DOCUMENT RESUME

ED 045 149 24 LI 002 366

AUTHOR Daiute, Robert J.; Gorman, Kenneth A.
TITLE Statistical Sampling of Book Readership at a College Library. Final Report.
INSTITUTION Rider Coll., Trenton, N.J.
SPONS AGENCY Office of Education (DHEW), Washington, D.C. Bureau of Research.
BUREAU NO BR-9-B-094
PUB DATE Jan 70
GRANT OEG-2-9-400094-1055010
NOTE 52p.

EDRS PRICE EDRS Price MF-$0.25 HC Not Available from EDRS.
DESCRIPTORS College Libraries, *Library Research, *Library Surveys, *Reading Habits, *Reading Research, Statistical Studies, *Use Studies

ABSTRACT

The general results of this statistical sampling of book readership at a college library revealed that three times as many book readers were reading nonlibrary books as library books inside the library. About one-half of the library books being read are classified as Social Science books. Business Administration majors read books in the library relatively more frequently than either Liberal Arts or Education majors. Library readers have higher cumulative averages than the student body as a whole. Commuters read more frequently than their share in the student population, Freshmen and Sophomores make up two-thirds of the book readers, and men are found to read books twice as frequently as women. The Chi-square test applied in matrix analysis revealed that relationships exist between the reading of a library book or not and whether the reader is a student or not, between major field of study and the sex of the reader, and between place of residence of the reader, on the one hand and the sex and class year of reader, on the other. Findings of this type should be useful in planning construction, layout, book acquisitions, staffing, and other aspects of library administration. [Not available in hard copy due to marginal legibility of original document.] (MF)

FINAL REPORT

Project No. 9B094

Grant No. OEG-2-9-480094-1059(010)

STATISTICAL SAMPLING OF BOOK READERSHIP

AT A COLLEGE LIBRARY

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January 1970

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

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Sampling Book Readership Inside the Rider Library

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January 1970

The research reported herein was performed pursuant to a grant with the Office of Education, U.S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

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Abstract

Statistical Sampling of Book
Readership at a College Library

By

Robert J. Daiute and Kenneth A. Gorman

The problem under investigation is whether it is practicable to sample book readership inside a college library (or any library). The project took the form of translating the sample design into interviewing procedures for student interviewers, conducting the interviews during a 60-day period, and analyzing the data obtained with the aid of a computer. The valid statistical inferences derived thereby, can serve as a superior set of assumptions for library planning and control.

The general results reveal that three times as many book readers were reading nonlibrary books as library books inside the library. About one-half of the library books being read are classified as Social Science books. Business Administration majors read books in the library relatively more frequently than either Liberal Arts or Education majors. Library readers have higher cumulative averages than for the student body as a whole. Commuters read more frequently than their share in the student population, Freshmen and Sophomores make up two-thirds of the book readers, and men are found reading books twice as frequently as women.

The Chi-square (χ^2) test applied in matrix analysis revealed relationships to exist between the reading of a library book or not and whether the reader is a student or not, between major field of study and the sex of the reader, and between place of residence of reader, on the one hand, and sex and class year of reader, on the other.

The T test uncovered many other interesting relationships not shown by the χ^2 test.

A simulation of library carrel use indicates that the average rate of occupancy is 12.2 per cent, with the highest occupancy on Sunday and between the hours of 8:00 p.m. and 9:00 p. m. each day, and the lowest on Saturday and between 8:00 a.m. and 9:00 a.m.

Findings of this type should be useful in planning construction, layout, book acquisitions, staffing, and other aspects of library administration.

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Introduction

This report gives the results of research on book readership inside a college library. The research consists of applying a plan for statistical sampling of readership which had been prepared by the principal investigators before the start of the immediate project.

The main feature of the sample design is the random selection of the reading locations and times to be included in a sample of appropriate size for purposes at hand. An interesting aspect of the the study is the use of students as interviewers in data collection.

Once the data were collected, computer programs were prepared to use an IBM 1130 computer in the statistical analysis of the data. This report presents the results of the analysis showing who is reading what books inside the library, and at what times. The Chi-square test and the T test were applied to measure the significance of selected variables in determining the pattern of book readership.

The reporting of such statistical inferences marks the completion of the immediate project. It can be noted, however, that the statistically significant findings can serve as basic premises in practically all phases of library planning and control.

I. The Plan

The plan for the research project consists of the plan for the three parts of: (1) the statistical sample design; (2) the organization for interviewing and data collection; and (3) the analysis of the compiled data. The overall plan is contained in the article entitled, "Sampling and Analyzing Library Book Readership," which is scheduled to be published in the Fall 1969 issue of the New Jersey Libraries Journal. See Appendix A for the article.

The plan calls for a random sample of book readership to be obtained. The sample size needed is 600 to assure the desired sampling error. The use of random numbers tables provides randomness of the two dimensions of time and place of the book reading. The brief manual for data collection tells how interviewers should proceed in conducting interviews in the library so as to assure that the statistical design of the sample is applied in practice. The hypothetical matrices in the article in Appendix A show how the collected data will be analyzed according to the Chi-Square test and other statistical tests. Such analyses permit the drawing of valid statistical inferences about relationships between reader characteristics and book attributes of those books being read in the library.

