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THE UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

AN INVESTIGATION OF VARIOUS SOCIAL AND ECONOMIC
FACTORS INFLUENCING STUDENT USE
OF ONE COLLEGE LIBRARY

A DISSERTATION
SUBMITTED TO THE GRADUATE FACULTY
in partial fulfillment of the requirements for the
degree of
DOCTOR OF PHILOSOPHY

by

HOWARD CLAYTON

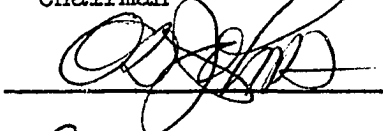
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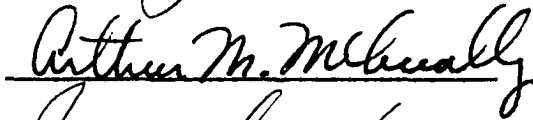
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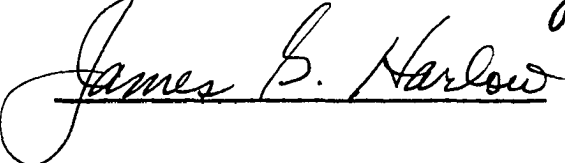
AN INVESTIGATION OF VARIOUS SOCIAL AND ECONOMIC
FACTORS INFLUENCING STUDENT USE
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CHAPTER I

INTRODUCTION AND BACKGROUND TO THE STUDY

With the phenomenal growth of 20th century American higher education has come a concomitant development in the holdings, services, and importance of college and university libraries. Money being spent by colleges for book collections alone now exceeds \$48,000,000 and the total number of professional librarians serving in institutions of higher education presently stands at approximately 9,674 (1). It is contended by writers such as Waples (10), Sheehan (8), and Wilson (12), and assumed by librarians in general, that this outlay of money, personnel, and specialized services results in a better education for today's college students.

During recent years, however, several studies have shown that the library's role in education may not be as crucial as educators and librarians have characteristically assumed it to be. For example, separate studies by Branscomb (3), McDiarmid (7), Weatherford (11), and others found that only a small minority of college students, perhaps no more than 33 percent, are responsible for as much as 87 percent of their campus library's general circulation; moreover, Knapp (6) discovered that the library made virtually no impact on most courses in the curriculum. Several other studies such as the one by Jex (5) have shown that independent reading, presumably involving use of the library, plays little part in the determination of either a student's grades or his over-all rank in class standings, thus leading to the general conclusion that many college instructors neither fully utilize library facilities nor completely exploit the invention of printing in either

classroom teaching or assessing student achievement in its narrow sense.

These studies also point out that while there is a small minority of college students who use the campus library heavily, another group approximating one-third of the student body makes at most only negligible use of the facilities. Furthermore, such research as that done by Branscomb (3), Knapp (6), and McDiarmid (7), suggests that these non-users make achievement marks in school that are almost identical to those of the student body as a whole, thus leading one to the conclusion that such pupils probably wouldn't miss library facilities even if they were completely absent from the campus. Since it then appears that college students who do not rely on the library for much of their academic achievement are not necessarily failures, misfits, or even late-starters, what factors do cause some students to make heavier use of campus library facilities than do others? Are there any observable characteristics in students' backgrounds that cause them to regard reading in general, and libraries in particular, with varying degrees of importance to education even though it does not measurably affect achievement marks? Do differences in patterns of library use among college students exist because of sociological influences that are known to affect other aspects of American education?

STATEMENT OF PURPOSE AND HYPOTHESIS

The purpose of this investigation was to see whether the various socio-economic backgrounds of students in one small mid-western liberal arts college play any significant part in their use of the college library. For example, this study attempted to answer such questions as whether students who came from urban areas and were sons and daughters of high-income

professional people made more or less use of the college library than did sons and daughters of low-income parents who worked in non-professional occupations and came from rural sections. More specifically, this investigation attempted to determine whether noticeable differences in use of the campus library could be discovered when students were arranged by the occupation and education of their parents, the income of their family, and the size of secondary school from which the students themselves graduated.

As a guide for carrying out this investigation, the following null-hypothesis was tested: There are no significant differences in use of the college library among students who come from various social and economic backgrounds. In examining this proposition, answers to questions such as the following were sought:

A. Social Factors: What Social Conditions Make An Impact On Use Of The College Library?

1. Do students from urban and rural environments show any significant differences in use of the college library?
2. What connection is there between a student's use of the library and his parent's occupation and education?

B. Economic Factors: What Significant Differences Are There In Library Use Among Students Coming From Different Economic Backgrounds?

1. Does income of parents play any significant part in the amount of student use of the college library?
2. Is There any noticeable relationship between the socio-economic environment of the home, status of high school attended, and use of the college library?

IMPORTANCE OF THE STUDY

The answers to questions such as the above should be of concern to

secondary and higher education guidance workers, educational administrators, college teachers, and librarians at all academic levels. Educators should be aware of any trends in library usage that are discernible among various groups of students for such information could be of benefit to those who are concerned with the library's potential, its contribution to the teaching program, and its choice of educational materials and services. Such knowledge, moreover, should also help to define more clearly the cooperative role of the library and the classroom teacher by pointing out factors that may play a part in conditioning student attitudes and points of view. Furthermore, by identifying both traditional users and non-users of the library, it could help to lay the groundwork for ascertaining what services are necessary if the library is to be a vital educational force in the lives of all students. Finally, additional information such as this not only could help to interpret more fully the educational role of the library as perceived by the college teacher but it could also assist teachers and librarians alike who are interested in cooperatively re-evaluating the role of the college library in the academic program.

DEFINITION OF TERMS

In general, the terms found in the text of this study are obvious and self-explanatory. To prevent ambiguity, however, a few terms are discussed below so their meaning, as used in the context of this investigation, will be clear.

The term loan will be used to designate a transaction between the library and college student whereby the latter is made responsible for the safe-keeping and return of borrowed material. By this definition, loan refers to any type of library material whether it be books, magazines,

pamphlets, ephemeral pieces from the curriculum center which the South-western library maintained for the teacher education program, or any periodicals that have been permanently bound. Although the point is discussed more fully in Chapter IV, it should be stressed here that full use of any college library can never be perceived by merely examining the number of loans recorded at the circulation desk for materials used within the library and not available for borrowing can be quite as crucial to one's study as those that are taken home; furthermore, it is important to remember that all materials in the collection do not make an equal impact upon either a student's education or his ability to complete class assignments. This definition of the term loan, then, is used advisedly and with full knowledge that too narrow an interpretation of its meaning tends to militate against a true understanding of the library's role in the educational process. The definition given above, however, is adopted because it lends itself to objective measurement but it will be used within the context that such restrictions impose.

A volume is meant to be an accumulation of writing that is arranged in one separate binding. This does not mean that the binding necessarily forms a complete work or that it is of a permanent nature. Consequently, it is possible to speak of a volume of a periodical being on loan to a student and mean that the student had merely a three months cumulation of a magazine in one cover. A definition such as this gives a researcher much more flexibility in tabulating the use made of large and heavy periodicals which demand several bindings per bibliographical volume.

A reserve loan will indicate a transaction in which the student borrows any piece of material that has been set aside by an instructor so members of his classes may make special or intensive use of the contents.

This use of the term reserve is not to be confused with the common practice of establishing a priority list of names with the intention of making a book that is temporarily in demand available to successive persons on the list. In the context of the present study, reserve loan designates transactions for those materials which an instructor feels are of such special importance to his entire class that their use can be expedited by keeping them together in a restricted area and circulating them for a comparatively short period of time.

Conversely, a regular loan, non-reserve, or loan from the general collection will designate those transactions which are the typical two-week loans. These loans are made for those materials that have only the customary restrictions of a college library and are for works that have not been expressly set aside for special study by a particular group. Occasionally, the terms charges, loans, and withdrawals will be used interchangeably. These three terms meet the conditions of the term loan defined above and will be used in that sense. All other terms of a technical nature will be defined and explained in the course of the text.

DESCRIPTION OF SAMPLE, SOURCES OF DATA, AND BASIC ASSUMPTIONS

Description of Sample

This study was limited to the student body of Southwestern College at Winfield, Kansas. Instead of taking a random sample from a population, this investigation was based on data compiled from the entire full-time student body that was enrolled in the college during the spring semester of 1964. For purposes of this study, a pupil who was enrolled in twelve or more hours during this period was considered a full-time student; consequently, the investigation included a total of five hundred forty-five

students. Such a procedure not only allowed the largest possible number of students from various social and economic levels to be studied but it also permitted more categories to be closely observed. While the study was limited to undergraduates, the subjects were not necessarily between the ages of eighteen and twenty-two.

Sources of Data

The first task of this investigation was to collect data on the social and economic background of each student at Southwestern College and devise a system for comparing this information to the number of materials which that student borrowed from the college library during the period under examination. The steps used in collecting this data were:

1. Each student's name was written on a 6" x 5" card. With the exception of renewals, each time a student borrowed a piece of material from the college library during the spring semester of 1964 it was recorded on his individual card.
2. On this same card, information was also kept concerning the student's major, class, sex, ACT percentile, grade-point average, and marital status. Further information included the student's home town, its population, the name of the high school from which he graduated, the school's enrollment, its operating budget, the school's library budget for the 1962-63 school year, and the number of volumes in the library's collection. Completing the information on this card was a listing of the parent's vocation and a notation as to whether the student dropped out of school during the course of the semester.
3. The library's public service center was able to ascertain the number of volumes each student borrowed during the semester and the college registrar supplied information on all other matters except the enrollment of the student's high school, size of school library, and total operating expenditures. These data were gathered either from departments of public instruction in the separate states or by writing to individual high schools.
4. During the last few days of the school term each student completed a questionnaire which gave information concerning his own socio-economic background. This included data on his parent's education, their mode of livelihood, income,

number of reading materials in the home, and other pertinent information.

5. This combined information was brought together and arranged into all the necessary categories. Statistical procedures which are outlined in Chapter III were applied to the collected data in an effort to detect significant patterns of library use among students from the various socio-economic strata.

Basic Assumptions

Unfortunately, no investigation can be 100 percent objective for basic assumptions underlie all studies in the behavioral sciences. This research is no exception for it was assumed that the students who were studied had competence and were willing to give correct information on the questionnaire. To maximize objectivity in this regard, the questionnaire was administered by college teachers in individual classrooms with no librarians present.

To complete the questionnaire, students merely checked answers that were arranged as multiple-choice questions. In constructing this questionnaire, judgments from librarians, educators, and psychologists were secured so that wording and arranging of the questions would result in a minimum of prejudiced responses. In addition, an extensive review of comparable questionnaires at other colleges and universities was made. Finally, a few of the professors had personal knowledge regarding the background of some of the students; consequently, these pupils were given a trial-run of the questionnaire and the cooperating teachers verified validity for responses given by these pupils. A copy of this questionnaire appears in the appendix.

A second assumption was that data from the registrar's office, as well as information from the various departments of public instruction, were accurate. The latter was originally supplied to the several state agencies through reports by individual school principals in separate attendance centers. In some states the department of public instruction does not collect such

information and it thus became necessary to correspond directly with the individual school.

Finally, while it was realized that circulation figures do not give a complete picture of student library use, this study accepted the assumption of various other investigators (7), (6), (3), that found circulation data to be a reliable index of a student's total use of the college library.

LIMITATIONS OF THE STUDY

It is realized that this investigation is limited to the extent that the above assumptions can be called into question. Moreover, this study dealt with only one institution of higher education and because of this there is no intention to project these figures to other schools or make inferences about the total role of the library in higher education. A few statistical measurements were carried out, however, in a deliberate attempt to see if the findings at Southwestern differed from results reported in the literature. While this is discussed more fully in Chapter IV, it is interesting to note that on the basis of this evidence Southwestern does appear to be typical of other institutions that have been examined.

The limitation of time and expense precluded interviews with each of the students; therefore, no attempt was made to match up level of library use to social status as perceived by the individual student. Today, students that are found on a college campus typically come from many states and even several nations. Consequently, categorizing students according to techniques developed by Warner (9), and Hollingshead (4), was felt to be impossible and it was therefore decided that classifications would be generated solely on the basis of information obtainable in the several places

described above.

Finally, every investigation is probably limited to some extent by the statistical measures that are employed. This is particularly true when they are applied to an agency of service such as the college library. This research, like many others, relied exclusively on quantitative data with full knowledge that many leading librarians consistently call for qualitative standards in measuring library excellence (2). Consequently, it is acknowledged that this study is subject to any limitation that is valid when purely objective measurements and descriptions are applied to library service.

ORGANIZATION OF THE STUDY

Throughout the present chapter introductory material has been presented which not only acts as a setting for the study but also cites reasons for its importance. Furthermore, attention has been directed toward the purpose of the investigation, the sources from which the data were gathered, and the limitations under which the entire study was undertaken.

Chapter II is intended as a review of the literature pertinent to this investigation. Works are cited and discussed in that section having to do with various socio-economic factors which both influence college attendance and make an impact upon use of the campus library; moreover, this section discusses the possible effect that libraries have upon education in general and student achievement in particular. The review not only cites investigations that have been conducted in the area of the college library but also reviews those studies concerning public libraries which have dealt with the social and economic backgrounds of their patrons.

The succeeding chapter is devoted to a brief description of Southwestern College, the socio-economic background of its students, and the place of the library in the school's educational program. Also included in this section is a short discussion of how the social and economic categories used in this study were formed, brief background information on the secondary schools that are discussed in the statistical section, and a short statement concerning the tools which were used to test the hypothesis.

Chapter IV is devoted to presenting the basic data with which this study was concerned. In this part can also be found, through tables and graphs, the shape of the distributions which were under discussion, the proportion of students that were found within the various socio-economic variables, and a brief summary of how the descriptive data of this study compares with that of investigations which were made on other college campuses during the past three decades.

The final two sections are devoted to a statistical analysis of the collected data, plus a summary of the findings and conclusions based on the results. The report will close with a discussion of topics that are recommended for further study plus a short statement on the importance of further research as an aid in identifying potential library users on the college campus.

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CHAPTER II

REVIEW OF PERTINENT LITERATURE

During the last half century a growing body of literature has arisen concerning socio-economic factors that seem to be decisive in shaping attitudes toward higher education. Even more recently, an increasingly impressive collection of writings describing users of the campus library has come into being and with the appearance of this literature has come greater insight into the make-up of the library's clientele. It now appears that additional factors, beyond the requirements of assigned readings, might be motivating at least a minority of pupils to borrow more than the average number of books from the library. It would seem that at least part of any such possible motivation might be attributed to the social, psychological, and economic environment which caused the student to desire a college education in the first place.

Various professional researchers, as well as a number of student investigators, have studied these psychological, economic, and social factors with varying degrees of sophistication. This section, therefore, will be devoted to an abbreviated resume of the literature surveying these fields; however, it will not be limited to the social and economic factors that play a part in determining who goes to college for it will also cover the research which shows how these same elements contribute to differences in intelligence, achievement marks, and attitudes toward libraries. Moreover, this review will examine previous studies which have indicated that socio-economic influences do seem to make some impact on library use. Finally, this section will examine some of the writings that have been

concerned with the role of the library as perceived by students as well as the importance of the library in the successful completion of course work.

For many years successive studies have consistently shown that American higher education is not equally accessible to everyone. In an intensive study of a few years ago, Roper (1) concluded that three critical factors figure heavily in whether a given student actually attends college. These considerations are (a) sex of student, (b) academic standing of student in high school, and (c) the socio-economic standing of the student's family. Not unlike these findings were those of Stroup (46) who found that race, sex, high school grades, enrollment and standing of high school attended, parent's economic standing, and student's place of residence were the over-riding considerations in whether a student continued on to college.

No less important are the studies that show the influence of urban and rural backgrounds as determinants in college and university attendance. For example, Stroup's study (46) also pointed out that those students living in cities and towns went to college in greater proportion than did those living in rural areas. In the same vein, Havemann (20) found that a student's chances for going to college are greater if he comes from a city of 100,000 population or less and he has far fewer chances if he has a farm background. Finally, Mulligan (40) noted that in all rural-urban settings, the proportion of students from the white-collar groups exceeds that of the students from blue-collar groups.

The size and quality of a student's high school has long been a topic for researchers interested in the origins of college pupils. Referring again to Stroup (46), this study showed that seniors from larger high schools and from schools with the highest academic rating went to college in greater proportion than seniors from schools with smaller enrollments and lower

ratings. That the high school attended is a useful predictive index for a student's intention to attend college is also seen in Roper's study (1). This piece of research pointed out that school income per-capita and average expenditure per student are both well-known indicators of going to college.

Social class differences in the background of college students is another topic that has long held the attention of investigators. The Yearbook of Education (15) noted that despite the recent influx and availability of public and private money for college students, members of the middle classes who have an urge to rise will accept hardships so their children can attend college. On the other hand, farmers and unskilled laborers do not have this tradition and are, consequently, not as willing to make the necessary sacrifice. Even more cogent is a report by McConnel (36) showing that winners and runners-up of the National Merit Scholarships came in more than 35 percent of the cases from families engaged in the professions. These findings also note that there was another group comprising about 22 percent of the total recipients who came from families of the managerial classes; however, only about 7 percent came from farm families and from skilled or unskilled labor classes. This is also in keeping with Feldmesser's findings (13) which showed that a young American of non-manual background enjoys about a four-to-one advantage over the student from a manual background in gaining access to college.

Havighurst and Taba (22) also found that home environment is important in determining who will attend college. These writers point out that in most families of low social status neither the intrinsic worth of an education nor the intellectual values that are typically stressed in

a school environment are impressed upon children in their day-to-day life activities. Moreover, even if the parents in these families are atypical and do give emphasis to these educational values in a verbal way, it is still more difficult for the young people of low status to accept them.

One study more is important to note. Young (56) discovered that significantly more parents of college going than non-college going students had graduated from college. Furthermore, these parents were not exclusively professionals and executives for they were well represented in the management class and among those groups who are above average economically. Even more important, however, was the fact that these same parents tended to encourage their children to attend college.

Turning from factors conducive to college attendance to cultural influences that cause differences in performances on intelligence tests, Lehmann (34) found that when scores on intelligence tests are compared differences do exist between rural and urban school children, as well as among students from various socio-economic strata. His findings supported earlier investigations showing that urban children have a higher mean I.Q. than rural children. Along the same lines, Havighurst and others (21) found a relationship between ability and social status, indicating that high family social position corresponds to high ability generally. On two intelligence tests, as well as on a reading test given to both groups, Havighurst's survey of ten-year-old children in a mid-western county-seat town of ten thousand population turned up the interesting data that rural-urban differences are consistently in favor of urban children.

Complementary to these data, Hieronymus (23) found a significant correlation between school achievement and socio-economic status even when test intelligence was partialled out. Carrying this idea a step further,

Frankel (14) investigated achieving and underachieving boys of the same high intellectual ability in an effort to determine causes for differences between the two groups. Among other factors in the study were home conditions, family background, and socio-economic status. It was found that achievers came from families rated significantly higher both socially and economically than those of the underachievers. Furthermore, more of the fathers of the achievers than of the underachievers were found in the top three groups, i.e., professional, semi-professional, and proprietor-managers.

