 asf with very little variation. Such statistics involving the utilization of space for stations appear to be more credible than other of the data regarding library use since the amount of space accommodating a study station does not appear to be a function of the "lead" or "lag" time inherent in facility provision. The average reading station area remains approximately unchanged in spite of possible over (or under) utilization of the library floor area.[2]

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[1] By way of comparison, University staff recently proposed a set of library space standards which provided stack area for 125 volumes per section, with 8.7 asf per section for a resulting .07 asf per volume.

[2] This was confirmed in the statistical treatment of the data. The coefficient of variation for the measure "asf per study station" was much smaller than that obtained for any of the other measures of space per input of library activity.

Measures of individual station requirements as contained in the literature generally cite 30 assignable square feet as being sufficient to accommodate the equipped carrel or large lounge chair. For most individual study carrels (without the "programmed learning" type of equipment) and tables seating four or fewer persons, 25 asf of floor area appears sufficient. Finally, for large tables which seat more than four persons, 22.5 asf per station is regarded as "adequate" seating.[1] Given a college library which contains approximately equivalent numbers of each of the above three station types, the average unit area of 25 asf per station appears to be a reasonable guide.[2]

Number of Reading Stations

Standard: Number of stations: 15-20 percent of estimated full-time enrollment (students taking 12 or more units), scheduled according to the relative emphasis of college curriculum on "trade-technical" instruction:

stations as % of full-time enrollment[3]	% of total student credit hours devoted to "trade-technical" courses[4]
15%	11% and greater
16	9 and 10%
17	7 and 8%
18	5 and 6%
19	3 and 4%
20	less than 3%

For example, a college which devoted more than 11 percent of total student credit hours offered to "trade-technical" instruction would plan for a sufficient number of study stations to seat 15 percent of anticipated full-time enrollment.

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[1]See Keyes Metcalf, Planning Academic and Research Library Buildings (New York: McGraw-Hill Book Co., 1965).

[2]Colleges whose instructional methods encourage more than the usual amount of individual study may wish to provide a greater number of individual study carrels than the station "mix" assumed above. The 25 asf per station provision may be slightly deficient in such a situation. However, it may be possible to "make up" this deficiency by over utilization of certain other areas.

[3]The measure of full-time enrollment is chosen as being the most relevant indication of reading station need. Full-time enrollment may also be converted to weekly student contact hours (wsch) for purposes of comparing library capacity with instructional capacity (measured in wsch).

[4]Courses such as building trades, engineering technology, textile technology, dry cleaning, etc. are within "trade technical."

The range of average practice in California public Junior Colleges during recent years has been to provide stations sufficient to seat between 11 and 15 percent of full-time enrollment at any one time. The University and State Colleges have attempted to plan seating accommodations for 25 percent of full-time-equivalent (fte) students but the average campus or college in both segments has operated with an actual station count representing 20 percent of full time equivalent student enrollment.

The literature generally cites a standard of 25 percent as being acceptable but there is considerable variation in the level recommended depending upon the character of the institution involved. Several variables which generally describe this institutional "character" appear intuitively to be significant in determining the proportion of stations. Those variables examined in this study are:

(1) Curriculum (relative emphasis by subject field area)
(2) Method of instruction
(3) Accommodations in buildings adjacent to library
(4) Provisions for student residence on campus
(5) Student mix (i.e., level of instruction offered)
(6) Location of campus
(7) Policy of library relative to non-student use
(8) Size of campus (student enrollment)

The general method used in examining these variables was to correlate (1) study stations as a percent of enrollment on (2) that measure which seemed to best typify the particular variable under consideration. The results of this effort are shown in Table 1.

While several of the variables were statistically significant as indicators of variation in reading station provision, the only reasonable indicator (among those examined) is the nature of curriculum as measured by the percentage of total student credit hours which are devoted to the "trade-technical" offerings. One would expect that as more of college student instruction is devoted to the trade-technical area, there would be less of a demand for study station facilities in the library due to the very nature of such instruction. The examination of data for Fall 1963 indicated this to be true in actual practice. Conversely, library reading station needs would be expected to increase as the relative amount of instruction in social sciences and humanities increased. The data, however, did not reveal any such trend.[1] Therefore, the "trade-technical" expression was chosen as the standard indicator for determining the appropriate percentage within a 15 to 20 percent range.

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[1]This may have been due to the presence of other variables which were not held constant or, once again, the disturbing statistical influence of existent lead and lag times.

Table 1

CORRELATION COEFFICIENTS OF READING STATION PROVISION ON VARIABLES DESCRIBING INSTITUTIONAL CHARACTERISTICS (1963 unless otherwise indicated)

Adjacent facilities (campus classroom stations per full-time enrollment, 1965)	.684[3]
College size (full-time enrollment, 1965)	-.445[3]
(full-time enrollment)	-.405[3]
Curriculum (SCH[1] in "trade-technical" instruction as percent of total SCH)	-.247[3]
Adjacent facilities (campus classroom stations per full-time enrollment)	-.195
Estimated population in college area[2]	-.153
Curriculum (SCH in "junior college classification" as percent of total SCH)	.075
(SCH in social sciences and humanities as percent of total SCH)	-.017

[1]SCH: total student credit hours taken.
[2]Where only one college is located in a county, the county population was used. Where more than one college is located in a county, such as Los Angeles, estimates were made on the basis of assessed valuation.
[3]Statistically significant at the 5% level.

The accommodations available for student study in other-than-library buildings on a college campus may be very important during certain peak study periods of the term (such as before finals, etc.). It may even be argued that the seating accommodations in the library should be based in part upon what other potential seating is available elsewhere on campus. However, an examination of library station provision relative to the number of potential study stations elsewhere on campus (as expressed by the number of classroom stations per full-time enrollment) was inconclusive for the Fall 1963 situation and contradictory for the Fall 1965 situation. This result is indicated in part, by the particular correlation coefficients shown in Table 1. In the Fall of 1965, those colleges which had the largest library station provision relative to enrollment also had the largest number of classroom stations relative to enrollment. Therefore, while the concept of utilizing adjacent facilities seems quite reasonable, there is currently no empirical basis for constructing a Junior College reading station standard to include this variable.

The facts that (1) with one or two exceptions, California public Junior Colleges are commuting institutions, and (2) they offer only lower division instruction, led to the use of a maximum library seating provision of 20 percent. As stated previously, both the University and State Colleges currently plan for seating 25 percent of their enrollment. This provision accommodates all levels of instruction (including graduate) and occurs in situations of significant student residence on campus, both factors considered to be indicative of high library use. Only in the most rare circumstance would a Junior College appear to have need for a library reading station provision of similar magnitude. On the other hand, those colleges that would find it appropriate to plan for seating less than 15 percent of the full-time enrollment would appear to be equally as rare.