II. The Organization

Two student organizations are being used in the interviewing and the validation of the interviewing program. The two are Alpha Phi Omega fraternity and Phi Chi Theta fraternity, respectively. The former is a service fraternity of men which has a chapter on the Rider campus. The latter is a professional business women's fraternity also on the Rider campus.

The attributes of Alpha Phi Omega can be described in the following terms: The purpose of this fraternity shall be to assemble college men in the fellowship of the Scout Oath and Law, to develop leadership, to promote friendship, to provide service to humanity, and to further the freedom that is our national, educational and intellectual heritage. The cardinal principles center around leadership, friendship, and service. It is the policy of Alpha Phi Omega to include in its membership men of social fraternities and nonmembers, men of all departments of the college, upon being so elected by the respective chapters and upon fulfilling the membership preparation prescribed by the national fraternity and by the chapters. The major fields of service include service to the student body, faculty, members of the fraternity, youth of the community, and the nation as participating citizens.

The relevant characteristics of the Phi Chi Theta fraternity can be described briefly. The purpose of Phi Chi Theta is to promote the cause of higher business education and training for all women; to foster high ideals for women in business careers; and to the attainment of such ends. Only women with satisfactory scholastic status in the fields of business administration, economics, marketing, secretarial science, and business education are asked to become members of the fraternity.

Special note should be taken of the fact that undergraduate students did serve both as interviewers and validators. It is an important part of this research project to determine whether it is feasible to use students in such roles. Happily, both student organizations did perform effectively.

There is another organization which must be taken into account in discussing a research project of this kind. It is not the data collection and validating organization of the two fraternities, but it is the organizational context of Rider College. It is within this context that resources are obtained, interviews conducted, and data processed at the computer center. And it has been this organizational context which has been resistant to the efficient conduct of the research. Largely, it has been a matter of the affected units of the Rider organization being willing to assume only the barest minimum of responsibility for seeing the project through to a successful conclusion.

An illustration of this type of problem is found in the confrontation of the principal investigators and the Librarian of Rider College. The immediate issue was whether an additional 41 chairs would be installed in the library so that each carrel desk in the survey would have its own chair. It was vital that each carrel desk have a chair in order that a student would have an opportunity to be seated at each carrel. Such an opportunity was essential in order for the random sampling to be truly random and representative of the readership population being sampled.

The Librarian took the position that he was well aware that some 40 to 50 carrels lacked chairs. He claimed that he planned the library that way. He was adamant in prohibiting the installation of the necessary chairs, until the President of Rider requested him to allow the needed chairs to be put in place.

From an organizational point of view, the problem is that of the research project requiring essential horizontal relationships of cooperation between the research project's principal investigators and Rider's administrative personnel. The needed horizontal relationships were not forthcoming, or they were present only to a minimal degree. The basic pattern of organization relationships at Rider is of vertical relationships radieting downward on the vertical plane from the president of the institution. The orientation of subordinates is to their relationship to the president, and not so much to horizontal and diagonal communication and coordination.

Perhaps the best that can be done in this kind of situation is: (1) establish in advance a detailed schedule of steps to be taken by the institution's administrators in connection with the research project; and (2) have the chief executive officer inform his subordinates of his interest in seeing that the schedule is observed by them in practice. When unanticipated problems arise, as they do inevitably, again it is essential that the chief executive affirm his interest in seeing that the research project be carried to a successful completion. Thus, the vertical relationships can be used to assure the needed horizontal relationships in the organizational context.

III. Implementing the Plan

This section will describe the several steps that were taken in translating the general plan into specific procedures to be followed by members of the two student fraternities in conducting interviews and validating the interviews.

It is necessary to select times and places of interviews at random. It was decided to conduct interviews in the library during a 60-day period from September 11, 1969 (the first day of classes) to November 9, 1969 inclusive. In the selection of the random times, a 4-digit number was assigned to each one of the approximately 8,900 5-minute intervals the library is open during that 60-day period. Four-digit random numbers were obtained from E. S. Pearson, editor, Tracts for Computers (Cambridge: Cambridge University Press, 1960) until 700 random times had been identified. Appendix B gives an illustrative listing of the sample times for the first two days of interviews. A total of 700 sample times have been selected in an effort to achieve the desired number of interviews.

In the selection of the random places or carrels, a count was made of the library carrels to be included in the scope of the study. In general, they are the carrels that are to be found in the immediate vicinity of the open stacks of books on the first floor and second floor of the Rider Library. Appendix C, which contains a sample of the interview questionnaire form, shows the layout and the total number (397) of the reading places. A 3-digit number is assigned to each carrel as shown in the diagram of the layout.

Next, 3-digit random numbers were selected from random numbers tables so that for each random time there would be listed a sequence of 5 randomly selected carrel numbers. Appendix B also presents these sequences for two illustrative days for each random time listed.

Before the beginning of the Fall semester, a group meeting was held of the members of Alpha Phi Omega who would serve as interviewers. The procedures to be followed were explained and discussed in detail. Questions that occurred to the interviewers were answered.