From a study in Arkansas, Keister (31) discovered that freshmen at Arkansas State College during the fall of both 1950 and 1953, coming from class "A," "B," and "C" schools, showed noteworthy differences. The author noted that factors such as length of term, quality of library, degrees of the faculty, and pupil-load are all elements which accrediting teams consider when reviewing high schools for membership in the North Central Association. The study not only showed that college freshmen from North Central high schools had somewhat higher I.Q. scores than those from schools with lower accreditation but that differences in quality of scholarship of these students were in favor of the graduates from schools with higher accreditation. Bledsoe (2) found very much the same thing for he noted that the chances are slightly favorable that the graduates of the larger high schools will achieve a better average mark in college.

Hoyt (25) is another investigator who discovered differences among college students with various backgrounds. Results of his study showed that there was a distinct trend for students from the smaller high schools to receive lower grades in college when he adjusted the achievement marks to high school rank.

Not all investigations show that students from larger schools do better work in college. For example, Saupe (42) and Lathrop (33), doing research at Missouri University and Iowa State College respectively, found that high school size had little relationship with success in college as far as marks were concerned. However, whether a college is located in a large city or in a small town may conceivably make a difference on the academic performance of the students. In this regard, Washburne (53) found that urbanism was correlated positively and significantly with academic success for students at the small-town college he studied but not for students at the city college participating in his investigation. Centi (6), studying only students in a large urban university, found no significant connection between achievement marks of students and the occupation of their parents. Moreover, the high and low scoring students were grouped according to the educational level attained by their fathers and mothers and again it was found that no significant differences existed. As far as socio-economic status is concerned, Washburne concluded that they were not significantly related to academic performance.

Finally, Young (57) feels that one should be quite chary in using pre-college background and training as a basis for predicting a student's success in higher education. Place of residence, socio-economic status, intellect, educational preparation, and other factors generally thought to be crucial in an educational career, according to this study, may not be as critical as was formerly thought. This conclusion was based on the author's finding that the U.S. has so many schools of various types, sizes, and quality beyond the high school that even ability is not too important in predicting success in higher education. According to Young, the differing preparations of students and the various constellations of ability can

easily be handled by some type of college on the American scene.

Turning to attitudes toward library use among rural and urban groups, Bundy (4) concluded that farm families in Illinois are generally unaware of the need for improved library service. Moreover, farmers in lower income brackets, and even those who are college graduates, while not likely to be opposing tax support for libraries, tend to think that present service is adequate. As far as social class is concerned, libraries, according to Eells (10), are frequented more by middle class than by lower-class children, thus contributing more to the literary information and experience of children in middle-class groups. There is, similarly, a tendency to place and to keep middle-class children in the most academic or "bookish" curriculum in schools.

In a significant work of some years ago, Warner (52) found that social class was indeed a strong influence on the reading habits of people in Yankee City. This was particularly noticeable in their reading of newspapers and magazines even though class lines could also be seen to a lesser extent in the reading of books. For example, the upper-upper classes seemed to have an affinity for science, biography, and history while the lower-lower classes catered more to children's books, adventure, and man's struggle against fate. Class lines could also be seen in the amount of use made of the city's public library. The upper-upper class had the smallest percentage of members which used the library while the upper-middle class was the only one which used the library to a significantly high degree. Of more than little interest was the author's discovery that "upper-lower classes comprised a larger percentage of newspaper subscribers in Yankee City than any other place." Next in order of newspaper use was the lower-middle class, then the upper-middle, the lower-lower, the lower-upper, and finally the upper-upper

classes.

Another community study that turned up informative data on library use among social classes was Hollingshead's survey of Elmtown (24). In this work it is noted that 54 percent of the boys and 34 percent of the girls borrowed no books from the public library during the period under investigation! Whether a given student at the local high school borrowed from the public library was significantly associated with his class position if he was a male student but not if the student happened to be a girl.

Even though a public library was being examined, this particular survey is especially pertinent to the present study for it is noted that 75 percent of the books borrowed by high school students were used in connection with their school work. Class II boys (the highest), and Class V girls (the lowest), borrowed on the average almost the same number of books. In attempting to explain this phenomenon, the author set forth the opinion that this was because Class II boys tended to take their school work seriously, both in preparation for college and earning a living, while the Class V girls were isolated in the high school and to a large extent cut off from out-of-school peers. These girls, moreover, have a low prestige position; however, within their class they are a highly select group simply because they are still in school. Finally, it was also found that Class IV girls averaged more loans than did Class II girls.

Also important was Hollingshead's statement that the reading of newspapers, magazines, and books is not an important trait in the leisure time of high school students. Moreover, when a youngster is inclined to books and is known as a reader he is looked down upon by the non-readers. In a sense the reader is pitied for it is thought that he is left out of

those group activities which form an important part in the life of students making up this age group.

Other community studies that shed light on this problem are those done by Carnovsky (5) and Waples (50). Carnovsky's investigation of circulation in the Hinsdale, Illinois, Public Library brought out the fact that housewives and students are the heaviest users of the library. Ranking third in use was the professional group, a category that included teachers, nurses, and lawyers. Waples, in carrying out similar research but working on New York's Lower East Side, found that readers who made heavy use of the public library were found largely among professional people and students.

Other research dealing with the impact of social class and economic well-being on use of the library among various types of students is not so celebrated as the foregoing and perhaps less comprehensive in scope. Among the works in this area is a study of the reading interests of the students at Huntington College (7) in which the author concluded that some factors influencing reading include parents, home environment, and students' choice of vocation. Louise Mason (38) investigated some of the influences on circulation in a junior high school library and found that students with home libraries of one-hundred fifty or more books borrowed a high mean number of materials than did students from homes with smaller libraries. This study relied entirely on arithmetic means to compare such factors as parental occupation and numbers of brothers and sisters to the number of materials loaned to the students investigated. With the statistical tools employed, the author was not able to prove a relationship between circulation and the above factors; however, Miss Mason did venture the opinion that social and economic factors of the home were an influence in the reading habits of students who used the school library.

In studying the non-reserve circulation of undergraduates at Dickinson College, Thompson and Nicholson (47) compared student use of the library to the influence of instructors, occupation of parents, size of home library, I.Q., student aid, extra-curricular activities, academic status, and college classification. These writers found that neither the occupations of parents nor size of home libraries had a significant relationship to the number of books withdrawn by students. However, those students who received financial aid for college expenses borrowed more books than students without aid and those who planned to continue on to graduate school used the library significantly more than those who were thinking of leaving college upon completion of the baccalaureate degree. Finally, Thompson and Nicholson found that professors had a significant impact on student use of the college library.

The voluntary reading among girls at the Georgia College for Women was the subject of a Master's degree thesis by Catherine Grovenstein (18). She attempted to discover the relationship between this free reading and background, rural-urban upbringing, size of high school attended, occupation and education of parents, number of books in the home, and the reading done by the students before they entered college. The girls who took part in this study kept a diary, completed a questionnaire, and participated in an interview with the author. It was discovered that while only 50 percent of the good readers came from rural communities, as many as 66 percent of the poor readers came from rural areas. Only one-third of the poor readers used their high school library very often while two-thirds of the good readers reported they borrowed books for recreational reading. Moreover, better readers attended larger high schools and more of the better readers owned books when they were children. Finally, those women students who were

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the better readers reported more cases of having talked about books with members of their family and having received more magazines in the home than did the poor readers.

Sister Malania Grace (17) found somewhat different findings in her study of extra-curricular reading among college women. She noted that economic and social factors were not positively associated with the amount of reading done by her subjects. Moreover, the education of the girls' parents also had little influence on the students' reading. In another investigation of extra-curricular reading, Jones (28) concluded that reading tastes and habits, at least as far as periodicals are concerned, were formed among the students before they entered college. Factors contributing to these habits were family influences, socio-economic conditions, intelligence, and previous school experience.

That some factor must be operating which causes certain students to use library facilities more than others is brought out in Patricia Knapp's study (32). She discovered that there were ninety-three students who borrowed books for curricular reading in courses where 80 percent of the students borrowed no books. Moreover, there were sixty-four other students who borrowed no books for classes in which they were enrolled even though 80 percent of their classmates used library materials for work in those same particular courses. On examining these one hundred fifty-seven students more closely, it was discovered that their scholastic achievement was not different from the other class members. Further scrutiny not only indicated their scholastic aptitude, as measured by A.C.E. tests, was similar but the students were also equally proportioned between the sexes. As far as the present study is concerned, the most interesting question about all this pertains to the motivations which caused these

one hundred fifty-seven pupils to use the library so differently from 80 percent of their fellow students who were enrolled in the same subject matter courses.

Regardless of what factors cause some students to read more than others, it appears that most college pupils consider the library only in terms of completing class assignments. For example, the Encyclopedia of Educational Research states that "studies undertaken at different kinds of schools and at different academic levels at different points in time all show that the college student uses the library almost exclusively for course work only." (35:770)

Substantiating this is the previously cited work by Knapp (32) which points out that at Knox College in Illinois 94 percent of the library circulation was for purposes of course work. Not only was most borrowing from the reserve shelf but one-half of the students who did any borrowing at all used these services in 90 percent of the cases for class assignments only. At M.I.T. the results were largely the same. Here, a study (41) revealed that over 71 percent of the undergraduate use of the library was for class preparation, i.e., studying as opposed to research.

Another investigation that found library use to be dependent upon assigned reading was the study by Gaskill, Dunbar, and Brown (16). These writers reported that the greatest use of the library was for reserve books; moreover, these conclusions are similar to those of other writers (37) that have produced evidence that the individual student's use of the library's total resources and services is minimal. For example, in the study referred to above (32), Knapp demonstrated that no more than 20 percent of the entire student body accounted for 50 percent of all library borrowing and Waples (51) was able to show that the average college student body made

no more use of a good collection than of a poor one. Gaskill (16) computed on the basis of a few typical days that 47 percent of the student body at least passed through the doors of the library on a daily basis; however, this figure may be inflated for he stated that 6.3 percent of the students investigated came to the library merely to study their own text-books. In a more recent study, Weatherford (54) gathered information from a questionnaire which one hundred sixty-five students at Miami University completed on the basis of memory. This data indicated that half the students accounted for 86 percent of the books borrowed and, even more significantly, only one-third of the students accounted for as much as three-fourths of all charges from the circulation desk.

In an older but still important work (3), Branscomb calculated that the average student checks out only twelve books per year, or slightly more than one book per course, and he hastened to add that this figure would be much lower were it not for the small number of students who check out an abnormally large number of books. For example, 33 percent of the students investigated accounted for 87 percent of the circulation from the general stacks and 46 percent of the students in one school accounted for 95 percent of all charges. Just as illuminating were the figures showing that 29.5 percent of the students made only negligible use of reserve books. In this case, negligible use was defined as no more than two loans from the reserve desk.

Further evidence that the proportion of students who make systematic use of the college library is small can be found in Eurich's study (11). By breaking down library use into individual days, this investigator found that only a small part of the total student body made daily use of the library's holdings and facilities.

As discouraging as the above data are to librarians, even more frustrating is the evidence showing that a student's use of the library has little relationship to the marks, or grades, he makes in college. For example, Weatherford, in the above mentioned study (54), found that the amount of reading done by students depended on how much had to be read to satisfy the instructor; however, independent reading beyond that was not rewarded by better grades. This co-incides with the findings of Jex and Merrill (27) who stated in 1959 that, "Research here and elsewhere does not support the commonly held opinion that amount of study is a crucial factor in the achievement of grades."

In writing on the impact of social class influences upon learning, Davis (8) states that good grades depend on the student's ability to memorize, master learned symbols, and read or listen to pre-digested solutions by other people -- in other words, paraphrase what others have written or said. Both Jacobs (26) and Hatch (19) reported similar findings for these men came to the conclusion that achievement of students as seen in marks is the same whether the instructor uses permissive or directive methods, student-centered experiences, laboratory practices, case problems, or some other teaching devices.

That pre-college library use has little effect on college marks was the finding of R.D. Walker in a recent investigation (49). This study, in which ability and aptitude were controlled, attempted to determine the contribution of the availability and level of library service in the student's home community to his freshman year academic achievement at the University of Illinois. Walker found that no significant differences in achievement marks existed between students with a high level of library service available to them in their pre-college days and students with

little or no services. His conclusion was that the level of library service available to a high school student is neither good nor bad as a preparation for success in higher education and that insofar as college grade-point averages are concerned, a student is not helped significantly by the level of library service available to him when a high school student.

One study, however, did find some relationship between marks and knowledge of the library. In an inquiry at Lowell State Teachers College, Massachusetts, William Joyce (30) found that academic rank of students and the results of a library expertise test showed a positive correlation of .41. Although this examination was designed to be used in conjunction with freshman orientation, in this case it was administered to eighty-one seniors majoring in elementary and music education at Lowell.

One other investigation related to this area is interesting to note. Smith (43) attempted to ascertain the relation between the student's reading behavior and his possession of abilities and characteristics, or traits, which his reading expresses or develops. It was discovered that relationships do exist between differences in the amount, type, and quality of student reading; furthermore, the author concluded that there was a demonstrable relationship between the reading that a student does and his possession of characteristics that higher education seeks to develop in him.

For purposes of his study, Smith devised a rating that measured the extent of a student's individual growth and development while in college. This instrument, called the student's relative achievement, accompanied the pupil's grade-point average and by utilizing this technique Smith concluded that "bright" students were not concentrated in the high-grades rank. The investigation also pointed out that when students are grouped according to educationally desirable traits, those ranking high read more curricular

materials than those ranking low even though all of them did not receive the same grade-point average. Finally, Smith noted that wide variations existed within the grade-point groups in the amount, type, and quality of reading done by individual students.

Smith's findings seem to be congruent with those of Lewis Stieg (45). The latter concluded that those students who borrowed the most books for assigned curricular reading tended to be the students who also checked out the most books for use in their leisure time. Steig's article also pointed out that students with high academic grades borrowed, on the average, more titles than did the poor students.

Perhaps, then, a great many students do not rely heavily on library facilities because such services do not seem pertinent to their studies or even necessary for their successful completion. The available evidence indicates that neither classroom teachers nor librarians have made much effort to integrate each other's efforts, thus leaving it to the individual student to supply his own motivation. For example, Josey (29) discovered by means of a questionnaire that 60 percent of the college libraries polled did not offer a required formal course in use of the library and 45 percent had nothing more than one lecture or guided tour for the students, usually during orientation week. Fifty-six percent of the responding colleges indicated they tried to give the freshmen some exposure to the library in English classes.

It may be for reasons such as this that comparatively few students know how to make meaningful use of a college library. In this connection, Gaskill (16) noted that although seniors borrow more books than juniors, and the latter withdraw more volumes than sophomores, who in turn use library materials more than freshmen, the upper-classmen nevertheless seem

to be no more adept at using the library as a tool than the lower-classmen. Moreover, there is evidence that graduate students are as little equipped to use library facilities as pupils from other academic levels. Evers (12), in studying the library use of graduate students at Catholic University, came to the conclusion that many of them had little or no real knowledge of either the library's resources or the techniques by which they might use the facilities to best advantage. The students reported that the library seemed too massive a tool for them to use effectively.

More ominously, Stearns (44), in an examination of 44th eleventh and twelfth grade students, found yet another weakness in library service. Here, it was discovered that students ranked libraries as high as fourth in importance of communication and felt it to be not only a very useful instrument for completing assignments but an excellent source of inexpensive recreational reading material as well. However, while students had this appreciation for the library and were generally satisfied with the regular collection, they were unhappy about the service and attitudes displayed by librarians.

Numerous other studies also show a lack of concern among librarians for bringing reading materials and students together. Vance (48), for example, found that the status of public school library service in Michigan had improved but still needed closer working relationships with administrators in planning new programs, adding new services for teachers, and in presenting library instruction to all students. In the same vein, it was noted by Whitten (55) that college libraries have under-rated the actual possibilities already available to them in integrating the library and the curriculum. His review of the literature indicated that college libraries have not functioned or become aware of the ways and means through which

their services might become wholly integrated with the educational program.

This extra-curricular role that the library appears to be playing is made even more manifest when one examines the attitudes of the classroom teacher. In Knapp's study of Knox College (32), it was found that over one-half of the classes in the curriculum were responsible for no more than 3 percent of the loans and three-fourths of the classes accounted for only one-eighth of the circulation. These findings were in line with earlier discoveries by Waples (51) which showed that reading collateral to courses makes up approximately four-fifths of the material borrowed from the library. Moreover, this same material comprises about nine-tenths of the student's total library reading.

No less important is the work of Sister Mary Peter Clave Ducat (9) who carried out an investigation to determine the nature and extent of library use in three secondary schools. She isolated factors such as sex, grades in school, I.Q., academic rank, and reading level in an effort to identify users and non-users of the library. She discovered that a wide variation exists in the estimate of the importance of library materials among teachers within the same subject area. Consequently, individual teachers rate the importance of the library differently, causing students to be motivated in various directions. This piece of research further pointed out that a greater proportion of better students than of those with lesser ability makes use of the school library. However, only a small percentage of students actually makes regular and frequent visits to the school library; moreover, the school library does not play a vital role in the educational program of those schools investigated.

In a study of eighteen teachers and one hundred sixty-one children in grade six, Mohammed el Hagrasy compared pupils' background as they

related to social, economic, and cultural factors (39). He found that when a teacher's personal reading habits and library background are significantly low his class' reading and library skills are significantly low. Conversely, when a class' reading and library skills are significantly high, then the teacher's reading habits and library background must have been at least at a relatively high level. Eurich (11) is another writer who discovered a connection between an instructor's interest in the library and the number of books which his students borrow. His findings indicated that the circulation of books from the general collection and the number of books that teachers in the several subject matter fields placed on reserve formed a similar pattern. In other words, when an instructor placed a good many books on reserve, and insisted that the students use them, there appeared to be a concomitant use of the non-reserve collection.

These data would seem to substantiate Waples' earlier findings which indicated a slight tendency for members of faculties in more excellent institutions to borrow greater numbers of titles than faculties in weaker schools. Even more pertinent, a good library seems to lend more books to instructors than does a poor library. According to the rating scale that was developed for all schools participating in the evaluation of higher education with which his study was a part, it was found that faculty loans relate positively to other factors of college library excellence.

In summary, this abbreviated review of the literature indicates that certain social and economic factors are at work in determining not only who will go to college but also in strengthening the will of others to remain on the campus until graduation. Moreover, these same socio-economic factors appear to have an impact on intelligence test scores, attitudes toward education and libraries, and perhaps even on achievement marks.

Approximately one-third of the college students make virtually no use of the library while another group of about the same number borrows a large number of books. This great diversity in patterns of circulation, however, is not typically reflected in achievement marks even though the vast majority of the library's circulation is for purposes of carrying out assignments. Co-ordinated efforts between librarians and classroom teachers toward getting greater student use of the library seem to be lacking. It appears that only a small number of courses rely heavily on the library for resources and/or materials while teachers are divided on the real importance of the library in their classroom teaching. Librarians, for their part, have not fully realized their opportunity in the educational program and have consequently been assigned a quasi-extracurricular role.