College size was found to be a significant variable. Smaller colleges provided (both in 1963 and 1965) a greater percentage library seating provision than did the larger colleges. This result, however, is probably due to the fact that smaller colleges generally possess a greater "lead-time excess" in their facility than do the larger colleges where enrollments may have caught up with library facilities which were occupied during the initial years of operation and not subsequently augmented. Even if this practice exists there does not appear to be any particular rationale for providing differentials in percentage of library seating accommodations merely on the basis of campus size.

No feasible way of examining individual college policies regarding non-student use was determined even though this may be a significant factor in some cases. The same was true of the method of instruction variable. While library station use may increase as more emphasis is placed upon individual study, there was no feasible quantitative way of measuring this influence.

Examination of the location variable was also fruitless. It is generally thought that rural college libraries receive relatively more use than do college libraries in urban areas. The correlation of adjacent population on college seating provision was not significant, however. In any event, this variable would be rather impractical in actual use since no accurate library data relating population to Junior College districts exists.

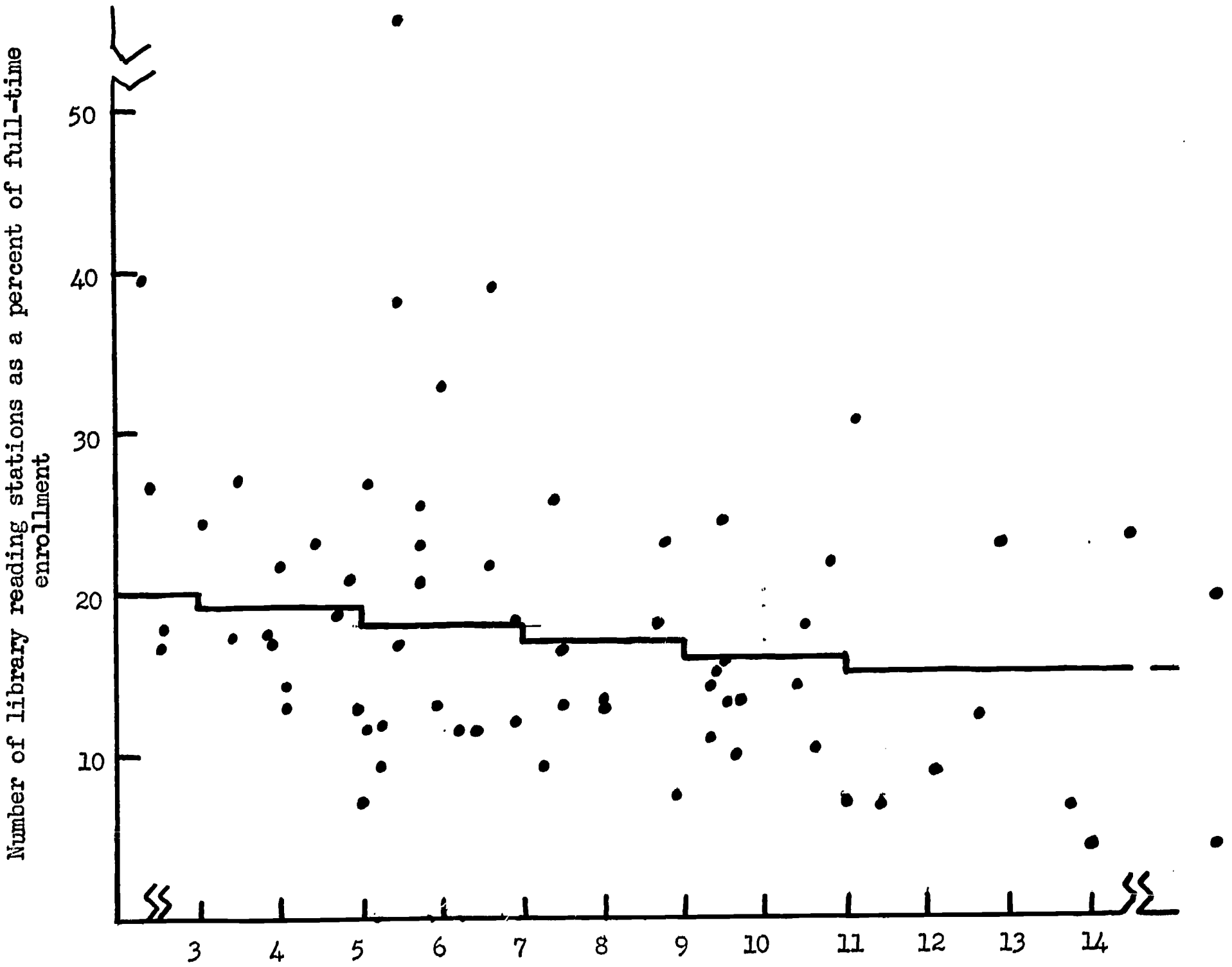
A comparison of the proposed reading station standard with actual reading station provisions in the Junior Colleges during Fall 1963 appears in Figure 1.

Student Measure

The student measure of full-time enrollment (students taking 12 or more units) appears to be the most reliable indicator of reading station needs on the average college campus. Clearly, measures of

Figure 1

COMPARISON OF PROPOSED READING STATION STANDARD WITH ACTUAL READING STATION PROVISIONS IN CALIFORNIA JUNIOR COLLEGES DURING FALL 1963



class attendance (the basis for Junior College financial assistance) have little relationship to the library station use. The contact hour of enrollment (weekly student contact hour) seems to add little as a relevant measure since it would appear to understate the need of the college which offers relatively more instruction in the social sciences and humanities and would thus generate relatively fewer contact hours per potential library user than would the institution which offered relatively more instruction in the areas which demand more class contact hours per potential library user.

The "full-time equivalent" based upon 15 average credit units per term could be used as an indicator although many of the student credit hours reported may arise from part-time students who take only one or two courses while working part or full-time and are not able to spend time in the library that is even proportional to the number of credit hours undertaken. The full-time student taking 12 or more units would, in the final analysis, appear to be the most desirable indicator.