This phase of the project has been especially interesting and rewarding to the principal investigators. It is a real exercise in translating abstract concepts into operational behavior. For example, the question arose about what to do if a student-reader is found on an interview occasion to be seated at a carrel that has several books open on it. What answer did we give? The answer followed this line: It can be assumed that a reader can be reading only one book at one time. The interviewer might be able to infer from direct observation which one of the books is being read. If he cannot, then he can ask the reader which one is being read at that moment. If the interviewer still cannot determine which one is being read, then he counts the occasion as one in which he could not find a reader of a book at that location, and the interviewer moves on to the next interview location in the sequence of 5 alternative carrel locations. The general proposition is that the interview procedure must implement faithfully the sample design that includes the sample time and the sequence of 5 sample locations to be visited in sequence until a book reader is found. If no book reader is found at any of the 5 carrels, then this fact is noted by the interviewer at the conclusion of his attempt to conduct an interview.

The story is similar when it comes to assuring that the sample design random times are observed in practice. Library clocks and student wrist watches might not be accurate. The question becomes a matter of finding an authoritative source of accurate time. It was decided that an interviewer should synchronize his own watch with a master clock at the telephone switchboard at Rider, about 10 minutes before the scheduled start of a sample 5-minute interval. Thus, the randomness of sample time would be observed in practice, it being critical that the sample times be implemented exactly according to plan.

With respect to the validating of interviews, this procedure is standard practice in sampling. A sample of 50 sample times was selected at random from the total of 700 sample times. The women studerts of Phi Chi Theta fraternity have been following the standard interview procedure on these 50 occasions. The results of the validators' interviews can be compared to the results of the regular interviewers' interviews being validated to see if there are any discrepancies, and to see if any corrective action needs to be taken. See Appendix F for a more complete discussion of validation of interview procedure.

IV. Coding the Data

When the interview forms are completed and returned, it becomes necessary to translate the information collected into terms that are suiteble for processing by the Rider IBM 1130 computer at the computer center. Appendix D is a sample of a work sheet used to show how to translate interview information about the book being read (if any) into the computer program code number. Once the code number is assigned, the information can be punched into the IBM cards by the keypunch operator at the computer center.

Appendix D contains a sample of the code sheet for the computer center data bank on undergraduate daytime students at Rider. A coded tabulation of student characteristics has been furnished by the computer center. The project secretary has entered the pertinent information on student characteristics into the interview forms.

Appendix E presents the coding system to be used by the research project. The project secretary has entered the proper code numbers in the appropriate columns of the IBM Fortran Coding Form which is used for that purpose. After this step is completed, the data are in a form to be keypunched into IBM cards.

V. The Results

The results of this research project can be discussed in terms of the topics of:

1. General results
2. Reading of library and nonlibrary books by type of book
3. Characteristics of book readers
4. Matrix analysis
5. T test analysis
6. Profile of the student reader
7. Use of library carrels by time of day and day of week.

Each one of the topics listed above will be discussed in turn.

General Results

It had been intended that overall results would be derived from a total of 700 attempted interviews of book readers inside the library. The actual number of interview attempts proved to be 661. The 661 interview attempts succeeded in obtaining interviews of 64 library book readers and interviews of 204 book readers who were reading books not taken from the library collection in the stacks. Of the 393 interview attempts that were made but did not result in interviews, 353 found carrels unoccupied and 40 found a carrel occupied by a reader of something other than a book. There was obtained a print-out of internal validation of data and random check and print-out of data.

It is evident that the goal of 600 completed interviews has not been realized. In one sense, this failure is a procedural problem. It indicates that a much larger number of interview attempts must be made, or a larger number of carrels sampled on each interview attempt, if 600 interviews are to be achieved. From another angle, however, the small number of readers of library books interviewed when over 600 interview attempts were made, can be regarded as one of the most significant substantive findings of this research project--that is, there is low utilization of the library for the purpose of reading library books inside the library.

It was found that, of the total number of readers in the sample, 20 per cent are readers of library books; 66 per cent, nonlibrary books; and 12.9 per cent, other reading matter. The standard error of the estimate for the percentage of library book readers is 2.3 per cent, which means that a 95 per cent confidence interval for the estimate is ± 4.5 per cent.

Types of Books

Types of library books being read have been determined and can be summarized as follows: The relative frequency of reading Social Science books is significantly higher than for any other type of library book. More specifically, the percentage of (Dewey Decimal System) Social Science books in the sample is 50 per cent. The standard error is 6.2 per cent. This result means that a 95 per cent confidence interval for the percentage is 12.3 per cent. The second highest percentage is 17.1 per cent, well outside the confidence interval for the Social Science library books.

The lowest three percentages of reading are in Pure Science, Technology, and the category of Geography and History, running between 3 and 6 per cent. All the latter percentages were well outside the 95 per cent confidence intervals for the two immediately higher percentages.