Students, then, are being left largely to supply their own motivation for using the library. Largely unknown are the reasons for one student wanting to use the college library more than another; however, this study will attempt to discover whether the same socio-economic factors that motivate people to desire a college education also create enthusiasm for library materials and services.

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CHAPTER III

TREATMENT AND ANALYSIS OF DATA

As this investigation concerns itself with only one institution of higher education, Chapter III will be devoted to a brief review of the type of school being examined and the make-up of its student body. Such an overview should help to place the student body more clearly in a social context and point out salient characteristics of the pupils who attend this particular school. Following this abbreviated sketch the chapter will outline the socio-economic variables with which the study is concerned and then conclude with a brief consideration and description of the statistical tools used in analyzing the data.

Southwestern College was founded in 1885 by the Methodists of Kansas. The school itself is located on the north-east edge of Winfield, Kansas, a county seat town of approximately 11,000 persons situated in south-central Kansas. The overall environment of the community is predominantly small town and rural while the college itself attempts to be a small residential institution combining a quality educational program with Christian ideals. The total enrollment of Southwestern typically varies from 650 to 750 students. Although the overwhelming majority of these pupils are from communities in central and western Kansas, the student body also contains persons from several different states and a few foreign nations as well. As to the social makeup of Southwestern's student body, its constituency is so notably comprised of people from the middle class that it appears to be exactly the type of school which Warner, Havighurst, and Loeb had in mind when they wrote, ". . the church-related college, as well as the independent liberal

arts college of the South, Middle West, and West, draw students from the upper-middle and lower-middle class families." (10)

The library collection at Southwestern College is housed in comfortable and attractive quarters. The building was erected in the early 1950's and reflects library planning of the time in that two permanent reading rooms with immovable walls were provided and the stack area was relegated to the conventional four-story tower arrangement. While a few carrels were provided in the stack area for independent study, this space is limited and probably was never intended as a subject approach to the students' study; consequently, use of the collection at the time of this study was effective only when materials were taken from the stacks to the reading rooms. This was particularly unfortunate in the case of indexes and bibliographies for they were mainly available only in the reading rooms while most of the works to which they referred were on shelves in that part of the building devoted to stacks.

The building itself, however, is well located in respect to campus dormitories. This means that the overwhelming majority of students are in close proximity to its facilities for most of the pupils live on the campus in typical residential college fashion. Moreover, while the arrangement of the materials was along rather conventional lines, the library did operate on an open-stack system and the compactness of the entire building made for considerable convenience in everyday use. The library suffered from no shortage of equipment and an adequate amount of seating space always assured students of a place to study.

The holdings at the time of this study numbered approximately fifty thousand volumes. Making up this collection were books, periodicals, indexes, documents, and pamphlets, as well as curricular materials for supporting

the teacher education program. Judged in the light of quantitative standards, the holdings were too small for an undergraduate curriculum; however, in the years preceeding this study the administration had made notable progress in their efforts to provide a collection capable of supporting the educational program. That these efforts were producing results could be seen in the increased expenditures for library operation, special grants of money from foundations for the purpose of acquisitions, increased staff, and a general attitude on the campus that the library was important. In short, the axiom, discussed by Carnovsky on different occasions (1), (2), that use of a library is dependent upon materials being available and accessible was realized and accepted.

One peculiarity for a library of this size was that the collection was classified according to the Library of Congress system. While this classification scheme was generally unknown to students and teachers who were new at Southwestern, they quickly caught on to its general outline and it did not seem to create any obstacle to the accessibility or understanding of the arrangement of materials. At no time was there evidence that another classification scheme would have made any difference in use of the library's holdings and services.

While no tangible evidence is available for quantitative measurement, it was obvious that considerable use was made of the library's entire collection, including reference materials and bibliographical guides, that did not appear in circulation statistics. Evidence for this notion was gathered through observing, noting the number of reference questions, keeping an unofficial count of books left on tables, and actively promoting library instruction in formal classwork. Furthermore, the library had recently acquired microfilm facilities and many periodical titles were available only

by using this equipment, thus precluding the possibility of a registered loan.

At the time of this study the library program was carried out by four full-time librarians plus a number of student assistants. Besides their own facilities, this staff could count on the support of holdings and services from four other libraries in the town of Winfield. For example, St. John's Junior College, located only a short distance away, maintained a collection and the public library was also available. Furthermore, a specialized set of holdings was maintained by a local medical institute and the in-service education students also had access to special materials at Winfield High School where many of them took work in practice teaching.

This, then, was the setting and the investigation concerned itself with how the students made use of the college library and how this use was influenced by the occupation of the students' parents, the income of the parents, the educational level which the parents achieved, and the type of secondary school from which the students themselves graduated. After the data were collected according to the procedures described in Chapter I, it became necessary to structure these four variables so they would have tangible attributes and meaningful boundaries. At times this seemed to be rather arbitrary and not altogether according to guidelines delineated in sociology textbooks; however, it is believed that the categories discussed below are well suited for describing the student body enrolled during the second semester of the 1963-64 academic year at Southwestern College.

The occupation of the students' parents was learned both from the registrar's office and from a questionnaire which each student completed. After this was done a full list of these occupations was compiled and

subsequently categorized into the following classifications: (1) farmers, (2) professionals, (3) business owners, (4) salary and commission employees, and (5) laborers or hourly wage earners. The category labeled farmers is self-explanatory and includes all families living in rural areas who make their living through agriculture. The professional group includes such occupations as ministers, doctors, lawyers, and teachers. In creating a category with such a distinction it is realized that ministers and teachers typically derive their income from salaries while doctors and lawyers characteristically rely on professional fees; however, for immediate purposes the factor which these occupational groups have most in common is that they all make their living as a direct result of their education. Moreover, the literature consistently states (3), (4), that sons and daughters of people in these occupational groups attend college in numbers that are out of proportion to their frequency in the population.

The category labeled business owners includes all families who derive their income from business profits regardless of whether the business is large or small and notwithstanding the size of town in which it is located. The next group, labeled salary and commission, is intended to include all families except ministers and teachers who receive either a regular pay check for services rendered or derive an income from commissions. This group should be carefully differentiated from the fifth category, laborers, for the latter is made up only of families who earn their living by an hourly wage. In this labor class are such occupations as bricklayers, oil-field workers, aircraft employees, and truck drivers. In addition, a few students listed income as being at least partly derived from inheritances and investments; however, this group was so small in number that they were

combined with the above categories when personal talks with the students involved revealed that the father did have an occupation which could be combined with one of the above categories. Finally, while no students listed welfare as the family's principal means of support, some of the pupils did make it known that their father was temporarily unemployed.

The income categories were formulated only after considerable thought and much discussion with college officials who were personally acquainted with many of the students' parents. Income levels were ultimately marked off as (1) \$0 - \$4,000; (2) \$4,001 - \$8,000; (3) \$8,001 - \$12,000; (4) \$12,001 - \$16,000; and (5) Over \$16,000. As data for this part of the study had to be obtained through the questionnaire, the idea of having the students check descriptive phrases denoting income levels such as Stroup (8) did was seriously considered but it was abandoned when it became apparent that most students who participated in the trial-run questionnaire felt that numbers would be easier to handle. As one would suppose, a majority of students indicated their family had an income of between \$4,001 and \$8,000; moreover, the other income levels were distributed throughout the student body about as one would expect for a college of this type. The exact ratios in which students could be found in this and other socio-economic categories are discussed in the following chapter.

Whenever information is desired that is derived from computations based on the education of students' parents, it is necessary to give some consideration to the educational attainment of both father and mother. In attacking this problem, some studies have generated an index number by adding the highest grade level attained by both mother and father and then dividing this total by two. While this idea was seriously considered, it was finally

decided to use only the highest grade level attained by either the mother or father. Therefore, if the father completed twelve years of schooling and the mother completed ten, only the father's score of twelve was considered. It is felt that a good case can be made for the position that the parent having the most formal education probably exerts the greatest influence on the family as a whole insofar as the children's schooling is concerned; moreover, by handling the categories in this manner, more students could be studied who came from a family where at least one member of the family had a college diploma or who at least attended college. The categories, therefore, that were finally devised and used were (1) less than high school graduate, (2) high school graduate, (3) some college but less than a baccalaureate degree, and (4) college graduate or more. When parents were not living, the students were asked to substitute the education of their guardians.

So that the secondary schools from which the students graduated could be matched with a quantity of library use, it was necessary to rank the high schools in some logical order. Here too, an index is a common device for handling such problems and an example of such a method can be found in Walker's dissertation (9) where he adapts a method of assigning index numbers to varying levels of high school library service. However, after information was collected on various types of secondary schools in twenty-three different states it became apparent that these data reflected so many intangibles that the best way to handle the problem might be to categorize the schools according to enrollment and merely describe the outstanding characteristics of each group. Consequently, the categories that were established on the basis of enrollments became (1) 0 - 125; (2) 126 - 300; (3) 301 - 850; and (4) schools over 850.

In surveying the data it was discovered that schools in the first category typically were rural in nature with libraries ranging from a high of 2,693 volumes down to absolutely nothing. It was found that these schools spent from \$0 to \$1,050 per year for library materials and they had an operating budget for the entire district, which virtually always included grades one through twelve, from \$12,000 to \$104,913. High schools in the second category, i.e., enrollments from 126 - 300, were located in towns with populations ranging from a few hundred to approximately 5,000 persons. College students from towns of this size usually came from homes where the parents were small town businessmen, farmers, or practicing professional men. However, these schools also had a small percentage of young people who had gone to college from homes where the breadwinners were gainfully employed in such jobs as electricians, mechanics, or railroad agents. Schools with an enrollment of 126 - 300 were found to have libraries with holdings ranging from 1,267 to 11,035 volumes and they reportedly were spending from \$250.00 to \$2,946 for library materials. Finally, schools in this enrollment category had a total operating budget within a range of \$79,072 to \$218,481, all of which was used for grades nine through twelve.

The secondary schools which were studied in this investigation with an enrollment ranging from 301 to 850 were usually found in county seat towns of 5,000 to 15,000 population. From these schools came students who were representative of all the above income and occupational groups; furthermore, they typically were quite representative of the various social classes that are described in numerous community studies. Libraries found in these schools had holdings which numbered from 2,748 to 19,844 volumes and they were allotted from \$672 to \$14,500 for books, magazines and sundry materials. Finally, the operating budgets of the secondary schools in this

group ranged from a low of \$135,008 to a high of \$998,110.

The last category of schools had enrollments from 851 to more than 3,600 students; moreover, these schools typically had the largest libraries for their holdings ranged from 3,700 volumes to approximately 43,500. The funds which were allotted to their libraries for purchase of materials ran from \$1,187 to \$29,152 while the schools' total operating budgets, generally based on a per capita allotment, ranged from \$265,750 to \$3,600,000. These secondary schools were found almost exclusively in larger towns and cities; therefore, comparatively few students from farm families indicated they had attended a high school with an enrollment of more than 851.

Some use is made in the present study of the students' grade-point averages. These averages were obtained from the registrar's office and not computed especially for this investigation. The Southwestern College Catalog (6) states that a student's grade-point average is determined by dividing the total number of points by the number of hours, including grades of "F," which a student has compiled. Courses marked only as "credit earned" are omitted from the calculation. Southwestern College rates a grade of "A" as worth three points, a grade of "B" as two points, a "C" worth one point, and no points for either a "D" or an "F." Consequently, for this study the students were grouped by categories in which the grade-point averages range from (1) 0 - .750; (2) .751 - 1.500; (3) 1.51 - 2.25; and (4) 2.26 - 3.00.

It can be seen by the frequency distributions discussed in Chapter IV that this investigation does not deal with a normally distributed population. The tools for analyzing the data, therefore, were non-parametric tests which avoid the assumptions inherent in parametric procedures. The assumptions are that the observations under study be drawn from a normally distributed population and that these different populations have the same variance.

Although there are other weighty assumptions underlining the use of parametric tests, notably that the observations must be independent and that the variables are measured in at least an interval scale, it was felt that the above assumptions of normality and equal variance were so obviously open to question that non-parametric procedures were the only valid ones for use in this investigation.

The analysis of these data, then, rested on the Kruskal-Wallis Analysis of Variance, the Mann-Whitney "U" test, and different types of chi-square tests. The analysis of variance is particularly helpful for deciding whether a number of independent samples, when considered together, are actually from different populations; furthermore, this test should be carried out before any tests are made for differences between only two of the several samples. The Kruskal-Wallis test is a substitute for the parametric "F" test and is one of the most efficient of the non-parametric devices for this purpose. Moreover, the Kruskal-Wallis preserves to a large extent the magnitude of the scores and it permits the examination of data which is inherently classificatory in nature while avoiding the restrictive assumptions of the "F" test.

The chi-square test, a commonly used technique for analyzing data in the social sciences, was used because it allows for measurement between discrete categories and comparisons of attributes. Its main purpose is to give a measurement of the probability of getting a disagreement between observed and computed frequencies equal to or greater than that observed in either direction. To measure the extent of association between sets of attributes, the contingency coefficient was used. On the other hand, when numbers of library materials checked out by groups of students were being examined the Mann-Whitney "U" test was used. The Mann-Whitney is one of

the most powerful of the non-parametric tests and is a useful alternative to the parametric "t" test. All of these tests and their application, along with formulas for their use, are discussed in detail by Siegel (5).

For purposes of this investigation, the values yielded by these tests are reported in Chapter V at both the .05 and .01 level of significance. This generally is done by describing a result as probably significant if its probability of error is less than 5 percent but greater than 1 percent and labeling the result as highly significant if the probability is less than 1 percent. While this is a procedure that is sometimes used by statisticians when reporting results in the literature (7:174), it is nevertheless recognized that these are merely descriptive terms and at times more exact information is needed on the results of a test. Accordingly, many of the findings are given in exact probabilities as they are listed in commonly used tables. By this means a much clearer picture can often be had of results which are either close to the critical limits or so far from it that this fact alone tells a great deal about the test score.

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CHAPTER IV

DESCRIPTIVE ANALYSIS AND COMPARATIVE SUMMARY

While the main purpose of this investigation was to determine whether evidence exists which indicates that use of the college library is conditioned by socio-economic factors, conclusions can probably best be drawn by first examining the circulation patterns as a whole. In looking at the distributions which represent borrowed material among various groupings of students, it must be remembered that strictly quantitative measurements of library service is at best only a partial yardstick of both the organization's achievement and the total benefit it can afford to its patrons. However, it is lamentably true that not only are means lacking for measuring either a library's total achievement or the subtle and intangible assistance it can offer, but no one has yet been able to devise an adequate criterion for gauging even quantitative service; consequently, the total impact which the library makes on its clientele must necessarily be beyond the scope of this report. Recognizing, then, that statistical computations do involve certain pitfalls, the present study made use of these purely quantitative measures within the context that such limitations imposed and proceeded on the assumption that the subsequent findings would perhaps be as good as any other single index presently available for showing an individual student's interest in and use of the campus library.

The present chapter, then, will be devoted to a presentation of the shape and pattern of the total circulation in the Southwestern College library during the spring semester of 1964. This will not only show how the student body made use of the total collection but will also demonstrate

through tables and graphs how the circulation of materials from the open stacks compared to that of the reserve shelf. Furthermore, this general presentation of the book circulation will show how students made use of the library when they were grouped according to the four socio-economic variables under consideration. Finally, the chapter will conclude with a brief summary comparing its descriptive data to that of comparable research findings which have been reported in the literature during the past thirty years.

Upon examining the distribution of the book circulation, the first and most noticeable observation is that it is similar to distributions usually reported in the literature. These distributions, familiar to all investigators of college library use, show a heavily skewed curve in which the value of the median is consistently less than that of the mean. At Southwestern, then, as at other colleges which have been studied, a large part of the students made only negligible use of the collection while another group comprising a small minority of the entire sample borrowed an abnormally large number of volumes.

It was determined that the 545 students who participated in this study borrowed a total of 8,433 pieces of material from the library during the entire semester. This means that on the average, students borrowed 15.47 books, that the median for the group was 11.9, and the standard deviation, at 14.7, rivalled the mean in value. Perhaps most significant of all is the fact that insofar as borrowing materials is concerned forty-eight students failed to make any use of the library at all, thus causing the mode to fall at zero. Moreover, there were twenty-eight other pupils who took out only one book each; consequently, the bottom end of the distribution contains an unusually heavy concentration of observations.

Number Of Students

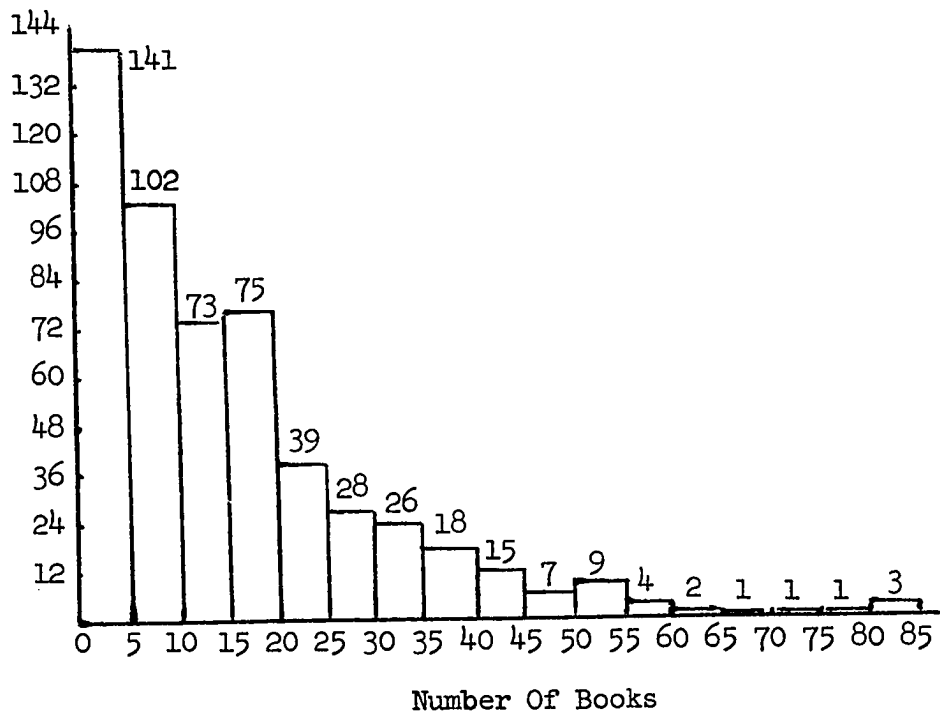


Fig. 1 -- Histogram Showing Combined Regular And Reserve Loans Per Student By Number Of Students Borrowing (Grouped In Intervals Of Twelve And Five).

An understanding of how students made use of the Southwestern library holdings during the 1964 spring semester can probably best be seen by the histogram in Figure 1. This bar-graph shows the number of books grouped into classes of five against the number of students, in units of twelve, who made use of these volumes.