A further question relates to the time of day of instruction. Space and utilization standards for instructional facilities are scheduled on an 8 a.m. to 5 p.m. student load basis. While there are good arguments for scheduling classrooms and laboratories on such a basis, the same rationale would not appear to apply to library utilization. The full-time student may find it convenient to take a number of his courses during the evening if they are so scheduled. There is no particular reason to believe that he will make less use of the library because of this attendance pattern than that person who attends class only during the day. Therefore, to limit the enrollment counting to an 8 a.m. to 5 p.m. basis for purposes of determining library seating may understate the true need on that campus where many full-time students pursue courses during the evening.

Library Service (staff work areas, public service, and processing areas)

Standard: Basic complement of 400 asf plus 140 asf/fte staff member.

The data currently available do not permit detailed statistical determinations of the space provisions for library services in the Junior Colleges. The central tendency of college libraries, during the Fall 1965, however, was approximately 160 assignable square feet per staff member. The University and State College provisions appear to be less and more, respectively; although this result may be due in part to different methods of space inventory.

The literature on library facility planning is equally as vague. Most documents cite the need for 125 asf per staff member plus some

undefined provision for certain public service and other basic areas. The same lack of specificity seems to be inherent with most planning standards currently in use.

Most Junior College libraries will tend to be relatively small; that is, average generally around 10 staff members. This is due primarily to the existing limits to Junior College campus size which are utilized in the planning of such institutions. Since they are relatively small operations (as compared to the Berkeley or Los Angeles campuses of the University, for example) they are unable to obtain the economies-of-scale in "library service" space utilization which the larger library may take for granted. It is therefore important (in the Junior College situation) to determine the extent of those areas which appear to be fixed (are basic and generally unrelated to student growth) as opposed to those areas which must grow as the clientele and staff increase.

In order to open its doors, the college library must have at least a basic collection. This basic stock in practice has seldom been below 10,000 volumes. A basic figure of 15,000 volumes was recently recommended by the Junior College Round Table of the California Library Association. A basic catalogue housing the necessary reference cards for such a collection plus adjacent public work areas could be accommodated well within 200 assignable square feet.[1]

There would appear to be need also for fixed (basic) areas within the technical processing operation to accommodate general storage and equipment. Based upon review of existing practices, a reasonable approximation of these fixed or basic areas plus that for the above basic catalogue would be 400 assignable square feet.

The most obvious variable area is that required for the desk and immediate working areas of the staff. Provision of approximately 125 assignable square feet for professional staff along with 100 asf and 80 asf, respectively, for clerical and student assistance would result in an overall standard of 100 asf per full-time equivalent staff member. This figure is consistent with most planning standards currently in use for such office-like facilities. In addition to these immediate working areas, there should be provided, in the technical processing section, floor area sufficient to accommodate those materials (usually books) that are being processed. This area is also a function of the number of staff and may be calculated on an average footage per staff basis. In the public services operation, growth in the number of library users results in additions to the card catalogue and increases in the total floor area that is required adjacent to reference and circulation staff work areas. Both additional areas appear to be a function of the number of both staff and users estimated for the library. Assuming that the staff expands in relatively comparable proportion to the increase in users, these areas also could be related to an assignable square feet per staff measure.

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[1]See Metcalf, op. cit., pp. 250-255.

Determination of the footage per staff that might be required in addition to the minimum 100 asf per staff working station, is aided in part by an examination existing practices. Given, the basic complement of 400 asf per library, an additional 40 asf per staff member (for a total of 140 asf per staff) results in a standard which closely approximates the current average practice in the public Junior Colleges. A college library with 10 staff, for example, would require a total of 1800 assignable square feet for library service areas or an average 180 asf per full-time equivalent staff. Given the diseconomies-of-scale inherent in the "smallness" of the Junior College library operation, a standard of this scale appears appropriate. In a much larger library, say of 50 or 100 staff, and serving a much larger clientele, such a standard might overstate actual need.

In summary, the library service areas are split between "fixed" and "variable" provisions in the following fashion:

Activity	Provision	
Staff work areas 1. (desk and immediate working area)	100 asf/fte staff	
Public service 2. Basic catalogue 3. Additions to catalogue 4. Public space adjacent to work areas	basic complement	function of (staff, users) function of (staff, users)
Processing 5. Equipment 6. Storage 7. Storage of materials in process	basic complement basic complement	function of staff
Totals	400 asf	140 asf per fte staff

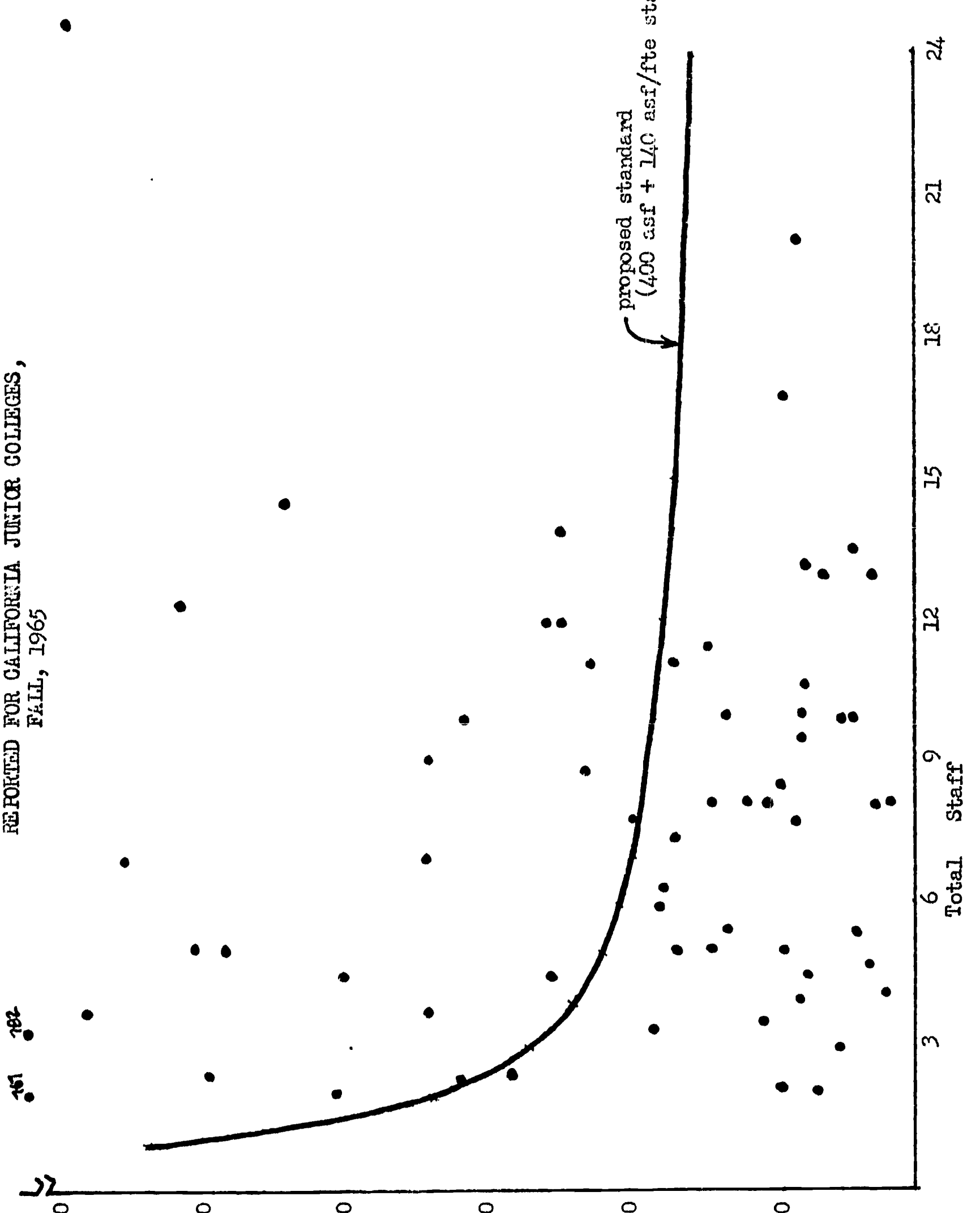
Figure 2 provides a graphic comparison of the space per staff member allowed by the proposed standard and the actual library service space per staff reported by individual colleges for the Fall 1965.