The foregoing percentages of relative frequency of reading are a measure of demand for the library books and can be discussed as an inventory problem. Library administration can balance the availability of books and the demand for books; books can be stocked in proportion to demand. There should be a larger supply on hand of those types of books that are more frequently used. Of course, low-demand books must be stocked, at times to a disproportionately large degree. The desire to make available such books can be met, in part, by the procedure of stocking such books at a central library or depository, and shipping to the place of need at the time of need. This practice would reduce duplication of low-demand books at the local libraries. When trade-offs among categories of books are undertaken, the trade-offs can be accomplished more effectively by reference to economic criteria, and not just to the criteria to be found in ecology, sociology, aesthetics, and so forth.

The distribution of textbook reading in the library can be described at this point. One hundred and one textbooks being read were required textbooks in Liberal Arts courses; 66, Business Administration; and 7, Education. The percentages are 58 per cent, 38 per cent, and 4 per cent, respectively. The analysis of textbook reading in the library can be conducted in a fashion parallel to library book reading.

The listing below is the textbook reading tally:

. Total number of textbooks 174

Liberal Arts 101

Art	3	Math	9	Psych	9
Bio	7	Phil	6	Russi	2
Engl	31	Phys	1	Soc	6
French	1	PolSci	7	Span	5
Hist	14				

Business Administration 66

Acc	11	Mgt	10
BLaw	7	Mkt	9
Econ	6	QMeth	9
Fin	12	Sec	2

Education 7

Characteristics of Readers

Major Field of Study

One section of the print-out lists relative frequency of book readership by major field of study of the reader. The relative frequency of use by Business Administration majors at .496 is significantly higher than relative frequency for any other field of study. The second highest is Liberal Arts majors at .300 relative frequency, which is well below a 95 per cent confidence interval of .061 for Business Administration majors. Also the relative frequency of use for Liberal Arts majors is significantly higher than the .204 relative frequency for Education majors, the latter being below a 95 per cent confidence interval of .056 for Liberal Arts majors.

For the Education Master and Business Master categories, it was found that both would have lower relative frequencies than the lowest measured relative frequency in the listing, and both would have 95 per cent confidence intervals lower than the lowest listed interval. Seven Evening School students, exclusive of master's students, also were found in the sample.

The percentages of reading by major field of study can be compared to the corresponding percentages for the daytime undergraduate population. In that population, 46.9 per cent of the students are Business Administration majors; 27.7 per cent, Liberal Arts majors; and 25.4 per cent, Education majors. There is no significant difference between Business Administration readers and their proportionate representation in the population. The same holds for Liberal Arts majors.

Education majors, however, read significantly less than their proportionate share in the population. The test for significance is based on the normal curve of error at 5 per cent level of significance using a one-tail test.

Cumulative Average

If there is any idea that students who have poor academic records are reading books in the library to a relatively large degree, it is not borne out by the results of this study at Rider. The arithmetic mean of the cumulative averages of book readers in the sample is 2.52 with a standard error of .03 and a 95 per cent confidence interval of ± .07. The mean of the cumulative averages for the daytime undergraduate student population as a whole is 2.40, well below the 95 per cent confidence interval of the sample mean of the library readers. Thus, it can be said with better than 95 per cent certainty that the mean cumulative average of the library readers is significantly higher than that of the daytime undergraduate population.

Any study that attempts to determine academic achievement of library book readers should make use of empirical methods similar to those used in the immediate study in order to identify precisely who actually is using the library books. Furthermore, it should be noted that this study draws no conclusions about the validity of the cumulative average as a measure of academic achievement, but simply points out that the library readers' mean cumulative average is higher than for the undergraduate population. It can be argued that the cumulative average is not a good measure of academic achievement because of variations among instructors, courses, and schools in the scales used in awarding grades.

Place of Residence

The sample of student readers contains 55.5 per cent who reside in dormitories on the campus, 33.8 per cent who are commuters, and 10.6 per cent who reside in fraternities or sororities on campus. The daytime undergraduate student population has 57.0 per cent who live in dormitories, 27.5 per cent commuters, and 15.5 per cent residing in fraternities or sororities.

Dormitory students read in proportion to their share in the population. Commuters read more than their proportionate share. Sorority and fraternity students read books in the library less than their proportionate share. Again, the one-tail normal curve of error test, with 5 per cent level of significance, was used in testing for significant differences.

Class Year

In the sample of student readers, there are 31.1 per cent Freshmen, 35.4 per cent Sophomores, 17.3 per cent Juniors, and 14.5 per cent Seniors. In the daytime undergraduate population there are 38.9 per cent Freshmen, 26.0 per cent Sophomores, 17.8 per cent Juniors, and 16.8 per cent Seniors.

Freshmen read books in the library significantly less than their proportionate share of the student population. Sophomores read significantly more than their proportionate share. Both Juniors and Seniors read the same as their respective proportionate shares.

Mean Class Year

The sample's mean class year for men and women students combined is 2.15; men alone, 2.29; and women, 1.89. The daytime undergraduate population's mean class year for men and women students combined is 2.12; men alone, 2.23; and women, 1.97.

No significant difference exists between the sample's mean class year and the population's mean class year for men and women together, men alone, or women alone.