From this graph it can be seen that more than 140 students borrowed no more than four books during the entire semester and that 486 pupils, or almost 90 percent of the student body, borrowed nine or fewer books. On the other hand, it is apparent that a comparatively few persons made extensive use of the library's holdings for two students each borrowed

TABLE 1
FREQUENCY DISTRIBUTION OF COMBINED
REGULAR AND RESERVE LOANS

No. of Books Borrowed	No. of Students Borrowing	Per Cent of Student Body	Cum. Per Cent of Student Body	Per Cent of Loans	Cum. Per Cent of Books
0	48	9	9	0	0
1	28	5	14	03	03
2	20	4	18	05	08
3	23	4	22	08	2
4	22	4	26	1	3
5	17	3	29	1	4
6-10	101	18	47	8	12
11-15	74	14	61	12	24
16-20	64	12	73	12	36
21-25	36	7	80	10	46
26-30	31	6	86	11	57
31-35	28	5	91	10	67
36-83	53	9	100	33	100
Mean -- 15.47		Median -- 11.9		Standard Deviation -- 14.7	

eighty-three pieces and twenty-one students each borrowed at least fifty books. For statistical purposes, however, the most important thing about this graph is that the shape of the distribution is similar to those found in earlier studies and that the library must still be important only to a minority of students.

Table 1 may be even more revealing as to how many books the students actually borrowed. The range from zero through five books, or approximately the first quartile, is listed separately and then, beginning with six books, the arrangement is by groups of five. As with the histogram given above, this table lists both reserve and regular loans together.

If the students are divided into four equal parts, it then can be seen that in the first group 137 students borrowed only 209 books, or less than 3 percent of the total loans made from the circulation desk. In the next highest category, or second quartile, are 136 who borrowed 1,048 books,

or about 12 percent of the total. Thus, it is apparent that 50 percent of the students accounted for only 15 percent of the loans. The third quartile, composed of another 136 students, however, borrowed 2,191 books. This sharp increase in circulation not only accounted for approximately 26 percent of the circulation but the 136 students at the top of this division made this steep upward climb even more dramatic by borrowing over 4,985 books. This would mean that only 25 percent of the students accounted for more than 59 percent of the borrowing and 50 percent of the students were responsible for about 85 percent of all loans.

Unusual as this may sound, these findings are not unique to Southwestern but, rather, follow the pattern that has been described in previous studies of college libraries. Not always reported, however, is how the total circulation, i.e., regular two-week loans and reserve loans combined, compares with regular loans and reserve loans when all three elements are separately examined. By taking the regular two-week loans separately and arranging them into the same type of units as was done with the combined regular and reserve circulation, a second histogram, constructed to the same scale, shows that the skewness of the distribution is even more pronounced and that there are many more students crowded at the lower end of the scale. Figure 2 shows how this distribution actually appears when the regular loans are separated from the reserve loans and arranged in the same manner as Figure 1.

Readily apparent in this graph is that the first class interval contains more than twice as many students as does the second. Moreover, while Figure 1 indicates that at least one student fitted into each of the class intervals, the histogram below shows that the range from 55 to 65 includes no pupils. The mean for the regular loans was 10.93 while

Number Of Students

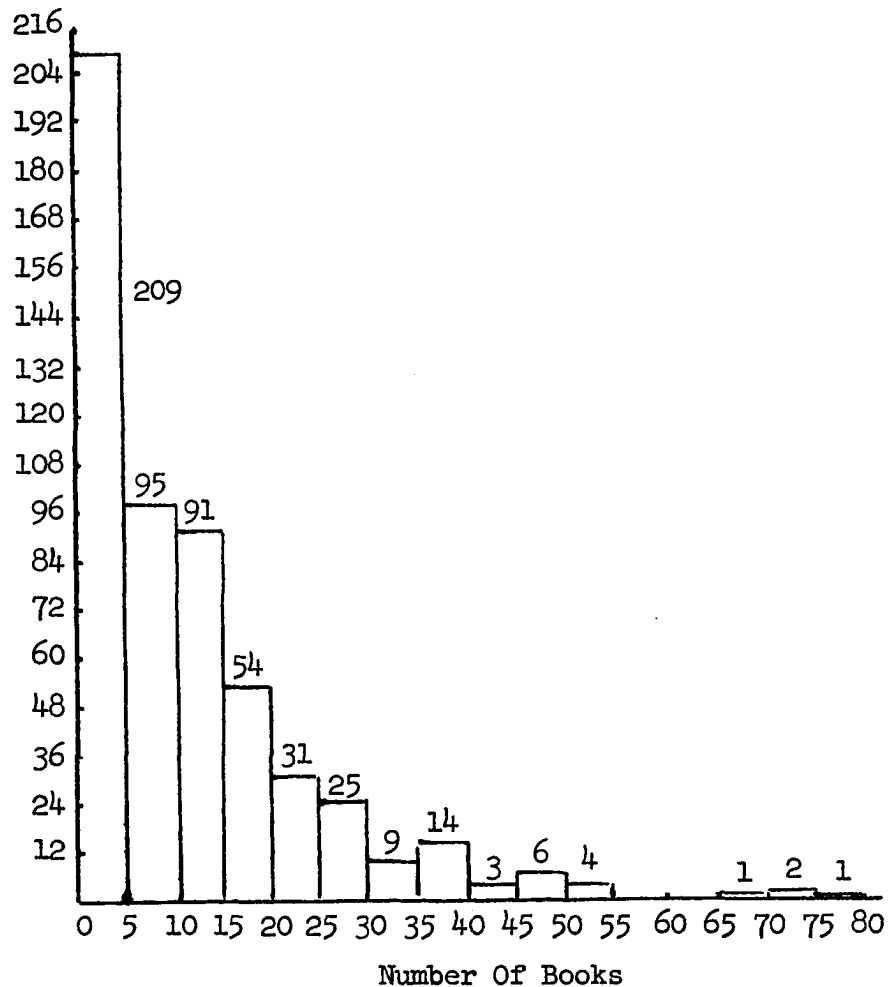


Fig. 2 -- Histogram Showing Number Of Regular Two-Week Loans Per Student By Number Of Students Borrowing (Grouped In Intervals Of Twelve And Five).

the median was only 8.14 and further compactness, or homogeneity, can be seen in the standard deviation value of 11.85, a figure somewhat less than that of the combined distribution. Even more pronounced than was the case with the combined distribution is the fact that only a few pupils made heavy use of the general collection for it can be seen that only fourteen students accounted for 771 books, or more than 12 percent of the

TABLE 2
FREQUENCY DISTRIBUTION OF REGULAR
LOANS ONLY

No. of Books Borrowed	No. of Students Borrowing	Per Cent of Student Body	Cum. Per Cent of Student Body	Per Cent of Books	Cum. Per Cent of Books
0	86	16	16	0	0
1	34	6	22	05	05
2	27	5	27	09	1
3	34	6	33	2	3
4	28	5	38	2	5
5	17	3	41	1	6
6-10	101	18	59	13	19
11-15	86	15	74	18	37
16-20	42	7	81	14	51
21-25	32	6	87	13	64
26-30	22	5	92	10	74
31-75	36	8	100	26	100
Mean -- 10.93 Median -- 8.14 Standard Deviation -- 11.85					

total! Table 2 shows a more detailed resume of how the library was used insofar as the regular loans are concerned. It is constructed to show the first quartile separately and the rest of the distribution in groups of five.

The 5,955 books which were loaned by way of the regular two-week method compares with 2,478 volumes which were circulated from the reserve desk. There is evidence in the literature (2) that a tendency has developed in recent years to downgrade the importance of the reserve collection. One aspect of this trend is for the classroom instructor to have students purchase their own paperback books in such fields as literature, philosophy, biography, and history. Other reported reasons for the shift away from reserve books is a growing desire among instructors for the student to find his own reading and allow each individual to establish a pace for himself. Whatever else might be responsible for a

possible decline in the importance of reserve collections, it is apparent from this study and others of similar nature that the quantitative use of reserve books is a good deal less than was reported in studies throughout the 1930's and 1940's (1).

Use of the reserve collection at Southwestern averaged only 4.55 books per student for the entire semester. The median was 2.21 and the standard deviation for the distribution came to seven, exceeding the mean by more than two points. Because the standard deviation exceeds the mean to this extent it is apparent that the distribution is heavily skewed to the right with an abnormally large number of students found at the bottom of the distribution. The extent of this extreme skewness is made evident by again drawing a histogram to the same proportion as Figures 1 and 2. When this is done it can be seen that the bar representing the first, or lowest class interval, is almost twice as long as the one for the regular loans and nearly three times as long as the first bar in the graph showing regular and reserve loans combined. Figure 3 also is important for showing how drastically the number of students drops off when the distribution moves away from zero.

It is axiomatic that extensive use of a reserve collection depends almost entirely on an instructor who feels strongly that this service of the library is an integral part of the educational program and insists on student use of the materials which have been set aside. Even a cursory examination of this histogram indicates that not all instructors at Southwestern during the 1964 spring semester relied on the reserve shelf to support their classroom program. For example, 204 out of 545 students in this investigation did not check out a single book from the reserve collection. On the other hand, there was not a single student majoring in

Number Of Students

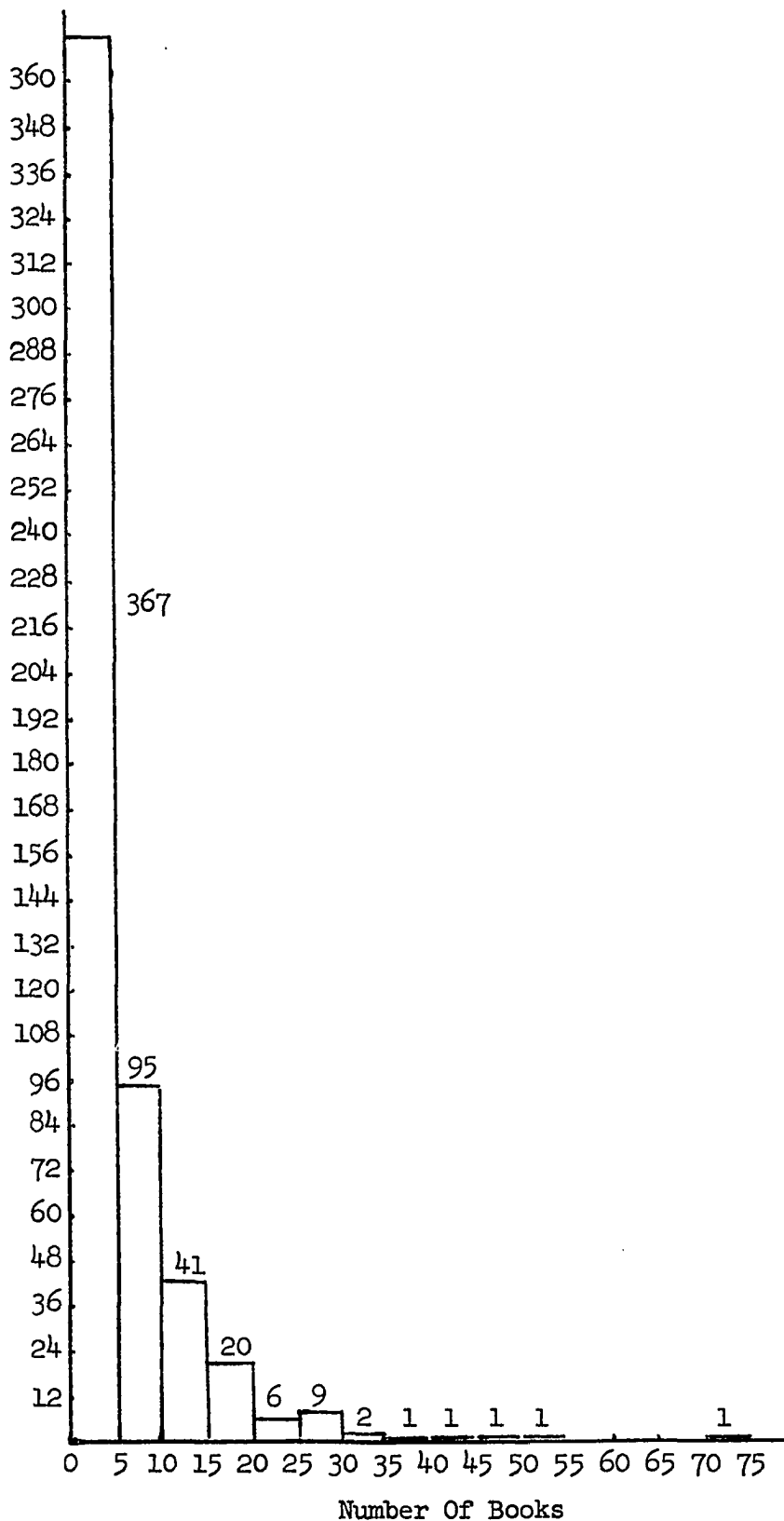


Fig. 3 -- Histogram Showing Number Of Reserve Loans Per Student By Number Of Students Borrowing (Grouped In Intervals Of Twelve And Five).

home economics who failed to borrow at least one book.

Carrying this examination of the reserve circulation one step further, it is apparent that as many as 37 percent of the students borrowed no books at all and approximately 54 percent of the students accounted for only 6 percents of the loans. While this means that 273 students borrowed no more than a total of 76 books, there were 136 other pupils who took out 1,885 books; moreover, of these 136 students a mere twenty of them borrowed as many as 644 of the 1,885 reserve materials. Finally, the extreme skewness of this distribution can be seen further in the fact that the first quartile limit is only .67; the median, 2.21; and the third quartile no more than 6.65 -- yet, the number of books borrowed by only one student ran as high as seventy!

Table 3 presents a resume of the reserve circulation in the same manner as that given for the other distributions. These three tables, plus the accompanying histograms, will serve as a guide throughout the report for showing how the college library was used during the period under study.

TABLE 3
FREQUENCY DISTRIBUTION OF RESERVE
LOANS ONLY

No. of Books Borrowed	No. of Students Borrowing	Per Cent of Student Body	Cum. Per Cent Of Student Body	Per Cent of Books	Cum. Per Cent of Books
0	204	37	37	0	0
1	62	11	48	3	3
2	31	6	54	3	6
3	33	6	60	4	10
4	37	7	67	6	16
5	30	6	73	6	22
6-10	76	14	87	23	45
11-70	72	13	100	55	100
Mean -- 4.55		Median -- 2.21		Standard Deviation -- 7	

This brief descriptive analysis showing the shape of the reading patterns under investigation will close with a graphic presentation which is intended to be an ogive. However, instead of taking the characteristic shape of a "lazy S," typically found in the textbooks, the ogives depicting the regular and reserve loans respectively make a sharp ascent to the 100 percent point. From this it can be determined that for the regular two-week loans it took 22 percent of the students to make up only 1 percent of the circulation while 25 percent of the pupils at the upper end accounted for as much as 61 percent of the charges. For the reserve loans,

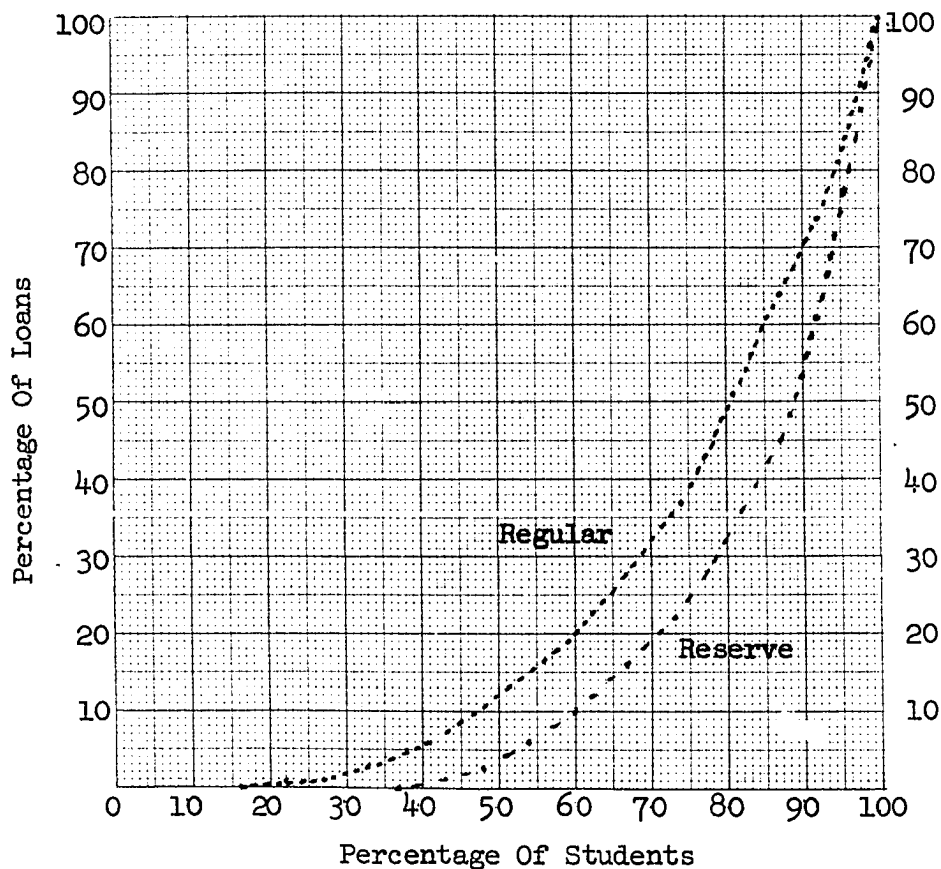


Fig. 4 -- Relative Cumulative Frequency Polygon Showing Both Regular And Reserve Loans.

76 percent of the students borrowed only 26 percent of the books while 15 percent of the top-end pupils was responsible for nearly 60 percent of the charges.

The balance of this chapter will be devoted to showing how the above data are distributed when they are arranged according to the socio-economic variables under consideration, i.e., the occupation, income, and education of parents, as well as size of the secondary school from which the students themselves graduated. According to the information gleaned from both the registrar's office and a questionnaire completed by the pupils, the entire student body was composed of pupils who came from families with occupations as follows:

<u>Occupation</u>	<u>No. of Students</u>	<u>% of Students</u>
Farmers	140	25
Professional	75	14
Business Owners	75	14
Salary & Comm.	136	25
Wage Earners	119	22

The 140 students who comprised the farm group checked out a total of 2,234 books of which 1,471 were regular two-week loans and 763 were reserves. When considering this total amount, i.e., reserve and regular combined, it is seen that the students from farm families had a mean of 15.95 and a standard deviation of 14.75. The distribution of this farm group, furthermore, followed closely the same pattern as the general shape of reading discussed above for 25 percent of these pupils borrowed only 3 percent of the materials while another group of the same size was responsible for 59 percent of the loans. This characteristic was so common among all occupational groupings that no further mention will be made of it unless it serves a particular purpose.