Museum

The amount of this type of area (art gallery, exhibition, etc.) included in the Junior College library during the Fall 1965 was practically non-existent according to space inventories of the State Department of Education. As a result it has not been considered as a necessary part of any proposed space and utilization standard. However, if such facilities should be determined as desirable in isolated instances, space for such functions may be found by over-utilizing space in the other categories.

Figure 2

Figure 2
CO.PARISON OF PROPOSED "LIBRARY SERVICE" STANDARD WITH ACTUAL AREAS PER STAFF REPORTED FOR CALIFORNIA JUNIOR COLLEGES, FALL, 1965



Summary

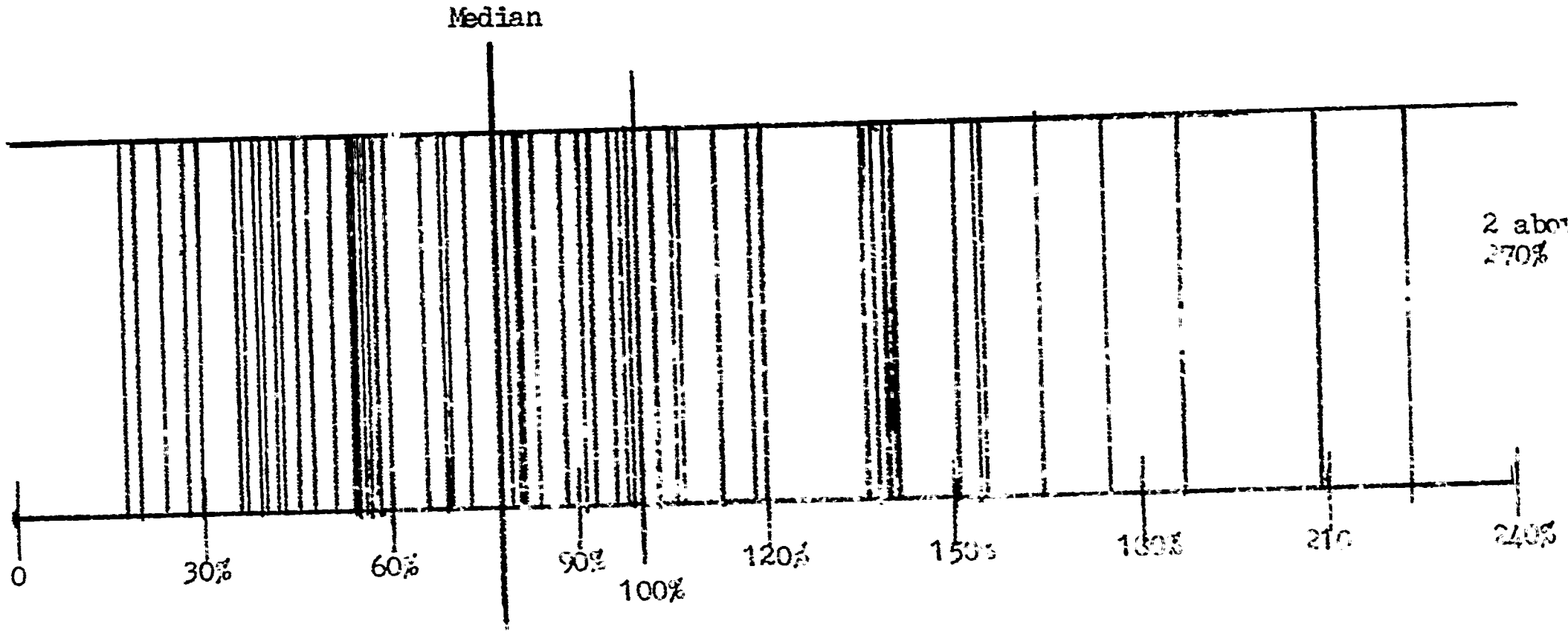
The standards as derived are based upon the anticipated student enrollment, library staff, and the bound collection to be housed. To provide a comparison with the actual practice reported during the Fall 1965, the standards were applied to the above inputs, as reported for that date, and a total "standard" assignable square footage calculated for each of the 70 California Junior Colleges. This standard asf allowance was then compared to the actual reported asf in the following fashion:

$$\left(\frac{\text{actual asf}}{\text{standard asf}}\right) 100 = \text{library capacity as a percent of need}$$

The results appear in Figure 3. It may be noted that according to the proposed standards, 49 colleges fell short of having sufficient space to provide for the level of activity reported. Twenty-one colleges reported facility sufficient to accommodate 100 percent or more of their operations. The median (average) college reported 76 percent of needed capacity.

Figure 3

JUNIOR COLLEGE LIBRARY FACILITIES: ACTUAL CAPACITY AS PERCENT OF CALCULATED CAPACITY, FALL 1965*



* Each vertical line represents the location of a junior college on the scale.