Sex

Men students make up 65.2 per cent of the students in the sample. Women students constitute 34.8 per cent of the students in the sample. Men students comprise 58.8 per cent of the daytime undergraduate population; women students, 41.2 per cent.

Men students read books in the library significantly more frequently than their proportionate share of the population. Women students read less than their proportionate share.

Summary of Matrix Analysis

In order to determine whether relationships exist between various characteristics of the readers of books in the library, the Chi-Square (χ^2) test has been applied. A 5 per cent level of significance has been used. The tables below summarize the results. In some cases, the matrices were regrouped in order to apply the χ^2 test. Even after such regrouping, certain characteristics could not be tested. The appendices contain the original matrices and the ones that were regrouped.

Table 1

Null Hypotheses:

There is no relationship between library book or not and the several characteristics of the reader

Characteristics of the Reader	Critical Value for Test	χ^2 Value	Acceptance or Rejection of Null Hypotheses
Sex	3.84	2.07	Accept
Time of Week (Weekday or Weekend)	3.84	0.23	Accept
Time of Day	5.99	4.49	Accept
Class Year	7.82	0.98	Accept
Student or Nonstudent	3.84	8.99	Reject
Cumulative Average	No χ^2 test possible without regrouping		

Table 1 indicates that the only relationship between reading of library book or not and the several characteristics of the reader is in connection with student or nonstudent readers.

When the χ^2 value is greater than the critical value, the null hypotheses is rejected.

Table 2

Null Hypotheses:

There is no relationship between the kind of library book read and the several characteristics of the reader

Characteristics of Reader	Critical Value for Test	χ^2 Value	Acceptance or Rejection of Null Hypotheses
Sex	3.84	1.60	Accept
Time of Day	5.99	0.31	Accept
Class Year	5.99	2.86	Accept
Cumulative Average	No χ^2 test possible without regrouping		
Major Field	5.99	0.41	Accept
Place of Residence	3.84	1.58	Accept
Student or Not	No χ^2 test possible without regrouping		

No relationships exist between kind of library book, on the one hand, and any other characteristics of the reader, on the other hand, in the instances where the χ^2 test was possible.

Table 3

Null Hypotheses:

There is no relationship between the major field of study and the several characteristics of the reader

Characteristics of the Reader	Critical Value for Test	χ^2 Value	Acceptance or Rejection of Null Hypotheses
Sex	5.99	80.89	Reject
Class Year	12.59	6.63	Accept
Cumulative Average	No χ^2 test possible without regrouping		
Place of Residence	No χ^2 test possible without regrouping		
Library Book or Not	5.99	3.34	Accept

The only relationships identified between major field of study and other characteristics of the reader is the relationship to sex of reader.

The χ^2 value for sex is greater than the critical value; thus, the null hypotheses is rejected.

Table 4

Null Hypotheses:

There is no relationship between residence of a reader and the several characteristics of a reader

Characteristics of the Reader	Critical Value for Test	χ^2 Value	Acceptance or Rejection of Null Hypotheses
Sex	3.84	8.71	Reject
Time of Week (Weekday or Weekend)	3.84	21.02	Reject
Time of Day	5.99	40.66	Reject
Class Year	7.82	23.10	Reject
Cumulative Average	3.84	0.17	Accept
Library Book or Not	3.84	0.21	Accept
Major Field	5.99	4.54	Accept

Sex and class year of the reader, as well as time of week and time of day of reading, are related to the residence of the reader, as shown in Table 4. No other relationships exist.

In the case of sex, class year, time of week, and time of day, the χ^2 values are greater than their respective critical values.

Table 5

Null Hypotheses:

There is no relationship between the weekday reading and the several characteristics of the reader

Characteristics of the Reader	Critical Value for Test	χ^2 Value	Acceptance or Rejection of Null Hypotheses
Sex	9.49	7.86	Accept
Time of Day	15.51	13.29	Accept
Class Year	No χ^2 test possible without regrouping		
Cumulative Average	No χ^2 test possible without regrouping		
Major Field	15.51	10.34	Accept
Place of Residence	No χ^2 test possible without regrouping		
Student or Not	No χ^2 test possible without regrouping		
Library Book or Not	9.49	5.11	Accept

No relationships exist between weekday reading and any other characteristics of the reader, in the instances where the χ^2 test was possible.

The χ^2 test is a broad test that treats a matrix as a whole. The χ^2 test combines the individual cell differences in a certain way to give a single test result for the whole matrix. The χ^2 value is the basis for acceptance or rejection of the null hypotheses. Even where the null hypotheses is accepted by the χ^2 test, there still might be significant differences between cells within the matrix. The T test can be used to test for the significance of these individual cell differences.

Summary of T Test *

The individual cells will be tested using a one-tail T test at a 5 per cent level of significance. The reason for the one-tail test, instead of the two-tail test, is that the one-tail test determines more readily whether one percentage is greater than another, first with respect to rows and second, columns. The results of the tests are summarized in the paragraphs below. It should be understood that all differences cited in the following discussion are statistically significant at a one-tail 5 per cent level of significance.