TABLE 4

SUMMARY OF REGULAR AND RESERVE LOANS
WHEN STUDENTS ARE ARRANGED
BY OCCUPATION

Occupation	Total Books	Means	Standard Deviations	Modes
Farm	2,234	15.95	14.75	0
Professional	1,084	14.45	13.07	0
Business	1,228	16.37	17.30	0
Salary & Comm.	2,168	15.94	13.65	0
Wages & Labor	1,719	14.44	14.79	0

The farm group's mean of 15.95 was similar to that of the other four occupational categories. For example, students from the professional and wage earning classes had a mean of 14.4, business averaged 16.37, and the salary category showed 15.94. Moreover, the spread of these groups was quite similar for the standard deviation of the five occupations ranged from no more than 13.07 for professionals to 17.30 for the business students. These data are summarized in Table 4 where the total number of regular and reserve books combined is listed together with their means, standard deviations, and modes.

When these data are arranged for the same occupational groups but

TABLE 5

SUMMARY OF REGULAR LOANS ONLY
WHEN STUDENTS ARE ARRANGED
BY OCCUPATION

Occupation	Total Books	Means	Standard Deviations	Modes
Farm	1,471	10.50	11.50	0
Professional	786	10.48	10.15	0
Business	794	10.58	12.64	0
Salary & Comm.	1,597	11.74	11.00	0
Wage & Labor	1,307	10.98	13.15	0

TABLE 6
SUMMARY OF RESERVE LOANS ONLY
WHEN STUDENTS ARE ARRANGED
BY OCCUPATION

Occupation	Total Books	Means	Standard Deviations	Modes
Farm	763	5.45	7.70	0
Professional	298	3.97	6.10	0
Business	434	5.78	10.07	0
Salary & Comm.	571	4.19	5.90	0
Wage & Labor	412	3.46	4.20	0

divided according to regular and reserve loans, similar findings quickly become apparent. This is illustrated in Table 5 where a breakdown of the regular two-week loans shows that even fewer differences among occupations were present insofar as the means are concerned. The mode is still zero for all groups and the standard deviation shows the same homogeneity that was apparent in Table 4.

To complete the analysis of the occupational groups, Table 6 summarizes data for loans made only from the reserve desk and from this compilation it is clear that no startling differences were present. As expected, in comparison with the preceeding data, much smaller totals and means are apparent and the standard deviations consistently exceed the means. The means themselves are quite close together, showing little dissimilarity among the samples; however, one interesting detail not apparent from the table is the fact that all occupational groups had virtually three times the number of students borrowing no books as there were pupils who withdrew any other given number of materials.

When turning from the occupation of the students' parents to a consideration of family income, more differences seem to appear. After all parental incomes were divided into the five pre-arranged classes it

TABLE 7
SUMMARY OF REGULAR AND RESERVE LOANS
WHEN STUDENTS ARE ARRANGED
BY INCOME

Income	Total Books	Means	Standard Deviations	Modes
\$ 0 - \$ 4,000	1,346	18.69	15.41	23
\$ 4,001 - \$ 8,000	4,372	16.07	15.42	0
\$ 8,001 - \$12,000	1,811	13.41	11.40	0
\$12,001 - \$16,000	508	15.87	17.48	0
Over \$16,000	396	11.64	15.14	0

was found that students appeared in their respective categories with the following frequencies:

Income	No. of Students	% of Students
\$ 0 - \$ 4,000	72	13
\$ 4,001 - \$ 8,000	272	50
\$ 8,001 - \$12,000	135	25
\$12,001 - \$16,000	32	6
Over \$16,000	34	6

From Table 7 it becomes apparent that students from high income families checked out fewer materials than did pupils whose parents had earnings under \$8,000. In fact, those with the least income had the highest mean value and those with the greatest income produced the lowest mean. Moreover, for the first time, the mode for any distribution has moved away from zero for in the \$0 - \$4,000 group more students borrowed 23 books than any other number.

When the data from Table 7 are divided into regular and reserve loans, results appear that are similar to those found when the occupational groups were treated the same way. For example, with the regular loans fewer differences among the categories seem to stand out for the means are more nearly alike; furthermore, an examination of the raw data shows that

TABLE 8

SUMMARY OF REGULAR LOANS ONLY
WHEN STUDENTS ARE ARRANGED
BY INCOME

Income	Total Books	Means	Standard Deviations	Modes
\$ 0 - \$ 4,000	914	12.69	12.40	0
\$ 4,001 - \$ 8,000	3,003	11.04	12.10	0
\$ 8,001 - \$12,000	1,329	9.84	9.35	0
\$12,001 - \$16,000	403	12.59	14.65	0
Over \$16,000	306	9.00	13.45	0

the range for three of these groups ran from zero to the seventies while the other two both reached as high as the fifties. Only the \$0 - \$4,000 group had any tendency to have a mode other than zero for eight of the students in this category failed to withdraw materials while six pupils each borrowed four volumes. Table 8, in the same manner as before, shows the students grouped according to income and summarizes the data concerning the regular two-week loans.

It can be noted from Table 8 that the means range only from a low of nine to a high of 12.69. This spread is considerably less than was found when the regular and reserve books were combined; however, by looking at the summary for reserve loans only in Table 9 it is again possible to

TABLE 9

SUMMARY OF RESERVE LOANS ONLY
WHEN STUDENTS ARE ARRANGED
BY INCOME

Income	Total Books	Means	Standard Deviations	Modes
\$ 0 - \$ 4,000	432	6.00	7.47	0
\$ 4,001 - \$ 8,000	1,369	5.03	8.21	0
\$ 8,001 - \$12,000	482	3.57	4.51	0
\$12,001 - \$16,000	105	3.28	5.44	0
Over \$16,000	90	2.64	3.16	0

see a wider range in means among income groups. On first glancing at Table 9 it would appear that the means have great similarity; yet, the difference between the high of 6.0 and the low of 2.64 does represent a 100 percent spread. In the following chapter the statistical significance of these differences will be considered but for now it is noteworthy that the lowest income level showed the highest mean throughout all three analyses and the highest income students consistently had the lowest average for books borrowed.

One of the two other social and economic variables that are being examined in this study was designed to give evidence as to whether the education of the students' parents made any significant contribution to the use which pupils made of the campus library. Most of the students enrolled at Southwestern during the 1964 spring semester came from homes where at least one of the parents had been to college; moreover, a plurality came from families in which at least one of the parents had actually graduated from college. Only a relatively small number, approximating 8 percent, came from families in which neither parent had completed high school. In actual numbers and percentages, the students came from families with varying educational attainment in the following manner:

<u>Parents With</u>	<u>No. of Students</u>	<u>% of Students</u>
Less Than High School Diploma	43	8
High School Diploma	159	29
Some College But Not a Degree	150	28
At Least a College Degree	193	35

In examining this educational variable, Table 10, given below,

TABLE 10

SUMMARY OF REGULAR AND RESERVE LOANS
WHEN STUDENTS ARE ARRANGED
BY PARENTS' EDUCATION

Years of Education	Total Books	Means	Standard Deviations	Modes
Less Than 12	530	12.50	9.90	1
At Most 12	2,581	16.20	13.65	0
Between 13-15	2,302	15.34	14.70	0
At Least 16	3,012	15.60	15.50	0

shows that for the second time the mode in one of the categories is other than zero. Interestingly enough, it was the lowest income group that had a mode other than zero and Table 10 points out that students with parents having the least education are the only ones not showing a mode of zero; moreover, this same group did not have a single student who failed to borrow at least one book.

In Table 10, as well as in subsequent references to students arranged in educational groupings, the row labeled "Less Than 12" refers to students whose parents have less than a high school diploma or twelve full years of schooling. The second row, "At Most 12," signifies that group of students with parents who went only so far as to graduate from high school while "Between 13-15" indicates parents who attended college but did not continue on to the baccalaureate degree. Accordingly, the row marked "At Least 16" indicates those students whose parents have at least a college degree.

As in the case of the occupational and income groups, Table 11 indicates that when loans in these educational categories are divided and the regular charges are studied separately the quantities take on lower values and the means become smaller in their spread. Tables 10 and 11 both show that the same two groups had the highest and lowest mean number of charges while only those students whose parents have less than a high

TABLE 11

SUMMARY OF REGULAR LOANS ONLY
WHEN STUDENTS ARE ARRANGED
BY PARENTS' EDUCATION

Years of Education	Total Books	Means	Standard Deviations	Modes
Less Than 12	380	8.63	8.43	1
At Most 12	1,820	11.45	12.26	0
Between 13-15	1,616	10.77	11.85	0
At Least 16	2,139	11.08	12.04	0

school diploma had a standard deviation which shows any contrast to that of the other three classifications. Table 11 also discloses that the mean for pupils from families with the least education is the lowest that has been recorded for any grouping of students when only the regular two-week charges are analyzed; however, this same group is again the only one which has a mode other than zero.

When only reserve books for students categorized by education are considered, examination of the raw data discloses that over one-third of the pupils in each of the four groups borrowed no books at all. This not only gives further indication of the degree to which the distributions are skewed but it also re-emphasizes that the total number of volumes borrowed by each class was done by only a small number of pupils within those groupings. For example, of the 43 students who indicated their parents were not high school graduates, there were 22, or more than half, who borrowed a total of only four books from the reserve shelf. On the other hand, there were ten pupils from this class who withdrew 119 of the total 158 volumes which were loaned to the entire group. Table 12, below, summarizes the reserve loans to students arranged by education of parents and sets forth the data in a fashion similar to preceeding tabulations.

The final group that this study wishes to examine is a category

TABLE 12

SUMMARY OF RESERVE LOANS ONLY
WHEN STUDENTS ARE ARRANGED
BY PARENTS' EDUCATION

Years of Education	Total Books	Means	Standard Deviations	Modes
Less Than 12	158	3.67	4.95	0
At Most 12	761	4.78	6.60	0
Between 13-15	686	4.57	7.25	0
At Least 16	873	4.52	8.20	0

made possible by sorting students into groups on the basis of size of secondary school from which they graduated. In general, the schools of each enrollment group delineated in Tables 13 through 15 meet the sociological description presented in Chapter III. The purpose of this part of the study was to determine whether evidence could be found to support the notion that schools with large enrollments, sizable library budgets, and comprehensive book collections graduate students who subsequently make greater use of the campus library than do students who come from schools where conditions are just the opposite.

Upon arranging the students into groups according to the size of secondary school from which they graduated it was apparent that a plurality came from schools with an enrollment of more than 850. This lead, however, was not a decisive one for students from the next highest enrollment category ran a close second and pupils from the two smallest sizes of schools, when combined, comprised almost half the student body. This again points up the fact that the subjects under investigation are overwhelmingly from small-town and rural environments and quite representative of middle-class America. The actual numbers and percentages of the pupils from the various enrollment categories were

as follows:

<u>School Enrollment</u>	<u>No. of Students</u>	<u>% of Students</u>
0 -- 125	83	16
126 -- 300	125	23
301 -- 850	153	29
Over - 850	175	32

When the total number of books listed in Table 13 is added together it can be noticed that the sum is not 8,433, the grand total involved in this study, but rather an amount which comes to 8,161. This discrepancy is caused by the exclusion of nine students who were from foreign countries and data concerning their secondary schools were not available. These nine pupils borrowed books from the library in numbers that were out of proportion to American born students for they averaged 30.2 volumes per person when the combined regular and reserve loans were computed. Use of the library among these people, however, was heavily in favor of materials on reserve because their average among these books was 17.7 while their mean for regular loans was only 12.4. While both of these values are greater than the concomitant scores of American students, the reserve mean of 17.7 is the most dramatic for it far outdistances the native-born mean of 4.55 while the average for regular loans, i.e., 12.4, is more nearly in

TABLE 13

SUMMARY OF REGULAR AND RESERVE LOANS
WHEN STUDENTS ARE ARRANGED BY
SIZE OF SCHOOL

<u>School Size</u>	<u>Total Books</u>	<u>Means</u>	<u>Standard Deviations</u>	<u>Modes</u>
0--125	1,377	16.59	14.35	16
126--300	1,891	15.12	15.85	0
301--850	2,221	14.52	12.70	9
Over 850	2,672	15.26	14.64	0

TABLE 14

SUMMARY OF REGULAR LOANS ONLY WHEN
STUDENTS ARE ARRANGED BY
SIZE OF SCHOOL

School Size	Total Books	Means	Standard Deviations	Modes
0--125	996	12.00	13.03	0 & 4
126--300	1,362	10.89	12.04	0
301--850	1,535	10.03	10.27	0
Over 850	1,965	11.22	12.37	0

line with the 10.93 achieved by Americans. Two of these students failed to borrow any books but five of the nine checked out 24 or more volumes, the highest of which was 83.

Table 14 shows that the means seem to be about the same as those for the regular loans presented in Table 12; furthermore, they are closely in line with those given for the occupational and income groupings of Table 5 and 7, respectively. In general, the distributions for both regular and reserve loans do follow closely the previous patterns; however, the students in the lowest enrollment category were unique in that they registered two modes. This was because nine students from small schools borrowed four volumes each while nine other pupils failed to withdraw any books from the library. Finally, Table 15 shows how loans made from

TABLE 15

SUMMARY OF RESERVE BOOKS ONLY WHEN
STUDENTS ARE ARRANGED BY
SIZE OF SCHOOL

School Size	Total Books	Means	Standard Deviations	Modes
0--125	381	4.59	5.33	0
126--300	529	4.23	7.60	0
301--850	686	4.48	5.67	0
Over 850	707	4.04	5.88	0

the reserve desk appeared when they were computed on the basis of size of high school from which the students graduated.

This descriptive analysis of the circulation at the Southwestern College library for the 1964 spring semester concludes with a brief statement concerning the borrowing of men and women students plus a comparison of means found in previous investigations and reported at various places in the literature. When both regular and reserve books are considered together the men students withdrew a total of 3,118 volumes and since there were 266 male students involved in this study, the mean value amounted to 11.72. On the other hand, the women students took out 5,315 volumes and this total, divided between 279 girls, amounts to 19.05 books per pupil. When regular and reserve charges were examined separately this same ratio between the sexes continued to prevail; moreover, the women students had more dispersion about the mean for they had larger standard deviations regardless of how the distributions were examined. It is interesting to note that this follows the basic circulation pattern that has been reported during the past three decades and indicates that the reading habits among men and women students probably haven't changed insofar as ratios are concerned.

In conclusion, it appears that the arithmetic means for the regular two-week loans reported in this section seem to be somewhat higher than those found in previous works. On the other hand, the evidence suggests that circulation of reserve materials might be substantially less than that which was reported in years past. For example, Branscomb (1) stated that the average student withdraws about twelve books per year from the non-reserve collection. The semester mean of 10.9 would not only put the Southwestern students in excess of twelve per year but would also tend to place

these pupils in line with more recent studies showing higher averages than those reported during the 1930's.

Branscomb's report on the circulation of materials in several college libraries made use of an arbitrary figure of five or fewer loans per student which was intended to indicate negligible use of the campus library. This writer went on to present tables showing just how many students were falling below this level and in a later study of student circulation, Knapp (2) summarized these data and added two more colleges to the listing. These summaries indicated that on various college campuses there were 42 percent, 10.6 percent, 36.6 percent, 28 percent, and 48.51 percent of the students who borrowed no books at all from the general collection. For Southwestern during the period under study there were 16 percent of the students who withdrew no books from the general stacks on a regular two-week basis. Also summarized are data showing that 66.9 percent, 55 percent, 50.41 percent, 48.95 percent, and 65.58 percent of the students in earlier studies borrowed less than one book per month from the general collection, or, in the definition of Branscomb, they made only negligible use of the library. These percentages compare with 41 percent of the students at Southwestern who, throughout an entire 18-week semester, withdrew five or fewer volumes from the general collection.

Some of the older studies reported by Branscomb and others noted that approximately 20 to 22 percent of the students made no more than five loans from the library when both regular and reserve books were totaled. Data from Southwestern indicates that 29 percent of the students made no more than five loans from the library when both regular and reserve loans were considered. The reasons that this figure is higher than that found in the earlier surveys is probably because so many more students at Southwestern

failed to make use of reserve books. For example, 37 percent of the pupils borrowed no titles at all from the reserve shelf throughout the entire semester and as many as 73 percent took out no more than five of these volumes. Moreover, the mean number of reserve loans at Southwestern for the semester was only 4.55, a figure which not only is substantially less than the yearly average reported by Branscomb but even smaller than the Knox College mean of ten years ago (2). Although it is beyond the scope of this work to do so, if these findings could be extrapolated to a wider area it might indicate that the entire reserve system, reportedly on a decline during the past twenty years (3), (4), is continuing in a downward trend.

In summary, it is obvious that in general terms the circulation of library materials on the Southwestern campus conformed to the pattern of previous investigations. Most students used the lending services on only a modest scale while a comparatively few made extensive use of the collection. When the students were arranged into groupings that showed their parents' occupations, their family income, and the education of which ever parent had the most formal schooling, some, but not radical, differences appeared in the arithmetic means. A fourth grouping, that of size of secondary school from which the student graduated, also seemed to show means and standard deviations that were narrow in spread. At first glance it would seem that those students who were from the lowest income levels and the smallest schools made greater quantitative use of the library than did students from higher income families and larger schools. In the following chapter the statistical significance of these and other differences will be examined and conclusions drawn regarding their importance.

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CHAPTER V

STATISTICAL ANALYSIS OF DATA

In the preceeding chapter essential data were presented showing how the four socio-economic variables under consideration were associated with the circulation of library materials at Southwestern College. To reiterate, these four variables include the size of school from which the students graduated, the occupation of parents, the educational level achieved by parents, and the family income. In the present chapter the foregoing data will be statistically examined in an effort to test the hypothesis that no significant differences exist in the use of the college library when students are compared on the basis of the above four variables. For examining these data, the non-parametric tests described in Chapter III will be used and the results which they yield will be reported in probabilities.

Table 4 in the preceeding section listed the average circulation of combined regular and reserve loans among the five occupational groups. From this table it could be seen that these arithmetic means varied no more than from a low of 14.44 for the labor, or wage earning, group to a high of 16.37 for students from homes where parents are owners of businesses. All five of these means were examined for differences through the use of an analysis of variance test and the subsequent results were found to be statistically insignificant. As stated earlier, this, and all other findings reported in such manner would indicate that the means for all five groups when considered together are no further apart than one would expect from mere chance at least 95 percent of the time.

When the above data were separated into regular two-week loans and reserve charges there appeared to be even less variation among the means.

Accordingly, the analysis of variance test indicated that indeed only insignificant differences were present and that the low mean of 10.48 was not really different from the high of 11.74. The same thing again proved to be true when the reserve loans were examined by themselves for in this case the variance was no greater than a low mean of 3.46 for labor students to a high of 5.78 for the business group. It is interesting that in all three tests the probability of these means actually being different stood at points between 50 and 80 percent, levels which are far bigger than the chosen required minimum of 5 percent.

If such evidence would seem to reject the notion that occupation of parents makes a difference in use of the campus library, what about the factor of size of secondary school from which these students graduated? Conflicting evidence, such as is found in Chapter II, is still being presented by various writers on the subject of whether students from big high schools do better work in college than students from smaller schools. Certainly, it would seem that these pupils who come from various schools do not enjoy equal opportunity for it was noted in Chapter III that enormous ranges exist within the classifications of secondary schools regarding the number of volumes in the libraries and the support which these schools give to their libraries.