SECTION III

SUMMARY OF PROPOSED LIBRARY PHYSICAL PLANT STANDARDS CALIFORNIA PUBLIC JUNIOR COLLEGES

1. HOUSING THE COLLECTION (STACK)

.10 assignable square feet (asf)[1] per volume (of which approximately 75% would house bound items, with 25% for unbound items).

2. AREA FOR READING STATIONS (STUDY HALL AND CARREL)

a. 25 assignable square feet per station.

b. Number of stations: 15-20 percent of estimated full-time enrollment (students taking 12 or more units), scheduled according to the relative emphasis of college curriculum on "trade-technical" instruction:

stations as % of full-time enrollment[2]	% of total student credit hours devoted to "trade-technical" courses[3]
15%	11% and greater
16	9 and 10%
17	7 and 8%
18	5 and 6%
19	3 and 4%
20	less than 3%

For example, a college which devoted more than 11 percent of total student credit hours offered to "trade-technical" instruction would plan for a sufficient number of study stations to seat 15 percent of anticipated full-time enrollment.

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[1]The assignable square feet include those areas which are "useable" for the functions described. Not included in this useable category would be such areas as the main lobby (excluding card catalogue area), elevators, stairs, walled corridors, restrooms, and areas accommodating building maintenance services.

[2]The measure of full-time enrollment is chosen as being the most relevant indication of reading station need. Full-time enrollment may also be converted to weekly student contact hours (wsch) for purposes of comparing library capacity with instructional capacity (measured in wsch).

[3]Courses such as building trades, engineering technology, textile technology, dry cleaning, etc., are within "trade-technical"; a complete list appears in Appendix B. Appendix C lists the results of applying this standard to reports of student credit hours offered by individual Junior Colleges during the fall 1963.

3. LIBRARY SERVICE (STAFF WORK AREAS, PUBLIC SERVICE AND PROCESSING AREAS)

Basic complement of 400 asf, plus 140 asf/fte staff[1] based upon:

Function	Provision
Staff work areas (desk and immediate working area)	100 asf/fte staff
Public service	
Basic catalogue	basic complement
Additions to catalogue	function of (staff, users)
Public space adjacent to work areas	function of (staff, users)
Processing	
Equipment	basic complement
Storage	basic complement
Storage of materials in process	function of staff

For example, a college library with 10 staff would require a total of 1,800 assignable square feet for "library service" or an average of 180 asf per full-time equivalent staff member.

4. SPECIAL ACCOMMODATIONS

Audio-visual (general and television)

No specific standards appear possible for such areas. Each installation should be considered on the basis of the program inputs involved and may be added to the library in addition to the above facilities.

Note: Space for programmed learning facilities such as language laboratories, etc., should be allocated (as much as is possible) to the instructional departments for which activities are conducted and not considered as part of library space, even though physically located in the library.

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[1]FTE staff: full-time equivalent staff, including professional, clerical, and student assistance.

SECTION IV
APPLICATION OF STANDARDS

Two additional factors, which relate to the actual administration of the proposed standards must be mentioned. These are (1) the method of space inventory and (2) "lead time" considerations.

For a Junior College planning the second or third increment to library capacity on its campus, the proposed standards must be applied to existing floor areas which have been accurately inventoried if the standards are to assist in the equitable allocation of space. Space categories are clearly defined by the State Department of Education and would appear, on the surface, to be fairly unambiguous. Large variations in the reported use of certain areas by individual colleges, however, suggest that not all districts inventory their library facility in the same manner. The distinction between what is assignable versus non-assignable floor area in the library is less clear than in the instructional facility. This is particularly true in the newer library facilities. Design trends are toward more open areas adjacent to entrances. What might have been a walled corridor in an older facility is represented by some portion of an open area in a newer library. To the extent that such distinctions are not established on a comparable basis by the several Junior Colleges, the proposed standards will not measure need accurately from either a relative or absolute standpoint.

In recent planning of library facilities in California public higher education, the total assignable square footage of a building has generally constituted some 70 percent of the gross floor area. The gross floor area is defined as "the sum of the areas at each floor level included within the principal outside faces of exterior walls, neglecting architectural set-backs and projections".[1] This gross floor area concept thus encompasses both the assignable square feet and non-assignable square feet categories cited in the standards in Sections II and III.

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[1]See Instructions for Forms P-1 and P-2, California Public Higher Education Cost and Statistical Analysis, CCHE, 1963.

The second relevant area of concern in the application of the proposed library space standards is the concept of appropriate "lead time". "Lead time" is meant to be the number of years beyond the occupancy date for which the demand level (i.e., expected volumes, students, staff) is established and the library sized for optimum use (according to the standards). Most instructional facilities, i.e., classroom and laboratory in buildings are planned to accommodate the level of instructional activity anticipated two years (and sometimes longer) after the building is initially occupied. In this manner colleges are able to construct structures of reasonable size rather than having, each year, to open several small facilities to accommodate the enrollment growth over the prior year. The library activity is less mobile than are those classroom and office activities in the instructional departments. That is, it is more difficult to relocate library functions (with the possible exception of reading stations) in other facilities on campus than it would be to relocate the classroom and office functions of, say, the Department of Sociology when it was found that the building housing this department was filled beyond its capacity. Therefore, the library building should have incorporated in its planned size a slightly longer "lead time" than would be required for instructional departments accommodated in classroom and office buildings. A "lead time" of not less than three years beyond the date of occupancy appears to be a reasonable minimum for the typical Junior College. Shorter lead times, especially at a rapidly growing college, bring about the necessity for adding too many small increments to the basic library facility with probable unnecessary capital costs as well as disruptions to the functioning of library activities when such increments are being constructed.

An additional aspect of the "lead time" planning concept relates to average capacity which is provided a function over the long run. If in the planning of physical plant capacity for the library an increment is scheduled (with appropriate lead time) for occupancy each time the facility is filled to its capacity, there will be, over the long run, an average-facility provision which exceeds need by the yearly over-capacity contained in the lead time. This situation is portrayed graphically in Figure 4. The model consists of a Junior College opening in the first year (t_1) with 1,000 enrollment and adding 250 students annually until a total student enrollment of 3,750 is reached by the 12th year (t_{12}) of operation (or 7,500 in the 24th year). When planning is geared to a three year "lead time" and library plant capacity is never allowed to fall below need, the result is an annual average capacity over the 12 years that is 121% of need. Two relatively small increments to the initial plant are required by the 12th year and three more additions would be required to accommodate the library function by the time the campus reached its ultimate enrollment of 7,500.