Library Book or Nonlibrary Book By Sex of Reader

No significant difference is found between men and women in reading nonlibrary and library books. And no significant difference is found on the part of either men or women in the reading of nonlibrary and library books.

Library Book or Nonlibrary Book By Weekday--Weekend

Nonlibrary books are read with greater relative frequency on weekends than on weekdays. The reverse holds for library books.

Library Book or Nonlibrary Book By Class Year

No significant differences are found among class years of readers in the reading of library and nonlibrary books.

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*The phrase T test refers to the Student-T-Test.

Library Book or Nonlibrary Book By Cumulative Average

Students who have the highest cumulative averages read nonlibrary books with greater relative frequency than do those who have middle and lowest cumulative averages. However, the students who have the highest cumulative averages read library books relatively less frequently.

Students who have middle cumulative averages read library books more frequently than nonlibrary books. The reverse holds for the students who have the highest cumulative averages. For the lowest students, there is no significant difference.

Library Book or Nonlibrary Book By Time of Day

In the afternoon, nonlibrary books are read with a greater relative frequency than in the morning or evening, while library books are read with a greater relative frequency in the afternoon than in the morning or evening.

In the afternoon, library books are read more frequently than nonlibrary books.

Library Book By Sex of Reader

Men and women displayed no significant difference in relative frequency of book reading by type of library book.

Men readers read Social Science books more frequently than Literature or Other library books.

Women readers read Literature and Other library books more frequently than Social Science library books.

Library Book By Student and Nonstudent

No significant difference was found in the relative frequency of reading of different categories of library books by student and nonstudent readers.

For Rider students, there is more frequent reading of Pure Science than Other library books; the reverse is the case for nonstudent readers.

Type of Library Book By Residence of Student

Dormitory students read more Literature books than do commuters. No significant difference is found in the reading of other categories of library books.

Dormitory students read more Literature books than Social Science, Pure Science, and Other library books.

Commuters read less Literature books than Social Science, Pure Science, and Other library books.

No significant difference is found in the reading of library books by Fraternity and Sorority students.

Library Book By Class of Rider Reader

Freshmen read less frequently Technology library books than do Sophomores or Juniors. Sophomores read more frequently Literature library books than do Juniors or Seniors.

Sophomores read Literature books more frequently than either Social Science or other books.

Juniors read Pure Science and Technology books more frequently than Social Science, Literature, or Other.

For Seniors, there is no significant difference in any of the categories of library books.

Library Book By Major Field

Education majors read Other library books more frequently than do Business majors.

Business majors read Technology books more frequently than either Literature or Other library books.

Library Book By Cumulative Average

The student with the lowest cumulative average reads Other library books more frequently than Pure Science. Cumulative average has virtually no significance in the student reading of types of library books, except that the students with the lowest cumulative average read Other library books more frequently than those with the middle cumulative average. The former also read Other library books more often than Social Science books.

Library Book By Time of Day

Technology books are most frequently read in the morning and evening.

There is no significant difference in the reading of any other category of books by time of day.

In the afternoon, Social Science, Literature and Other library books are read more frequently than Technology library books.

Library Book (Using Two Categories of Library Books--Social Science and All Other)

With one exception, no significant differences were found in relationships between the type of library book (Social Science and Non-Social Science library book) being read in the library and the characteristics of the reader. The characteristics include: sex, Rider student or not, residence of student, class year, major field of study, cumulative average, and time of day of reading. The one exception to the finding of no significant differences is in the relationship between the type of library book and the class year of the Rider reader.

Sophomores read all other library books relatively more frequently than they read Social Science library books.

Major By Library and Nonlibrary Book

Library books are used more frequently by Education majors than nonlibrary books. No significant difference is found for any other pairing.

Nonlibrary books are read more frequently by Liberal Arts majors than by Education majors. There are no significant differences for any other pairing.

Library books are read more frequently by Education majors than by Liberal Arts majors. There are no significant differences for any other pairing.

Major By Residence

For Liberal Arts majors, those in fraternities and sororities read less than those in dormitories or commuters. For Education majors, those in fraternities and sororities read books in the library significantly greater than do those who are commuters. Business Administration majors who are dormitory students read less than those who are in fraternities and sororities or commuters.

Among dormitory students, Liberal Arts students read significantly more frequently than do Business Administration students. For fraternity and sorority students, Liberal Arts students read significantly less frequently than do Education and Business Administration students.

Major By Class Year

Liberal Arts Freshmen read significantly more frequently than do Liberal Arts Juniors. Business Administration Freshmen read significantly less frequently than Business Administration Sophomores and Juniors.

For Freshmen students, both Liberal Arts and Education majors read more frequently than do Business Administration majors. No other pairing of majors displayed any significant difference.

Major By Cumulative Average of Rider Reader

No significant difference in cumulative averages was found in relative frequency of book reading among Liberal Arts, Education and Business Administration majors. Nor was there any significant difference found in pairing students according to cumulative average, major-by-major.

Major By Sex of Reader

In Liberal Arts and Education, women read significantly more frequently than men; the reverse holds for Business Administration.

For men, Business Administration majors read more frequently than do Liberal Arts or Education majors. For women, Business Administration majors read significantly less then either Liberal Arts or Education; furthermore, Education majors read significantly more frequently than do Liberal Arts majors.