When the regular and reserve loans combined are examined it can be seen that students from schools which enroll no more than 125 pupils borrowed a total of 1,377 books. As there were 83 students enrolled at Southwestern who came from such secondary schools this meant that the group as a whole averaged 16.59 volumes. Pupils from schools with an enrollment of 301 to 850 scored lowest for they had a mean of no more than 14.52. To discover

over-all differences in the samples, the Kruskal-Wallis analysis of variance was again used and a result indicating insignificant differences once more appeared.

As was done with the occupational groups, the combined regular and reserve loans were then taken apart and examined separately. Table 14 of Chapter IV indicates that even less variation exists among these means than was the case when they were combined with reserve books; moreover, an analysis of variance bears out the supposition that they are not significantly different. However, when the reserve loans were subjected to the same test the insignificant results which again appeared were this time reduced to a figure standing between 10 and 20 percent. Moreover, the high mean of 4.59 which represents the students from the smallest schools was tested against the lowest mean of 4.04 that was scored by students from schools enrolling over 850 pupils. The Mann-Whitney "U" test, which was employed to determine whether 4.59 actually is greater than 4.04, showed a result that was probably significant but not high significant. The exact probability associated with the result was .0274, a figure somewhat less than the required 5 percent but greater than 1 percent; consequently, the first evidence is turned up of a theoretical population within the parent group.

It was pointed out in Chapter III that the level of education attained by the parent who spent the most years in school was the criterion used for categorizing students in the group labeled education. The purpose for establishing such a variable was to see if evidence might be present that would indicate whether a high level of education among parents would lead their sons and daughters to make more use of the college library than would be the case when students came to the campus from homes where parents

had little formal schooling. The data gathered in this study seemed to substantiate the sociological maxim that education begets more education for only 8 percent of the students at Southwestern came from homes where the parents had less than a high school diploma. Conversely, 35 percent of the students came to college from homes where the parents had already received at least the baccalaureate degree. The question then became one of discovering whether these groups used the library to the same degree.

When the regular and reserve loans were combined it was discovered that those students whose parents had graduated only from secondary school had the highest mean value. However, this mean of 16.2 was virtually the same as that of the students whose parents had either attended college or gone on to graduation. The lowest average, 12.5, was scored by pupils whose parents had not completed high school; but, the analysis of variance pointed out that when all four means were considered together they were not significantly different. When the regular loans were extracted from this combination and examined separately, the means lined up in the same order of magnitude but the differences became smaller, a fact that was made manifest when the analysis of variance test yielded a probability of almost 90 percent! When the reserve loans were tested separately, the chi-square score showed a smaller probability but it was still some distance from the pre-determined minimum of 5 percent.

In discussing the students who were grouped according to size of secondary school it was pointed out that high and low means of the reserve distribution had a difference which was probably significant even though the analysis of variance indicated no differences at a 5 percent probability. To be certain that such seemingly contradictory findings might not slip by unnoticed, a Mann-Whitney "U" test was conducted on each high and

low mean in all the categories discussed above. This proved to be fruitless, however, for the only finding with a probability less than 5 percent remained the one associated with the size of school category; consequently, it would appear that up to this point the socio-economic variables of occupation and education of parents fail to show sufficient evidence that they have a significant effect on use of the campus library among college students while size of secondary school evinces some indication only when reserve loans are considered. It is interesting to note, moreover, that all test results so far which even approached the critical level of either 5 percent or 1 percent came only when use of reserve books was being considered.

The final variable to be studied was that of income. Consequently, the students were grouped in the same manner as was the case for the preceeding categories and the same non-parametric tests were applied to the data. In the analysis of variance administered to the distribution showing the combined regular and reserve books, the test yielded a finding that was probably significant. While the exact probability was very close to the minimum 5 percent level, it nevertheless did fall between 5 percent and 2 percent. When the regular two-week loans were examined separately by analysis of variance, it was discovered that the differences were not significant; however, upon testing the reserve loans in the same manner a result was again obtained that proved to be probably significant.

On examining the data for income more closely it can be seen that the high mean among the classes belongs to the students whose families have incomes of \$0 - \$4,000. When the regular and reserve loans are combined this average amounts to 18.69 books per student and this statistic compares to the low mean of 11.64, registered by students whose family income is over \$16,000. Thus, the lowest income group has the highest mean number of

books and the highest income category is assigned the lowest average number of loans. Moreover, this same alignment holds when the loans are separated and the regular charges are examined apart from the reserve distribution.

To examine these data further, a Mann-Whitney "U" test was applied to see whether the mean of 18.69 was significantly greater than the low mean of 11.64. In this regard, a highly significant result was obtained for the exact probability proved to be no greater than .0033. Even though the analysis of variance failed to show significant differences among all means in the regular two-week loans, the Mann-Whitney test was nevertheless applied to the high and low averages. Testing the same question as above, the "z" score yielded a probability which was found to be between .0162 and .0166, or a result smaller than 5 percent and therefore probably significant. For the reserve books, the high and low means were tested in the same manner as above and again a result appeared which was highly significant.

Evidence seems to be present, then, indicating that income of families may have something to do with separate populations within the student body. While this seems to manifest itself in particularly strong terms when reserve books are being considered by themselves, it appears to be less evident when only the general collection is under examination. In this connection it should be pointed out that when the tables in Chapter IV representing income groups are examined, it can be seen that students in the \$4,001 to \$8,000 category have the second highest mean when regular and reserve loans are combined. Although this lead passes to the \$12,001 - \$16,000 group when only regular loans are observed, the lower income group finally secures second place in total loans by borrowing substantially more volumes from the reserve shelf.

Up to this point, virtually all of the most obvious differences

appear to be confined to the reserve collection. Even when the Mann-Whitney "U" test was applied to high and low reserve book means in the occupation, education, and size of school categories, higher "z" scores were consistently found than when the regular loans were separately examined. Moreover, it should be remembered that while differences in reserve book means for students arranged by income were the only ones showing highly significant results, i.e., less than 1 percent, the reserve distribution for size of school did produce probably significant differences. Finally, both the education and occupation groups had probabilities indicating that greater differences were present in the reserve distributions than in the regular two-week loans.

Income and Sex of Students. In attempting to examine further the apparent differences in income, the students were divided so that only the men were in one group and the women in another. To be certain that the women's average of 19.05 books was truly greater than the men's average of 11.72 a Mann-Whitney test was administered for significance. The resulting "z" score was highly significant, the probability being far less than .00003; moreover, the same findings were apparent when the regular loans were separated from the reserve books and examined independently.

After this was done, it was found through analysis of variance that all four of the socio-economic variables concerned with this study also showed highly significant results when they were coupled to sex of the student. For example, each of the variables were dichotomized so that men and women students each comprised half of the variables' total effect. This resulted in a total of ten separate groups and the differences among the means of these various groups proved through analysis of variance to

be highly significant. These results, in fact, had a probability of far less than .001 and consequently they could hardly have been caused by chance factors.

Being thus assured that significant differences do exist between the borrowing patterns of men and women students, the next question was whether differences in income would appear if the men and women were separately arranged into the five levels of income studied above. To carry this out, men students only were sub-divided into groups of those who came from families with income of less than \$4,000, then \$4,001 - \$8,000, and so on until the arranging was complete. After this, women students were handled in the same manner and then an analysis of variance was used to discover whether intra-group differences were present.

With the men arranged in the above manner, analysis of variance showed insignificant results with the regular two-week books but probably significant findings in the reserve loans. For the women students, differences in both regular and reserves were found to have a probability ranging from no less than 30 percent to 50 percent; consequently, they would have to be considered insignificant. The individual averages that were observed, however, between the borrowing of men and women students was found to be rather interesting and it seemed likely that significant differences between high and low means might be uncovered by examining them separately. For example, when the combined regular and reserve loans were scrutinized the highest average among male students was scored by men from families with \$0-\$4,000 incomes. Their mean of 16.15 books per student compared to 9.5 for the Over \$16,000 group and 8.21 for the \$12,001-\$16,000 class. When Mann-Whitney tests were used on the differences between these two low scores and the high, results were yielded which were

probably significant.

As with results reported earlier, the observed differences in the means when regular loans were considered by themselves did not always prove to have statistically significant differences. Among the men students, the \$0 - \$4,000 group had the highest mean value with 11.8 books and the Over \$16,000 category was again low, averaging only 7.2 volumes per student. When put to a statistical test, however, this spread was not significant. On the other hand, when the reserve distributions for these men were treated, high and low means were discovered to be probably significant. At least some of this may have been caused by the unusually low number of reserve books borrowed by many of the male students because 14 men in the \$12,001 - \$16,000 category checked out a total of only 5 books and the 22 pupils from the Over \$16,000 group made use of no more than 50 volumes for the entire semester.

Intra-group differences, then, did seem to be noticeable for men insofar as reserve books were concerned but probably not for the regular two-week loans. With the women students, larger numbers of books were checked out and in some cases rather unusual patterns of borrowing led to interesting results. For example, when the regular and reserve books were combined the group having the second highest mean was the \$0 - \$4,000 group with an average of 20.85. This mean proved with a probability of .0436 to be statistically larger than the Over \$16,000 group's low average of 15.58; however, the highest mean for reserves and regular combined went to students from the \$12,001 - \$16,000 group even though their average of 21.83 was not significantly larger than the low mean of 15.58. The reason for this anomaly was the small sample involved and the fact that one girl borrowed 83 books during the semester. If this student had not been

included in the \$12,001 - \$16,000 category, the entire group would have had a much lower mean value. Interestingly enough, however, the same income class that was high for the women, i.e., the \$12,001 - \$16,000 category, was the low group for the men students.

The lack of significant differences in the borrowing of men when only the regular loans were considered also carried over into the women's use of the library's lending facilities. But, despite the fact that no significant differences were found among the women's use of regular two-week books, the girls seemed to follow the same general pattern of the men in that students from lower income groups had the highest means and students in upper income brackets had the lowest averages. Moreover, when the reserve loans for the women were examined separately it was noted that the highest mean value again came from the \$0 - \$4,000 category while the low was that of the Over \$16,000 group. Testing to see whether this high of 7.38 was larger than the low of 3.33, a "z" score was arrived at that was unlike the above test on regular loans for this value had a probability of approximately .0392 and could therefore be considered probably significant. From these findings it can be seen that the substantial differences found between the borrowing of men and women students are not just that all girls take out more books than all men for evidence exists to suggest that separate populations based on income may be found within the entire student body, even when pupils are grouped according to the sexes.

However, one must be quite chary in interpreting these results and not over-enthusiastic in attaching importance to them. For example, both men and women, when arranged into income categories, seemed to show probably significant differences when loans from the reserve shelf were examined but neither sex presented the same consistent evidence when only the regular

two-week loans were observed. Moreover, at no time did highly significant findings appear even though there seemed to be rather consistent patterns indicating that both men and women from the lowest income level took out the most books. In more cases than not this group was followed by the \$4,001 - \$8,000 income students and in practically every case, whether regular or reserve loans were being examined, it was found that the pupils from Over \$16,000 families checked out the fewest number of titles.

Income and Major Field of Study. Having thus ascertained that the apparent differences between income groups can also be found when men and women students are studied separately, it was decided to see whether this same phenomenon might also be at work when students are arranged according to their major field of study. In other words, would students majoring in the department of language and literature, for example, also arrange themselves into patterns where the low income students borrowed more and the high income pupils less. Or were perhaps most of the low income people concentrated in one certain major that called for extensive library use while the higher income students exhibited quite the opposite trait.

So that too much would not be assumed, the first test to be run was an analysis of variance to see if differences really did exist in various departmental majors. The results of this test produced highly significant scores; in fact, the chi-square value was 94.68 where a mere 20.09 was the critical limit for 1 percent probability with eight degrees of freedom. While this unusually high score was produced on a test involving regular and reserve books combined, the same highly significant findings were also produced when these two elements were separated and tested independently. Presented in Table 16 is information showing how the students were arranged

by academic subject fields and the mean number of books that were loaned to pupils in each of these study areas.

Having then discovered that the Southwestern students, when arranged according to major field of study, use the library in the same manner as investigators have found students doing in other colleges since the 1920's (2), it was next desired to see if pupils from the various income categories were spread throughout all the majors in the same proportion as they were found in the student body as a whole. It is rather well-understood, and even accepted, that certain fields of study, history for example, lend themselves to library use while other areas, particularly those having to do with skills and workbook courses, have less immediate need for libraries. The question then became one of determining whether certain income groups tend to concentrate in any given area of study so their use might be unduly influenced.

A chi-square goodness of fit test on each of the majors in Table 16 indicated that no significant differences could be found when testing the

TABLE 16

STUDENTS ARRANGED BY MAJOR FIELD
OF STUDY WITH MEANS GIVEN FOR
REGULAR AND RESERVE LOANS

Major	No. of Students	Regular Means	Reserve Means
Natural Science	78	7.05	5.13
Physical Science	56	8.30	2.10
Education	85	14.06	6.94
Business	94	5.68	2.25
Language and Literature	48	20.08	4.60
General (No Major)	60	8.92	4.15
Social Science	79	16.40	4.10
Home Economics	20	9.50	14.50
Fine Arts	25	9.04	3.36

above question. However, Cochran's more sensitive goodness of fit test, which both employs a weighting device and indicates where discrepancies are occurring, produced a score that showed probably significant, but not highly significant, differences among students majoring in business. Although this was the only field of study that appeared to have a possible imbalance, the test did present some evidence that disproportionate numbers from high income families were majoring in business while students from low incomes were under-represented. Table 16, incidentally, shows that students in business borrowed the lowest mean number of regular books and the second lowest number of reserve loans.

In all other fields of study, however, it would appear from the results of both the conventional and the Cochran goodness of fit test that students from the various income categories are distributed in the same proportion as they are found in the student body. For example, approximately 13 percent of the student body was made up of students from incomes of \$0 - \$4,000 and the goodness of fit test implied that each of the majors contained about the same proportion of pupils from this economic class. Consequently, with the possible exception of business majors, for these students it would be difficult to maintain that a given income group borrowed more books because pupils from a certain economic class were concentrated in fields of study which necessarily required more reading.

It can be seen from Table 16 that if the regular and reserve loans are combined, the students from language and literature have the highest mean number of charges and pupils from the field of business have the lowest. While these differences definitely are statistically significant, of more interest is whether income groups within each of these majors, or fields of study, also show differences in the number of books they borrow from the

library. In short, will the \$8,001 - \$12,000 group, for example, borrow significantly more volumes than any other given income category within only one major.

The biggest obstacle to carrying out such tests was the fact that by splitting the students from these nine majors into five separate income groups only a very small number of pupils could be observed in each of the categories. While it is true that tables are available for use in testing small samples (6), differences among groups must be exceedingly marked if such tests of significance are to produce anything. This was illustrated when the pupils majoring in business were examined by these small sample tests. Among these students the high mean was produced by the \$0 - \$4,000 pupils and their average of 11.16 seemed to be considerably ahead of the low of 6.11 which was established by the highest income students. However, by small sample testing these differences were not significant; furthermore, when a high of 28.09 for the \$4,001 - \$8,000 group was found among language and literature students as against a low of 19.00 for pupils from \$8,001-\$12,000 families, the test results again proved to be insignificant. An exception to this was found with science students when a high mean of 13.28 among \$0 - \$4,000 students was compared to the low average of 4.73 for Over \$16,000 pupils. In this case the Mann-Whitney small sample test result found the difference to be probably significant.

Table 17 summarizes the above information by showing the various subject areas together with high and low means that were scored for each particular income group within the subject. In some instances there were so few observations in the income groupings that categories had to be combined. These means were computed from the combined regular and reserve distributions and although each of these differences were tested for significance, only a

TABLE 17

SUMMARY OF HIGH AND LOW MEAN NUMBER OF
BOOKS BORROWED BY INCOME GROUPS
WITHIN SUBJECT FIELDS

Major	Income Groups	High Mean	Low Mean	Income Groups
Science (Phy. & Nat.)	\$ 0--\$ 4,000	13.28	4.73	\$ Over \$16,000
Education	\$ 0--\$ 4,000	24.25	19.91	\$4,001--\$ 8,000
Business	\$ 0--\$ 4,000	11.16	6.11	\$ Over \$16,000
Language & Literature	\$4,001--\$ 8,000	28.09	19.00	\$8,001--\$12,000
General (No Major)	\$4,001--\$ 8,000	15.60	10.24	\$ Over \$ 8,000
Social Science	\$ Over \$12,000	26.60	17.79	\$4,001--\$ 8,000
Home Economics	\$4,001--\$ 8,000	27.08	13.50	\$ Over \$ 8,000
Fine Arts	\$4,001--\$ 8,000	12.93	12.11	\$ Over \$ 8,000

few of them yielded a probability less than the minimum requirement of 5 percent. Nevertheless, it is more than a little thought provoking to count the number of times the low income students have the highest means.

In the above table a rather consistent trend seems to show high means among low income students and smaller averages for those with higher incomes. Most of the time it is the class of students with incomes under \$8,000 that have the highest mean number of volumes and typically when the Over \$16,000 group is not listed as low it is because that group contained so few students they had to be combined with another if a worthwhile average was to be computed. As noted above, in the majority of cases small sample testing did not yield significant differences; yet, it is impressive that the pattern persists of having low income students with the highest means regardless of whether the sex of student or major subject area is being considered.

Income and Achievement Marks. The review of literature pertinent to this study includes investigations that have concerned themselves with the connection between library use and achievement marks, or grades, made by college students. It would seem that while correlation techniques yield low

results, indicating that good grades do not necessarily depend on extensive use of the library, students who do make superior grades use the library more heavily than pupils with low achievement. Since wide variances are common among college students in the matter of achievement, is it possible that the differences in means among income groups really might be caused by a constellation of certain students in the right achievement groups? In other words, is it possible that those students from the lower and middle economic levels are actually the ones who are doing better in achievement and are, consequently, making greater use of the library for that reason.

To examine such a question it was necessary to arrange the students into four groups according to a pre-determined coding based on grade-point averages which is discussed more fully in Chapter III. When the classifying was completed it was discovered that 28 pupils had not completed semester requirements and therefore had no grade-point average. Of the remaining 517 students, however, data were available and the mean number of regular and reserve books borrowed by these persons is presented in Table 18.

If students in the 0 - .750 category, for purposes of brevity, are labeled inferior, those in the second from the top called average, the next group down known as above average, and the bottom group referred to as

TABLE 18

MEAN NUMBER OF BOOKS BORROWED BY STUDENTS
ARRANGED BY GRADE-POINT AVERAGE

Grade-Point Average	No. of Students	Mean No. of Loans
.000 - .750	40	6.28
.751 - 1.500	251	15.23
1.501 - 2.250	170	18.84
2.251 - 3.000	56	20.55

superior, it can be seen that there is a noticeable variance between all academic groups and particularly between the superior and the inferior students. Moreover, there are statistical differences present in these means but the real question to examine is whether income has anything to do with the number of materials that are borrowed by students within each of the grade categories. That is, do the superior students, for example, show differences in the amount of borrowed material when they are arranged by their family income.