Figure 4
PLANNING ALTERNATIVE I
(lead time only)

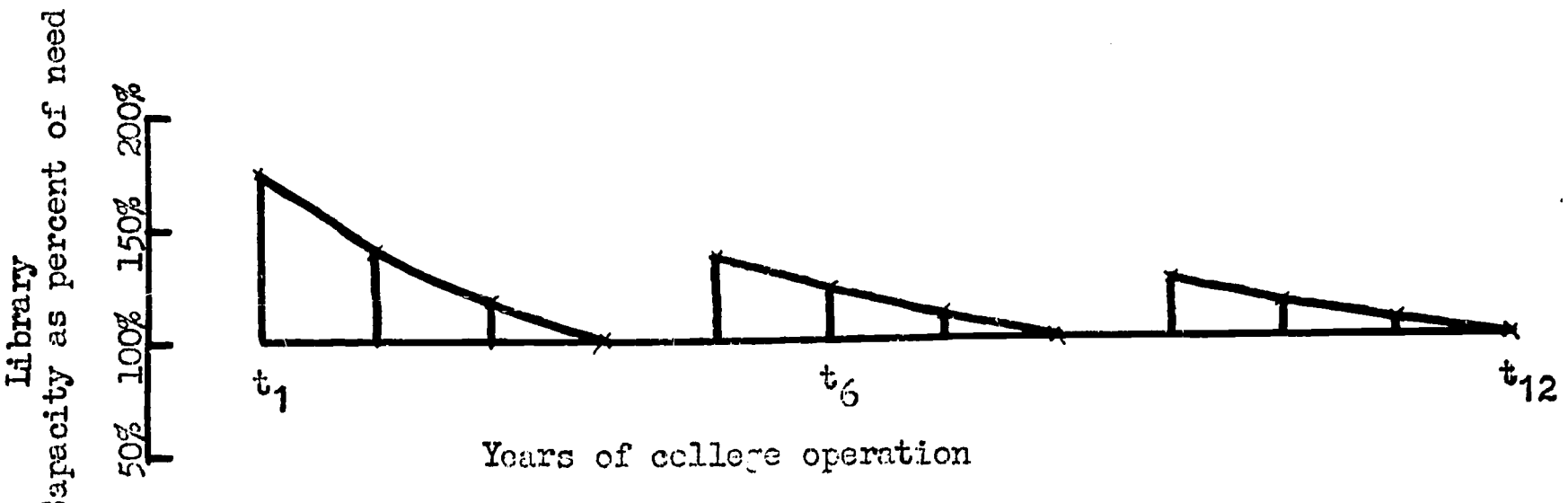
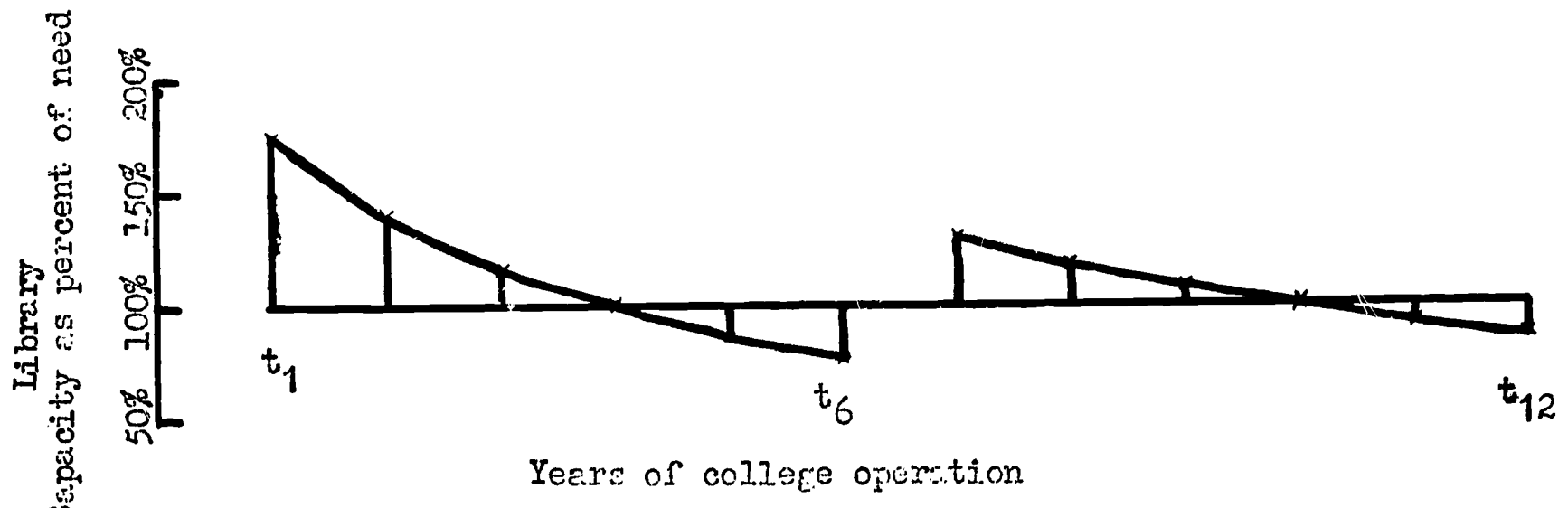


Figure 5
PLANNING ALTERNATIVE II
(lead and lag time)



Figures 5, 6 and 7 represent alternative planning procedures given the same college enrollment model.[1] In Planning Alternative II, (Figure 5), the library capacity is allowed to fall slightly below 100% of need prior to the construction of another plant increment. Here one addition will be required during the first 12 years with two more needed to take the campus to its ultimate-enrollment library requirement. The unit costs of facility construction may be less than in the Alternative I procedure due to the larger sized units. Further, the average capacity provision (111% for 12 years) is more closely approximated to long-run requirements. The major question in this programming relates to the ability of the library to function properly when capacity represents 78% of needed area (as in year t_6). In such a situation, adjacent buildings may be utilized more extensively to accommodate reading station requirements. Technical processing staff could also be accommodated in adjacent facilities temporarily (with some probable increase in operating costs). The collection, to be sufficiently accessible to users, however, must continue to be housed in the library. The standard provision of 125 volumes per section allows some room for expansion in the number of volumes held without increasing total stack area requirements. It is doubtful, however, that any provision much below 80% of need (or approximately 150 volumes per section) would be operationally feasible unless additional stack space were acquired by displacing some other library function into another facility. Such additional disclocations would certainly be undesirable.