Major By Time of Day

No significant difference was found in the time of day--morning, afternoon, or evening--in which Liberal Arts, Education and Business Administration majors are most likely to read books in the library. Nor was there any significant difference found in relative frequency of book use by time of day, major-by-major.

Residence By Sex of Reader

Of dormitory students found reading books in the library, women read significantly more frequently than do men book readers. Of commuter students, men read significantly more frequently than do women. Of fraternity and sorority students, there is no significant difference in reading between men and women.

Among men, commuters read books in the library more frequently than do dormitory men; while, among women, dormitory women read books in the library more frequently than do commuter women.

Residence By Library Book or Not

Fraternity and sorority students read library books more frequently than nonlibrary books in the library. For both dormitory and commuter students there is no significant difference in the reading of the two types of books.

Fraternity and sorority students more frequently read library books in the library than do dormitory or commuter students. Dormitory and commuter students each read more frequently nonlibrary books than do fraternity and sorority students.

Residence of Reader By Class Year

Of dormitory readers: Freshmen read books in the library relatively more frequently than do Sophomores, Juniors, or Seniors; Sophomores, than Juniors or Seniors; and Juniors, than Seniors.

Of commuter readers, both Juniors and Seniors read relatively more frequently than Freshmen. Also, among commuter readers, Seniors read relatively more frequently than Sophomores.

Of Freshmen, dormitory students read more frequently than do commuter, or fraternity and sorority students.

Of fraternity and sorority readers, Juniors and Seniors read relatively more frequently than do Freshmen, and Seniors read relatively more frequently than Sophomores.

Of Juniors, commuters read significantly more frequently than do dormitory students.

Of Seniors, commuters, as well as fraternity and sorority students, read more frequently than do dormitory students.

Residence of Reader By Major

Of dormitory readers, Liberal Arts students read more frequently than do Business Administration students. Of fraternity and sorority students, both Education majors and Business Administration majors read more frequently than do Liberal Arts majors.

Of commuter readers, Business Administration majors read more frequently than do Education majors.

Residence By Cumulative Average of Rider Reader

No significant differences were found in cumulative averages of Rider student readers as among dormitory, commuter, and fraternity and sorority readers.

Residence By Time of Day of Rider Reader

Dormitory students read relatively less frequently in the morning (8:00 a.m. to 12:59 p.m.) than in the afternoon (1:00 p.m. to 5:59 p.m.) or evening (6:00 p.m. to 10:30 p.m.) and relatively more frequently in the evening than the afternoon.

Commuter students read relatively more frequently in the morning than the afternoon or evening, and relatively more frequently in the afternoon than the evening.

Fraternity and sorority students read relatively more frequently in the evening than in the morning or afternoon.

In the morning, commuter readers read more frequently than either dormitory readers or fraternity and sorority readers.

In the evening, dormitory readers, as well as fraternity and sorority readers, read more frequently than do commuter readers.

Day By Residence of Student

On Tuesday, commuters read relatively more frequently than dormitory students. On Sunday, fraternity and sorority students read relatively more frequently than do either dormitory or commuter students, and dormitory students relatively more frequently than commuters.

Dormitory students read relatively more frequently on Monday than Tuesday, and on Monday than Friday. And dormitory students read relatively more frequently on Saturday and Sunday than on Tuesday. Dormitory students read relatively more frequently on Saturday and Sunday than on Friday.

Commuter students read relatively less frequently on Sunday than they do on any other day of the week.

Fraternity and sorority students read relatively more frequently on Sunday than on Monday, Tuesday, Wednesday, or Thursday.

Day By Class Year of Student

Both Juniors and Seniors read with greater relative frequency on Monday than do Freshmen students. Seniors read with greater relative frequency than do Sophomores and Juniors on Tuesday. Juniors read with greater relative frequency than do Freshmen, Sophomores or Seniors on Wednesday.

Freshmen read with greater relative frequency than Seniors on Thursday. Also, on Thursday, Sophomores read with greater relative frequency than do Seniors; other readers, than Juniors; and other readers, than Seniors. On Sunday, Freshmen read with greater relative frequency than either Sophomores or Juniors.

Freshmen are most likely to read on a Sunday and least likely to read on a Monday. Freshmen read relatively less on Monday than they do on Tuesday, Thursday, or Sunday, and relatively more on Sunday than on Wednesday or Friday.

Day and Sex

It was found that the relative frequency of reading by women students is significantly higher on Monday than for men students, while the reverse holds on Friday. On the other five days, there was no significant difference between relative percentages of men and women readers.

The analysis reveals, furthermore, that men students read relatively more frequently on Tuesday and Friday than they do on Monday; the reverse holds for women. For all other pairs of days, for each sex, there is no significant difference in book readership in the library.

Day By Nonlibrary Book Versus Library Book Use

In comparing nonlibrary book use and library book use according to the day of the week, there is no significant difference between the relative proportion of the two types of books except on Thursday when nonlibrary book reading is relatively greater than library. There is no significant difference between readership of library and nonlibrary books on the other 6 days of the week.