It is easy enough to see that if the students comprising the superior and inferior groups are each sub-divided into five income categories there will be only a few observations in each classification. This proved to be particularly true for the inferior group because only three students from the Over \$16,000 class were included in this category. Consequently, when the regular books were studied it was noted that one of these pupils borrowed no materials, one took out ten volumes, and one was responsible for thirteen loans. This would generate an average of eight books per student; however, when the same three students were examined for loans from the reserve desk it was found that one of them did no borrowing, one took out a single volume, and the other withdrew two titles. Such small numbers, of course, are hardly representative of an entire class of students and indeed the small sample tests failed to turn up any significant findings.

Similar results also were noted in the superior group. Here, eight students were found to be from the \$0 - \$4,000 category and two pupils were from the Over \$16,000 bracket. Small sample testing again failed to turn up significant results, a fact that can be understood when it is seen that one of the students in the high income group borrowed 70 volumes while the other member of this category did no borrowing at all. Theoretically, the

average for these two students would be 35 but it is obvious that such a figure tells nothing about either student.

Turning to the category labeled "average," or those with grade-point averages of .751 - 1.500, samples here can be examined with considerably more reliability. The highest mean value for the regular two-week loans was made by the \$0 - \$4,000 students and this average amounted to 10.10 volumes per pupil. Conversely, the low mean was again attributed to students from the Over \$16,000 category; however, when a Mann-Whitney test was carried out the "z" score resulted in a probability of .0559 and thus had to be considered insignificant. With the reserve loans, the bottom income group was still high with an average of 5.037 but the lowest mean this time, with a score of 1.69, went to the \$12,001 - \$16,000 group. These differences were found to be statistically significant since the probability stood at .0392, or less than 5 percent but larger than 1 percent. The Over \$16,000 students in the reserve book distribution had a mean of 2.09 and when this was tested to determine whether it was less than 5.037 the probability was discovered to be .0582, or slightly larger than the minimum critical point.

To complete this part of the investigation, students from the above average classification were arranged into income levels and analysis of variance and Mann-Whitney tests subsequently applied to the data at hand. The first of these tests resulted in findings that were not significant for the chi-square score gave probabilities of between 10 percent and 20 percent. This result was exactly the same when applied to the regular two-week loans as it was to the reserve books but upon closer inspection some interesting findings were uncovered.

For example, upon looking at the regular loans it was seen that the

nine pupils from the \$12,001 - \$16,000 category had the highest mean value with a score of 20.33. This high average was caused by three students who checked out 33, 36, and 60 volumes respectively. This exceeded the second high mean, that of the \$0 - \$4,000 group, which amounted to 15.448; however, when attention was turned to the reserve distributions the usual pattern of high means for low income people returned and this average became progressively smaller as the income level went up.

Tests of equality were carried out on the regular two-week loans to see if the high mean of 20.33, scored by a high income group, was greater than the low mean of 8.4. Small sample testing was necessary here for a total of only fourteen pupils were involved -- nine in the \$12,001 - \$16,000 group and five in the Over \$16,000 class. The results of this test proved to be insignificant; consequently, the same procedure was applied to the mean of 15.448 and the lowest average of 8.4 for the Over \$16,000 group. Once again the "U" value pointed to an insignificant difference and it was decided that evidence was lacking to demonstrate conclusively that differences in income had anything to do with the number of regular loans made by the academically above average students.

As most of the observed differences in circulation patterns seemed to be identified mainly with reserve loans, the foregoing tests were also used on high and low means for the different income groups with only books from the reserve shelf being considered. The means for the various categories ranged from a high of 7.48 for the \$0 - \$4,000 students to a low of 3.8 among the Over \$16,000 pupils. Upon using a test for significance it was found that these high and low means were not significant and no further testing was done among the groups.

It would seem, then, that when students are arranged into four groups

on the basis of grade-point averages by the procedures outlined above, conclusive evidence is lacking to support the notion that any one income level borrows more volumes from the library than another. Only the reserve loans among average students indicated probably significant results even though other test results were close to the critical point and in all achievement categories the means were consistently larger for low income groups than for high income students. It can only be speculated as to the effect more observations would have made on these tests of significance; however, such information will have to await further investigations.

Negligible Use of the Collection. In the concluding section of Chapter IV, mention was made of Branscomb's (1) use of an arbitrary number of loans per student to indicate negligible use of the college library. In attempting to carry out a parallel experiment, Branscomb's figure of one book per month was replaced in this study by adopting the rule that if a student was in the bottom quartile of the distributions found in Chapter IV that student would be considered as making only negligible use of the Southwestern College library. If the combined regular and reserve loans were being examined this would mean that a student would have to borrow six or more volumes to escape the lowest quartile and when only regular loans were under study this figure would be four or more. Accordingly, in the reserve distribution the first, or bottom, quartile was considered to be one book or less; consequently, a pupil would have to borrow at least two volumes to be eligible for the second quartile.

The purpose of such classification was to see if there is any indication that income, plus any other of the three socio-economic variables, might be related to the fact that a student was in the bottom quartile.

To carry out such tests, chi-square contingency tables were constructed which combined the four socio-economic variables two at a time. The number of students found in the bottom quartile was then written in the proper box of the tables which represented the conditions under which the observations were made. Only if the resulting chi-square value was greater than the adopted critical level would it be assumed that the two variables under consideration were associated with the fact that pupils were in the bottom quartile.

Table 19 gives the complete data for a contingency table that tests for independency between occupation of students' parents, the income of the family, and students who were in the bottom quartile when regular and reserve loans were observed. The table also points out that the chi-square score of 21.86 is larger than the adopted 1 percent critical point of 20.09 when eight degrees of freedom are involved. This would mean that the finding is considered highly significant and that an association does

TABLE 19

CONTINGENCY TABLE SHOWING STUDENTS IN FIRST
QUARTILE WHEN ARRANGED BY INCOME AND
OCCUPATION (REGULAR AND RESERVE
LOANS COMBINED)

	\$0- \$4,000	\$4,001- \$8,000	\$8,001- \$12,000	\$12,001- \$16,000	Over \$16,000
Farm	5	18 (22.96)	12 (9.62)	1 (6.42)	3
Professional	0	9 (13.54)	8 (5.68)	1 (3.78)	5
Business	1	7 (12.95)	8 (5.43)	3 (3.62)	3
Salary	3	17 (20.60)	7 (8.64)	6 (5.76)	2
Labor (Wages)	7	26 (22.95)	4 (9.63)	1 (6.42)	1
D.F. = 8	$\chi^2 = 21.86 > 20.09$ @ 1 percent				

exist between being in the lowest quartile, occupation, and income of the students' parents.

Statisticians are not entirely agreed about the minimum number of observations that each of the cells in a contingency table should have. For example, Lewis and Burke (4) insist that each cell should have no less than five to ten frequencies while Maxwell (5) claims that one box out of five may have an expectation as low as one. It can be seen from Table 19 that not all the cells for income groups labeled \$0 - \$4,000 and Over \$16,000 have as many as five observations; consequently, these two columns are coupled to their nearest neighbors and the expectations which are found in parentheses are those for the combined cells. Thus, twenty-three students from farm families with an income not exceeding \$8,000 were found in the bottom quartile and, as can be seen from the parenthesis, one could mathematically expect 22.96 students in this category. It is recognized that some of the cells are still short of five observations; however, interpretation of the result will have to consider this fact in light of the above points of view and judge it accordingly.

When similar occupation and income tests were tried on only the regular loans, significant, but not highly significant, results appeared. However, when the reserve loans were tested in the same manner a highly significant value again turned up. There is evidence, then, that income and occupation are associated with negligible use of the library when negligible use is interpreted as borrowing so few books that the student is found in the lowest quartile.

In carrying out the tests for the possible associations of family income and use of the college library, the same contingency tables were constructed to see if relationship existed between income and the education

of parents. In testing both the reserve books and the regular two-week loans separately, it was found that the chi-square value in both cases was highly significant. Once again, however, one cell in each of the tables contained only three and four observations respectively and proper care should be taken in interpreting the results.

To this point, income has shown an association with both occupation and education of parents when numbers of students were observed to be in the lowest quartile of the distribution. The final socio-economic variable, that of size of high school from which the college student graduated was also coupled to family income and a comparable test was made of these two attributes. When the combined regular and reserve loans were put to a test probably significant results appeared. It should be remembered from Chapter IV that no data were available on the secondary schools from which the foreign students graduated and they had to be excluded from this particular test. Examination of the completed contingency table revealed there were more cells with less than five observations than many statisticians would care for; nevertheless, the results did seem to give further evidence that income may have relationship to use of the campus library. When the same tests were used on the regular and reserve loans separately, insignificant chi-square scores appeared for the regular distribution and probably significant values for the reserves.

If income, when matched with the other three socio-economic factors, does seem to be related to negligible use of the library, what would the other three variables show if they were matched in similar manner? When size of school was connected to the education of parents a chi-square score of insignificant value was generated regardless of whether the regular, reserve, or combined loans were being tested. The size of secondary school

was then matched with sex of the student to see whether this combination would be related insofar as negligible use of the college library was concerned. The results were again insignificant in all three distributions. In fact, when sex of the students was tied to all four of the socio-economic variables, including income, a score with a probability greater than 5 percent invariably appeared. Consequently, it is fairly safe to say that these socio-economic variables are not related to the fact that a given student in the lowest quartile may be a man or woman.

When occupation of the parents was coupled to income, a highly significant finding was discovered indicating that these two conditions were probably associated with a student making negligible use of the library. Occupation, however, was also considered when it was matched with the education of parents and it is interesting to note that parents in the professions had to be excluded from this test because none of these people had less than a college degree. When this test was carried out with the combined regular and reserve loans, a probably significant score developed and comparable findings also appeared when regular and reserve loans were considered separately.

Occupation was also considered when it was coupled to the size of school from which the students graduated. In this regard, rather contradictory results occurred because insignificant findings appeared when the combined regular and reserve loans were examined but highly significant chi-square scores were present when only the regular loans were tested. In the course of this entire study, this was the only time such a result occurred.

From the foregoing it would seem that when students are observed in the bottom quartile under conditions of income and any of the three

other socio-economic variables, the observation is not independent of the conditions. Similarly, comparable conclusions are arrived at when occupation is matched with education of parents, although these findings are not highly significant. Income, however, had highly significant scores when coupled both to occupation and education of parents and had at least probably significant scores when matched with size of school.

In interpreting such data much care must be taken that association is not made synonymous with cause and effect. For this reason it would be going beyond the facts to state that low income causes students to borrow more books from the campus library and high income results in less borrowing. The only evidence that is available in this case is that when students are observed in the lowest quartile there is an association between income, occupation, and education of parents which is highly significant. Furthermore, chi-square results which are probably significant give some indication of an association between income and size of secondary school from which the student graduated. Finally, occupation of parents also showed significant findings, and therefore association, when matched with education of parents and highly significant results when matched through regular loans with the size of the students' high schools.

Conclusions. The total body of evidence presented throughout this chapter might seem to be insufficient for completely rejecting the null-hypothesis even though substantial information is at hand for suggesting that separate theoretical populations exist in the student body. Actually, more study is needed on this matter for though tests which compare the equality of sample means often turn up significant results, and sometimes even highly significant results, indicating that students from families

with incomes under \$4,000 borrow more books than do pupils from families with at least a \$16,000 income, a chi-square goodness of fit test shows that the income groups are disproportionately present in the lowest quartile only when reserve loans are being examined.

In this regard, Table 20 gives data for a goodness of fit test that was intended to answer the question of whether the various income groups were found in the lowest quartile in the same proportion as they were scattered throughout the entire student body. These data, representing reserve loans only, were tested by Cochran's extra-sensitive goodness of fit test and the results proved to be probably significant. When this same test was tried on the regular loans an insignificant result appeared for the exact probability was .0614, or slightly higher than the acceptable minimum of 5 percent. The evidence, then, though it is only probably significant, points in the direction that the first quartile has a disproportionate number of higher income students when only reserve loans are being studied but has about equal proportions of income groups when the regular distribution is examined.

Closely akin to the above finding is that of Table 21. This

TABLE 20

NUMBER OF STUDENTS FROM INCOME GROUPS
IN FIRST QUARTILE COMPARED TO
PROPORTIONATE FREQUENCY IN
STUDENT BODY (RESERVE
LOANS ONLY)

\$0- \$4,000	\$4,001- \$8,000	\$ 8,001- \$12,000	\$12,001- \$16,000	Over \$16,000
(34.58)	(133.00)	(66.50)	(15.96)	(15.96)
24	131	72	20	19
z = .0332 < .05				

	\$0- \$4,000	\$4,001- \$8,000	\$ 8,001- \$12,000	\$12,001- \$16,000	Over \$16,000	Totals
Students in 1st Q.	(35.14) 24	(132.76) 131	(65.89) 72	(15.62) 20	(16.59) 19	266
Students Not in 1st Q.	(36.89) 48	(139.24) 141	(69.11) 63	(16.38) 12	(17.41) 15	279
Totals	72	272	135	32	34	545

D.F. = 4 $\chi^2 = 11.13 > 9.49 @ 5 \text{ percent}$

From this it is obvious that the proportion of students in the lowest quartile becomes progressively large as the incomes increase. Only the two largest income categories show any discrepancies in the upward climb of the proportions. By analyzing these data according to methods that partition chi-square, this trend is found to be highly significant and, moreover, even though it was mentioned that the regular loans indicated a lack of association between income and bottom quartile, when this same test was carried out for the two-week charges that trend too was found to be highly significant.

The null-hypothesis that was being tested in this study postulated that there were no significant differences in use of the campus library among students who came to college from the various socio-economic backgrounds. From the data that has been presented in this chapter it would seem that this statement might be accepted as far as the variables of education of parents, occupation of parents, and size of high school are concerned. Less certain, however, is the matter of accepting the null-hypothesis that differences do not exist among students who are arranged by income of parents for certainly pupils at the extreme ends of the income scale not only produced some of the most interesting and provocative information in this investigation but they also supplied considerable material for discarding the null-hypothesis.

Some of this evidence that would tend toward rejecting the null-hypothesis includes not only the fact that lower income students consistently borrowed more materials than pupils from families with higher incomes, but that probably significant findings were also common when reserve loans were studied. Moreover, there seemed to be highly significant relationships between negligible use of the library and variables such as income and the

education of parents. Association between negligible use and income could also be found, though it was slightly more open to chance, when occupation of parents and size of school were considered. Finally, the data appeared to be quite conclusive, with little room for chance, that the proportion of students in the lowest quartile in both the regular and reserve distributions increases as the income of pupils' parents increases.

It might be that more refined methods of collecting data would reveal that all the variables play a different role than that indicated here. One such procedure might be to interview students and, with the results, classify all pupils as to their social standing on the campus. These scale ratings could then be compared to the students' actual use of the library. Another method might be to explore more extensively the background from which they came and make more scientific ratings concerning their pre-college socio-economic milieu.

With the methods used in this investigation, some differences did become apparent among the income groups regardless of the distribution in which they were sought. In some of these places, however, the findings seemed somewhat contradictory except that with reserve loans there was consistently more borrowing among the low income students than among pupils whose families had earnings of over \$8,000. If one is willing to accept a level of 5 percent, substantial evidence is present for adopting the null-hypothesis insofar as parents' education, occupation, and size of students' high school are concerned but rejecting it when it comes to the income variable. If, however, more rigorous findings are demanded, and the higher critical level of 1 percent is felt to be necessary, much less evidence of a significant nature can be mustered for rejecting the null-hypothesis insofar as any of the socio-economic variables are concerned.

A final answer will probably be determined only when many more librarians turn greater attention to problems of their clientele and discover more things about who uses the college library. Still unknown are the answers to such questions as why one student uses the facilities so much more than does another pupil even though it is not demanded of him insofar as achievement marks are concerned. Furthermore, the problem of what higher education can do to foster library-mindedness in pre-college students is an unexplored realm; but, when librarians discover who their potential patrons really are a substantial start toward making the library an effective arm of the classroom might not be far away.

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CHAPTER VI

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

When the literature dealing with student use of college libraries is examined it becomes rather clear that a relatively small number of pupils account for the bulk of the library's circulation. Conversely, a large majority of students in American colleges and universities are apparently using the campus library facilities only when it is necessary and sometimes not even then. Yet, it appears that this fact does not have any noticeable effect on the achievement marks of these pupils for studies of grade-point averages which have been done in several American colleges indicate that non-users of the library do as well as those pupils who borrow heavily from the collection.

Using these conclusions as a point of departure, the present study attempted to discover whether these wide discrepancies could be explained, at least in part, by the social and economic backgrounds of the students. The purpose, then, of this investigation was to determine whether the pre-college social and economic conditions of students' families in one small mid-western liberal arts college tended to play any significant part in use of the campus library. In carrying out the study, attention was directed toward testing the null-hypothesis that no significant differences in use of the college library among students from various socio-economic backgrounds would be found.

Data for this investigation was collected at Southwestern College of Winfield, Kansas. This school is a small church-related institution located in a county seat town of approximately 11,000 persons and its

students come in large part from rural areas of central and western Kansas. However, there is another fairly large group of students who come to Southwestern from Wichita, Kansas, and the environs of that city. Consequently, a research worker at this college is able to observe students from both a rural and an urban setting and at the same time take note of the possible influence of income. This latter point is made manifest by the fact that many of the students from the Wichita area have parents who help to fill the ranks of both skilled and unskilled labor while others do various types of work which place them in income categories below \$8,000.

Data for the study was collected from both the students and the college registrar. The students contributed to this task by completing a questionnaire which dealt with their family's social and economic station while the registrar's office provided such data as names of high schools from which the students graduated, their majors, class standings, and grade-point averages. Other pertinent information regarding the students' secondary schools had to be collected from the offices of public instruction in twenty-three different states. Finally, these combined data were coupled to information that was systematically collected at the college library's public service center. This included the number of volumes that was borrowed by each student for the entire semester regardless of whether they were regular two-week loans or books from the reserve shelf.

So that the null-hypothesis could be tested, four socio-economic categories were established and the students were successively arranged in these groupings. The four categories, which became variables for the study, were the occupation of the students' parents, the total income of the family at the time the student graduated from secondary school, the

amount of schooling that was achieved by the parent with the most formal education, and the size of high school from which the student graduated. Instead of creating a value index for these secondary schools and judging them on that basis, enrollment became the crucial factor and information was gathered on schools within each category concerning size of their library's collection and how much financial support the library received for continuing operation.

In some respects this study resembled other investigations concerning student use of the college library. As these previous research activities have covered a period of approximately thirty-five years, certain trends in use of the library have taken shape and since parallel data from this study were readily available a small section of this report was devoted to comparing the descriptive findings at Southwestern College to the more general area. In this respect, it would appear that students at Southwestern are not atypical of pupils in other colleges for the circulation distribution was markedly skewed, as in other investigations, and only a select few made the greatest use of the collection. It was noticed, moreover, that the decline in use of reserve books, reported at sundry places in the literature, would seem to be generally substantiated from the data presented here for the mean number of such charges at Southwestern was noticeably less than that reported in studies some years ago. On the other hand, loans of regular two-week books were higher than that reported in the last large-scale investigation of this topic; consequently, it may seem that classroom instructors are turning more to the concept of free reading on the part of the individual student.