The Planning Alternative III (in Figure 6) examines the possibility of sizing the library for a six year "lead time" with unused areas being scheduled for interim occupants who would later be phased out when the total space was required by library activities. Normally such interim occupants would be provided office and/or classroom areas. (The feasibility of building in laboratories, with the required plumbing and extensive stationary equipment, and later remodeling them into open library areas is extremely doubtful.) The resulting long-run plant utilization (112%) is similar to that in the previous alternative (II); however, the extent and danger of "under-capacity" operation is less significant. Only two additions are required for total campus growth, one being required during the first 12 years. After the 5th and 14th years remodelings would be required to convert areas formerly occupied by interim functions into library areas. The added units are larger than in either Alternatives I and II and would most likely exhibit smaller unit construction costs. The added construction costs of remodeling, however, must also be calculated along with the value of the disruption to normal library functioning caused by such work.

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[1] An infinite variety of planning procedures are possible. Only four of the most obvious alternatives appear here.

Figure 6
PLANNING ALTERNATIVE III
(interim occupancy)

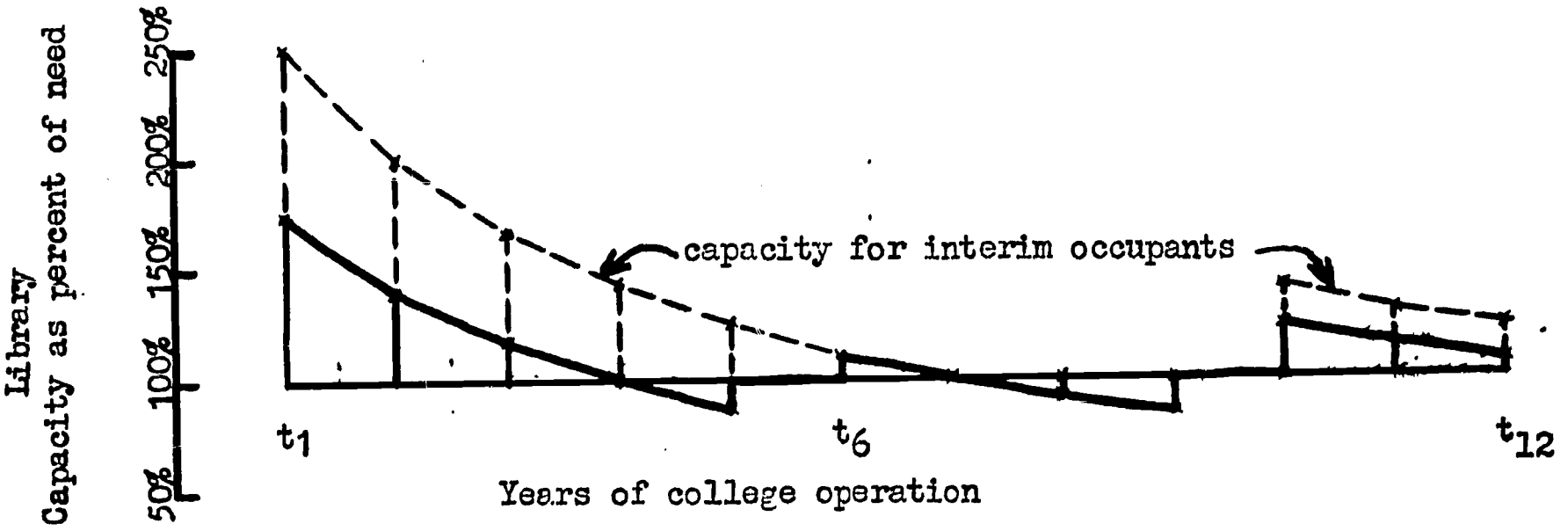

Figure 7
PLANNING ALTERNATIVE IV

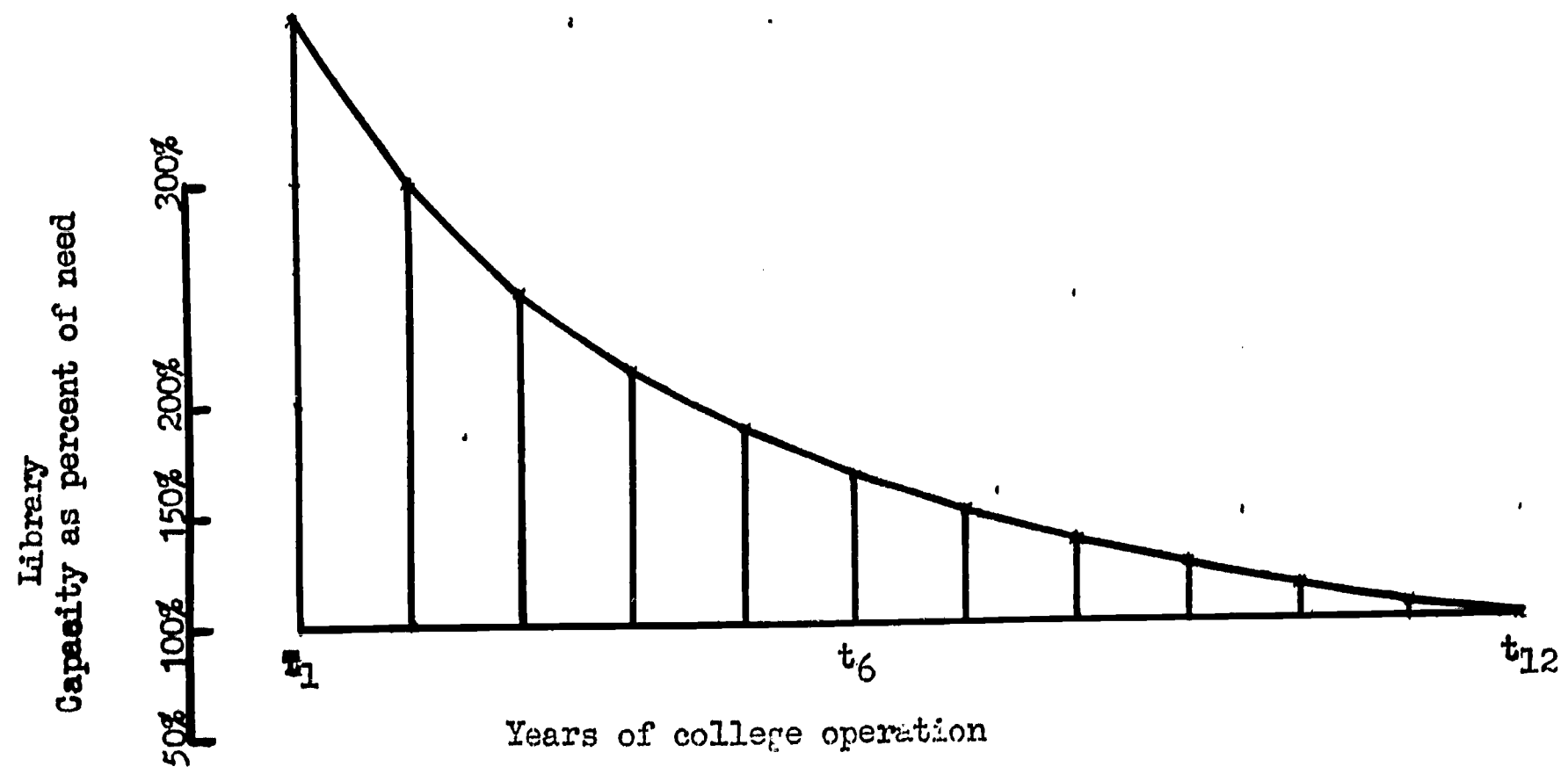

Figure 7 represents the alternative (IV) of constructing an extremely large initial plant which would accommodate approximately one-half the total campus growth. While only one additional unit (of similar size) would be required (in the 13th year of operation), the arrangement is rather inefficient as indicated by the average annual utilization of 177%. The large sizes of the building units would probably result in some economies in unit costs of construction. The unused capacity could not be recovered, however, and would represent a sub-optimal allocation of capital funds if, as a result, other activities on campus, instructional or otherwise, were forced to operate in physical plant areas that were short of needed capacity.

In summary, Alternatives I and IV result in less efficient plant utilization and, in the case of I, relatively frequent disruption of library operations with lessened service levels and (probably) increased operating costs. Alternatives II and III appear to be more appropriate bases for the planning of campus library facilities, both in terms of more efficient utilization of the library structure(s) and more reasonable incremental increases in library capacity. Of these two alternatives, the "interim occupancy" method, Alternative III, may provide the best solution through the vehicle of greater plant flexibility as well as less frequent construction requirements. In the final analysis, however, numerous considerations must be taken into account to determine the "best" solution for any given campus. Excessive costs of remodeling or lack of need to house interim occupants might well rule out the possibility of planning according to Alternative III. Whatever the solution chosen, it should again be emphasized that "lead times" of less than three years would seem unappropriate in the planning of Junior College libraries.

APPENDIX A

APPENDIX A

Membership of Committees and Department of Education Staff Consulted During Study

1. Higher Education Library Resources Committee

   Samuel J. Leask, California Citizens for Better Libraries
   Mrs. Carma Leigh, California State Library
   John B. Dooley, College of San Mateo
   Marvin Howell, State Department of Education
   Stanley McElderry, San Fernando Valley State College
   Dr. Robert A. Kennelly, California State Colleges
   Dr. Robert A. Vosper, University of California
   Dr. Angus Taylor, University of California
   Tyrus G. Harmsen, Occidental College
   Dr. E. Howard Brooks, Stanford University
   Frank J. Dempsey, Berkeley Public Library
   Harold L. Hamill, Los Angeles City Library

2. Facilities Standards Committee

   Gerald Cresci, State Department of Education
   Arthur Hall, California State Colleges
   Harry Harmon, California State Colleges
   Robert Harris, Department of Finance
   John Keller, University of California
   Robert Walen, University of California
   N. B. Keller, Legislative Analyst's Office

3. Junior College Round Table of the California Library Association

   Miss Harriett Genung, Mt. San Antonio
   Thelma Taylor, Harbor College
   Harry Bach, Riverside City College
   Mrs. Joleen Bock, Rio Hondo Junior College
   William Grainger, Pasadena City College
   Everett Moore, College of the Desert
   Elton Shell, San Bernardino Valley
   Hal Stone, L.A. City College
   William Whitney, Fullerton Jr. College
   Helen Rodgers, El Camino College
   Margaret Lanphier, Mt. San Antonio

4. State Department of Education Staff

   Archie McPherran
   Milton J. Beck
   Edward Rodgers

APPENDIX B

APPENDIX B

TRADE AND TECHNICAL CLASSIFICATION

(Based Upon Standard Classification of Subject Fields and Services used in the California Public Higher Education Cost and Statistical Analysis, CCHE, 1965.)

Code	Subject Field
6800	Trade and Technical (general)
6801	Aeronautics Technology
6802	Air Conditioning
6803	Building Trades
6804	Ceramic Technology
6805	Chemical Technology
6806	Culinary
6807	Drafting Technology
6808	Electrical Technology
6809	Electro-Mechanical
6810	Electronics Technology
6811	Engineering General
6812	Engineering Technology
6813	Industrial Management and Supervision
6814	Industrial Technology
6815	Mechanical
6816	Metallurgical Technology
6817	Metal Trades
6818	Textile Technology

APPENDIX C

APPENDIX C

Reading Station Allowances Based Upon Fall 1963 Student Credit Hour Reports

1. Trade-Technical student credit hours (SCH) less than 3% of total sch: 20%

   Chabot
   Grossmont
   Merced
   Palos Verde
   Siskiyous

2. Trade-Technical sch 3% and 4% of total sch: 19%

   Foothill
   Gavilan
   Imperial
   Marin
   Oceanside
   San Francisco
   Santa Ana
   Santa Rosa
   Sierra
   Yuba

3. Trade-Technical sch 5% and 6% of total sch: 18%

   American River
   Antelope Valley
   Bakersfield
   Barstow
   Cabrillo
   Cerritos
   Chaffey
   East Los Angeles
   Los Angeles City
   Los Angeles Metro
   Los Angeles Valley
   Modesto
   Mt. San Jacinto
   Napa
   Palomar
   Porterville
   Rio Hondo
   Riverside
   Sacramento
   Santa Barbara
   Sequoias
   Shasta
   Victor Valley

4. Trade-Technical sch 7% and 8% of total sch: 17%

   Coalinga
   Diablo Valley
   El Camino
   Fullerton
   Hancock
   Los Angeles Harbor
   Los Angeles Pierce
   Monterey
   Pasadena

5. Trade-Technical sch 9% and 10% of total sch: 16%

   Compton
   Desert
   Glendale
   Lassen
   Mt.San Antonio
   San Bernardino
   San Joaquin
   San Mateo
   Santa Monica
   Southwestern
   Taft
   Ventura

6. Trade-Technical sch equal to, or more than 11% of total sch: 15%

Citrus	Oakland
Contra Costa	Orange
Fresno	Reedley
Hartnell	San Diego
Long Beach	San Jose
Los Angeles Trade	Vallejo