As noted above, the distribution of student loans did not follow the normal curves which lend themselves to statistical analysis through

parametric tests. Consequently, this study relied on non-parametric procedures for testing hypotheses and the specific tools employed included the Kruskal-Wallis analysis of variance, the Mann-Whitney "U" test, and various forms of chi-square procedures that are particularly appropriate for examining frequencies when they are coupled to attributes. The results, or scores, of these tests were reported at a level of both 5 percent and 1 percent, usually by signifying the former as probably significant and the latter as highly significant.

Summary of Findings and Conclusions

When attention was turned to a general inspection of the circulation at the Southwestern College library it was found that the mean number of loans for the combined regular and reserve charges amounted to 15.47 volumes. When this figure was broken down into materials that were checked out from the general collection and reserve shelf respectively it was ascertained that 10.93 books per student were borrowed as regular two-week loans and 4.55 volumes from the reserve facilities. Descriptive data used in this manner, however, tend to be quite misleading for a large percentage of the students took no books from the library while as few as twenty pupils borrowed no less than 644 pieces from the reserve collection.

When such findings were matched with the four socio-economic variables, data came to light which indicated that occupation and education of parents had little or no effect on the amount of use which college students made of the campus library. Students were then arranged according to size of secondary school from which they graduated and when differences among these four categories were examined a probably significant finding appeared indicating that pupils from the smallest schools borrowed more

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reserve books than students from schools with enrollment over 850. In studying income, more consistent evidence seemed to indicate that students from incomes of less than \$4,000 borrowed more books than did pupils from families whose earnings came to more than \$16,000.

These findings began to appear when the students were first arranged into occupational groups which were labeled (1) farmers, (2) professionals, (3) owners of businesses, (4) salaried and commission employees, and (5) labor, or hourly wage earners. When grouped in such manner it could be seen that the means for all five categories had little dissimilarity and when they were tested by the tools previously discussed the resulting scores indicated that no statistically significant differences were involved. Moreover, this same evidence kept returning whether the occupational groupings were matched with regular loans, reserve charges, or a combination of the two. Consequently, as far as one occupational group borrowing more materials than another is concerned, it would seem that the null-hypothesis would be valid.

Attention was then directed toward the matter of size of secondary school and whether students from schools in the various enrollment categories would make noticeably different use of the library's lending facilities. When regular and reserve loans were studied together it was noticed that the means generated by students who came to college from the four enrollment categories varied no more than from a low of 14.52 to a high of 16.59. The former was registered by pupils from schools with enrollments of 301-850 while the latter represented those students from schools with less than 125 in attendance. Comparable findings were apparent when this combined circulation was taken apart and the regular loans were separated from the reserve withdrawals. By means of analysis

of variance the means of all four enrollment categories could be simultaneously compared and in so doing it was discovered that statistical differences were not present; however, when the high mean among reserve books was tested to determine whether it was significantly larger than the low mean, a score resulted which indicated that these two differences were probably significant. In this case, the highest mean value was attributed to students from schools with less than 125 enrollment while the low average was produced by pupils from schools with over 850.

Next to be examined was the impact that the education of parents might have upon student use of the college library. Although it seems that the education of these parents does have something to do with their sons and daughters being in college, evidence is lacking that this same element has anything to do with the amount of use which their children make of library facilities. Only 8 percent of the students at Southwestern had parents who themselves had not completed twelve years of schooling but 63 percent of the student body came from homes where at least one of the parents had attended college for some period of time. But, when these same findings were used to observe the number of books which students from various levels of parental education borrowed, it was clear that few differences were present. Moreover, statistical testing revealed that the few loans actually separating the various categories was nothing more than what would be expected from mere chance.

The final socio-economic variable to be examined was that of the student's family income. In categorizing students for these tests, income levels were arbitrarily established according to the following scale:

\$	0	-	\$ 4,000
\$	4,001	-	\$ 8,000
\$	8,001	-	\$12,000
\$	12,001	-	\$16,000
	Over		\$16,000

The most striking fact to appear when circulation was examined for students in these various categories was that pupils from the lowest income group consistently borrowed more books than students in the Over \$16,000 classes. This was particularly noticeable when only the reserve books were examined although test scores which were significant could occasionally be found among the regular two-week charges as well. Such differences, moreover, could be seen when the entire student body was dichotomized into groups of men and women as well as when they were arranged by major fields of study. The student body was further divided by grade-point averages and this partitioning brought out some interesting observations even though the number of students in the several categories became so small that meaningful conclusions were scarce and difficult to make.

While the statistical findings mentioned above were often impressive and worthy of note, it should be emphasized that they were neither 100 percent consistent nor always highly significant. In the majority of cases where significant findings were apparent the test scores yielded results with which one could be confident at least 95 percent of the time but not as much as 99 percent of the time. For example, students from the \$0 - \$4,000 class had a high mean of 18.69 when the combined regular and reserve loans were studied and this compared to a low of 11.64 for pupils from the Over \$16,000 class. The difference in these means was found to be highly significant; but, when the high and low means which represented only regular loans for the same two income groups were examined only probably significant, or less than 5 percent but greater than 1 percent, results were obtained. Accordingly, when all students were divided by sex it was noted that among regular two-week charges the men from the lowest

income bracket had a mean of 11.8 volumes while the men from the highest income category showed an average of 7.2. This spread of 4.6 books per student was tested and the result showed a probability of greater than 5 percent; consequently, it had to be considered insignificant. But again, paradoxically, when reserve loans for these same students were examined it was found that the lowest income group had borrowed so many more books than the Over \$16,000 pupils that, statistically speaking, chance factors could account for this difference only three times in one hundred. The result, therefore, was considered probably significant.

The general statement can be made that in the vast majority of cases the highest means were earned by students from the lower income brackets. This seemed to occur regardless of how the students were arranged, i.e., by sex, major field of study, or grade-point average. It is unfortunate that such exceedingly small samples were often produced when the student body was sub-divided into categories of income and achievement marks. The statistical results that might have occurred had this not been the case can only be left to conjecture.

The last part of the study was devoted to ascertaining whether any association existed between the four socio-economic variables and the number of students in the bottom quartile of the frequency distributions. Branscomb's arbitrary figure of one loan per month, which he said constituted negligible use of the library, was adapted for this part of the investigation. It was decided that if a student borrowed no more than a total of five regular and/or reserve books he could not escape the bottom quartile and would therefore be considered as one who made only negligible use of the Southwestern library during the semester under study. In the same way, the bottom quartile limits for the regular loan distribution was

2.6 and that for the reserve books came to only .67. Accordingly, a student was judged to have made only negligible use of the general collection if he took out no more than three regular books and he made negligible use of the reserve shelf if he borrowed no more than one volume from this source.

Carrying out this idea by the use of chi-square contingency tables, then, no association was found between education of parents and size of school from which the student graduated when the combined regular and reserve loans were examined. In other words, these two conditions seem to be independent of the fact that a given student was in the bottom quartile and thus making negligible use of the library for the period under consideration. In further examining the combined regular and reserve loans, size of school was also found to be independent of negligible use when it was matched with occupation; however, when the same test was tried on only the regular loans a highly significant result was observed.

The two variables of occupation and education of parents were matched in the same manner as above and chi-square scores resulted which were probably significant. While the tests on these combined conditions yielded a probability that stood between 5 percent and 1 percent, when each of these educational variables was coupled to that of income some highly significant findings appeared which indicated a close relationship between these conditions and negligible use of the library. Furthermore, when income was coupled to occupation a highly significant association was found with the reserve loans and a probably significant relation with the regular distribution. By matching size of school and income an association between these variables and first quartile was discovered in the reserve loans that was probably significant even though some of the cells in the table had few enough frequencies to make some statisticians chary of the final results.

Finally, sex of students was found to be independent of all possible combinations of the above socio-economic variables for whenever they were coupled to any of these conditions insignificant results appeared.

While it would appear that a considerable body of evidence is present to support the idea that low income students borrowed more materials from the college library than did pupils from more affluent families, the null-hypothesis seems to be valid for occupation, education, and size of school. That part of the null-hypothesis dealing with income probably could be rejected if one were willing to accept a confidence level of 95 percent but this would become more doubtful if an investigator demanded at least 99 percent confidence. It was discovered, for example, that the bottom quartile of the distribution did contain a disproportionate number of students from the Over \$16,000 income category when reserve loans were studied but not when the regular distribution was considered. However, these and other findings were by definition only probably significant and could not be made with 99 percent confidence. In the same vein, when income by itself was examined for association with students in the lowest quartile of the reserve distribution, a chi-square value resulted which showed with 95 percent confidence that there was a relationship between the conditions; however, when the same test was applied to regular two-week loans, insignificant findings again appeared that indicated a lack of association. Finally, all the students in the bottom quartile of both the regular and reserve distributions were arranged by income and the proportions, or ratios, which these students comprised of their total economic groups were ascertained. From this it was apparent that these ratios became progressively large when they were successively observed in each of the ascending income categories; moreover, this trend, when tested

by chi-square, proved to be highly significant, indicating that as incomes went up the proportion of students in the bottom quartile also went up.

As interesting as these findings are it nevertheless would seem that the evidence pointed out in Chapter II showing the library to be affected mostly by the role of the classroom teacher is still valid. Use of the Southwestern College library was not particularly responsive to the variables of either occupation or education of parents, and only influenced by size of high school from which the students graduated to no more than a questionable degree. Therefore, it would seem that the college tends to become a leveler of library use with each student meeting merely the demands of his teacher. Certainly there is little in this study to refute the substantial and long-standing evidence presented in Chapter II that the greatest impact on library use is caused by the pressure of classroom assignments.

This is not to suggest that the finding which indicates that students from lower economic levels may be borrowing the most materials is not significant. The fact that this might actually be the case, however, should not be confused with the possible reasons behind any such phenomena for evidence on this point is completely lacking. In the way of speculations, however, it could be advanced that on the one hand students from less affluent families who are in college might be more highly motivated to use the library because they have a desire to be socially mobile and as such want to be prepared to accept all opportunities for betterment. By the same token, students from high income families may have a tendency to relax more in the academic environment, knowing they have position and prestige already waiting for them when they complete their college education.

On the other hand, high income students could call on library services

to a lesser extent because they have the means to purchase more materials for themselves. Moreover, it may be that a life long feeling of self-sufficiency has resulted in a feeling of less reliance on communal services such as a library offers, even when classroom assignments are involved. While all this is pure conjecture, it should be remembered from Chapter II that Warner found the upper-upper class in a New England town to be making the least use of the public library and Thompson and Nicholson noted that students requiring financial aid borrowed more non-reserve materials than pupils not receiving this help. Finally, it could be significant that none of the writers mentioned high income groups as the greatest users of the libraries they investigated.

If the college library actually is failing to reach an equal number of students from various points along the socio-economic continuum, this could represent a new and hitherto unknown source of potential library users. Moreover, this could be a place where the library and the classroom teacher would have a splendid opportunity to integrate efforts and services for regardless of a student's background, or the socio-economic station he will ultimately occupy in life, the college library is unique in the number of ways it has for opening new avenues which can lead to the attainment of occupational, cultural, and general objectives. This can be done by combining current methods of teaching to the immediate and personal services which only a library can offer, a combination which presents the student with his best opportunity for mastering the techniques of learning materials. Moreover, by joining the classroom to the library in a practical manner the student will ultimately come to view this program as the central ingredient in an educational experience that presents the library as a range of tools leading to a sophisticated, critical, and value conscious approach to the

solutions of contemporary issues and problems.

Recommendations

Although several outlets are available in the field of library science for completed research to be published, it appears that only a relatively modest amount of original information is being brought to the attention of librarians and educators. This becomes particularly unfortunate when it is remembered that the library field is uniquely suited for giving individual help to all students and in providing for each pupil to proceed according to his own abilities. One area where information is especially scanty and relatively superficial is in the matter of knowing who the library's patrons actually are, what causes them to use the facilities, and how they can best be served. The present study is one which hopefully can assist in filling this void for its purpose was to provide information concerning the background of these people and furnish insight into the reasons for one student making greater use of the lending facilities of a college library than another. As this study progressed, other problem areas made themselves apparent and research on those topics could shed further light on the library's patrons and potential.

The socio-economic variables which were constructed for this investigation were rather subjectively arrived at and it is possible that if these groupings were constituted in another fashion more significant results might be forthcoming. Obviously, some factor, or factors, in each student's background either causes him to be motivated toward using or not using the institution's library. A greater understanding of this motivation then would not only lead to better servicing of those people who are desirous of expanding their ability to use library facilities but it would

also better enable librarians to involve students who show less inclination for handling bibliographical apparatus and extensive collateral reading in problem solving.

One such approach might be to interview pupils with a view toward having them rate their fellow students in a social hierarchial fashion. The ratings, similar to the community-wide ratings found in Warner's writings, could then determine whether those students who perennially are the most socially visible persons on the campus make greater or less use of the library than those students at the opposite end of the scale. Conceivably, such studies could be tied in with economic variables by using a measure that incorporated ownership of cars, free spending money, and loans to the students.

Another area of research that might aid in understanding the impact of social and economic forces on library use is that in which investigations similar to the present one would be carried out in different types of colleges and universities. Urban universities could provide an excellent testing ground because students from extreme ends of the economic scale would more likely be found in such schools than at colleges such as Southwestern. Other possibilities in this area might include studies only in women's colleges or men's schools where a wide variety of social groups are brought together.

The actual benefits which a student hopes to gain by using the library is another subject which is in need of investigation. All educators probably recognize and accept the statement that marks, or grades, are not completely reflected in achievement and are not necessarily based on the amount of study done by the student. It is obvious from several studies that many students make extensive use of campus library facilities even though this does not

result in high achievement marks. Consequently, information is needed on what the student actually gains, or hopes to gain, by borrowing unusually large numbers of books from the library, especially when he continues to receive less than superior marks. In this same connection, studies could be conducted to determine whether social and economic factors in students' backgrounds cause them to hold letter grades in varying levels of esteem while looking upon library use as an element which is not directly associated with achievement marks.

Librarians also need to be aware of potential users even before the students reach the college campus. In gaining such information as this it might very well be possible to learn the socio-economic background of young people who are planning to attend college and determine whether the means and resources can be brought into play that will enable each potential college student to understand the library as a range of tools and an instrument for his own problem solving.

It is generally assumed that quality library services and extensive holdings for supporting the educational program are good things in themselves and should be accepted by everyone without question. It is on such an assumption that librarians each year typically ask for larger budgets--not only for the purchase of reading materials, but also for equipment that will expedite their use. However, research into the problem of how much difference an excellent library actually makes in the education of a college student might be extremely enlightening. Carried a step further, such a study could compare results between students on both ends of the socio-economic scale with a view toward determining whether one or the other is actually able to benefit the most. Such a study would probably involve the use of matched pairs of students and demand research of a high order.

The foregoing is all based on the assumption that librarians are actually able to present a program which can aid the classroom instructor and make a significant contribution to education. However, real information is missing regarding the matter of how faculty members can be made enthusiastic about the potential of the library and how its use can be brought to bear on equalizing opportunity among students in the social and economic spectrum. Consequently, much insight might be had from a research program which would bring to light information on how the librarian and classroom teacher can pool their efforts and imagination for helping all students to improve themselves through individual library use. Particularly pressing in this area is information on how courses that teach skills and utilize workbooks can be made an integral part of the library program. Notable examples of such courses include beginning mathematics, industrial arts, private music lessons, and various commercial subjects such as shorthand and typing.

Finally, research in the field of librarianship might show some significant findings if it turned its attention to less quantitative studies and placed more stress on such subjective areas as student attitudes, standards of improvement, and the library's relationship to all students on the college campus. While it is easier to calculate library use and achievement by studying circulation records and budget figures, the potential of the library might very well be enhanced by discovering what students from the various social and economic strata think about librarians personally and how they perceive the academic role of the librarian as compared to that of their classroom teachers.

If the library is to serve as an important part of the education of all students, much more information should be collected on these and

other topics. While research is only one method of ascertaining the library's role in the educational framework, it does provide tangible evidence of its present condition and its impact on students. To make its effectiveness with students much greater and its contribution more significant is the true mission of the library, and to this end research can provide important guideposts along the way.

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APPENDIX

APPENDIX

QUESTIONNAIRE

Please Place A Check () In The Most Suitable Blank

Please Print Your Name _____
(Last) (First) (Middle)

1. Do you feel that the library in the high school from which you graduated was (1) __ Very Good; (2) __ Good; (3) __ Fair; (4) __ Poor; (5) __ No Opinion.
2. Approximately how many hard-bound and paperbound books are in the home in which you were reared: (1) __ 0-21; (2) __ 22-50; (3) __ 51-100; (4) __ Over 100.
3. Which of the following ways best describes how your family received its income when you were in high school: (1) __ Professional fees or business profits, including farming; (2) __ Salaries and Commissions; (3) __ Wages paid for work done on an hourly or daily basis; (4) __ Income from investments and/or inheritances; (5) __ Pensions from government, welfare, or other.
4. When you were in grade school did you have access to: (1) __ A good school library; (2) __ A poor school library; (3) __ No school library; (4) __ Don't know.
5. Circle the number of grades in school your parents, or legal guardians, completed:
Father: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 __ Grad. School
Mother: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 __ Grad. School
6. Check the category that best describes the use you made of your high school library: (1) __ Assigned reading only; (2) __ Mainly fiction or stories for recreation; (3) __ Both assigned and some recreational reading; (4) __ Read widely just for the sake of reading; (5) __ Didn't Use it much.

7. How many daily or weekly newspapers were subscribed to in the home in which you were reared: (1) __ 0; (2) __ 1; (3) __ 2; (4) __ 3; (5) __ If more than 3 write in the number.
8. How many magazines were received in the home in which you were reared: (1) __ 0; (2) __ 1; (3) __ 2; (4) __ 3; (5) __ 4; (6) __ If more than 4 write in the number.
9. Place a check before the categories that would best approximate your family's total annual income when you were in high school:
(1) __ \$0-\$4,000; (2) __ \$4,001--\$8,000; (3) __ \$8,001--\$12,000;
(4) __ \$12,001---\$16,000; (5) __ Over \$16,000.
10. Do you feel the Southwestern library to be (1) __ Very Good; (2) __ Good; (3) __ Fair; (4) __ Poor; (5) __ No Opinion.
11. For giving you assistance, do you find the professional librarians at Southwestern to be (1) __ Very Good; (2) __ Good; (3) __ Fair; (4) __ Poor; (5) __ No Opinion.
12. Including yourself, your mother, and your father, check the number of persons that were being supported and was part of your family at the time you graduated from high school: (1) __ 3; (2) __ 4; (3) __ 5; (4) __ 6 or 7; (5) __ If more than 7 write in the number.