With respect to nonlibrary books alone, they are read relatively more frequently on Thursday than on Friday, while library books are read with more frequency on Friday than Thursday. For any other pairing of days there is no significant difference for either library or nonlibrary books.

Day By Student Versus Nonstudent

Nonstudents were found to be reading books in the library relatively more frequently on Friday than do the Rider students. Student readers read relatively more frequently than nonstudent readers on Thursday. On the other five days of the week, there is no significant difference in relative use by student readers versus nonstudent readers. Nonstudent readers do read relatively more frequently on Monday than do student readers on Thursday; and the former read more frequently on Friday than on Tuesday, Wednesday, or Thursday. Nonstudent readers also read more frequently on Saturday than do nonstudent readers on Thursday.

Student readers read relatively less frequently on Friday than they do on Tuesday, Wednesday, or Thursday.

Day By Major of Rider Reader

Liberal Arts majors are most likely* to be found reading on a Monday and least likely on a Saturday. An Education major is the same. A Business Administration major is most likely to be found on a Tuesday and least likely to be found on a Saturday.

Both Liberal Arts and Education majors read relatively more frequently on Monday than do Business Administration majors. Liberal Arts majors read relatively more frequently on Wednesday than do Education majors. For all other pairings, there is no significant difference in relative frequency of book reading by day of the week.

For Liberal Arts majors there is a relatively greater frequency of reading on Monday than Friday or Sunday. Also, for Liberal Arts majors there is relatively greater frequency of reading on Wednesday than on Friday or Sunday.

For Education majors, there is relatively greater frequency of reading on Monday than Wednesday.

---

*The phrase "most likely" means largest of all but not necessarily significantly larger than any other.

For Business Administration majors, there is relatively [illegible] frequent reading on Monday than on Tuesday, Friday, or Sunday

For all other pairings of days there were no significant differences according to type of major of the student readers.

Day by Cumulative Average of Student Reader

The top student is most likely to be found reading on a Friday and least likely on a Saturday. A student with a cumulative average between 2.00 and 2.99 is most likely to be found reading on a Monday and least likely on a Saturday.

A student with a cumulative average between 0.[illegible] and 1.99 is most likely to be found reading on a Wednesday, and least likely on a Thursday or Sunday.

There is a significant difference on Wednesday in relative frequency of book reading by [illegible] who have the lowest cumulative average (in the range 0.00 - 1.99) and students who have a middle cumulative average (in the range 2.00 - 2.99). There is no other pairing of [illegible] cumulative average that displays any significant difference according to day of the [illegible].

[illegible] the lowest cumulative [illegible] read [illegible] more frequently on [illegible] and [illegible] on Sunday [illegible].

[illegible] middle cumulative [illegible] frequently [illegible] on Tuesday [illegible] Friday [illegible].

For the [illegible] significant [illegible] Tues[illegible] significant [illegible].

[illegible] 7

relative frequency of reading in the afternoon is greater than the evening. On Friday, the relative frequency of reading is greater in the morning than either the afternoon or evening.

There is greater relative frequency of reading on a Friday morning than any other morning of the week. In the afternoon, Friday and Tuesday afternoon have less relative frequency of reading.

Sunday evening has greater relative frequency of reading than Wednesday and Friday evening only. Tuesday evening has greater relative frequency of reading than Friday.

Profile of the Typical Man Student and Woman Student Library Reader

The data on library reading can be summed up graphically in terms of the characteristics of a typical man and woman student reader. The typical man student library reader is a first-semester Sophomore who has a cumulative average of 2.48. Most likely he lives in a dormitory; least likely, a fraternity. Most likely his major field is Business; least likely, Education. He prefers nonlibrary books to library books. However, when he does read a library book he generally chooses a Social Science book. He is most likely to be found in the library on a Tuesday; least likely, on a Saturday. He would rather read in the afternoon or morning than in the evening.

The typical woman student library reader is a second semester Freshman with a cumulative average of 2.55. Most likely she lives in a dormitory; least likely, a sorority. Most likely her major field is Liberal Arts; least likely, Business Administration. She prefers nonlibrary books to library books. But when she reads a library book, it tends to be one in an area other than Social Science. She is most likely to be found in the library on a Monday and least likely, there on a Saturday. She is more inclined to read in the evening or afternoon than in the morning.

In short, men and women student library readers tend to be alike in their place of residence, preference for nonlibrary books, and disdain for Saturday reading. They differ in their class year, cumulative average, major field, time and day of reading, and choice of library books.

Simulation of Carrel Utilization

According to the sampling plan, an interview attempt was concluded when an occupant was found in one of five randomly chosen carrels or when five carrels had been sampled, whichever came first. An interview was completed only when the occupant of a carrel was reading a book. If he was reading something else, note was made of it, but he was not interviewed; nor were any other carrels sampled in that attempt.

In coding the sample results into punched cards we indicated the times of the interview attempts only for those that were actually completed. But this is all that is needed to simulate the rate of occupancy of the carrels (book readers as well as nonbook readers).

The rate of occupancy is simulated by hour and by day. The discussion will be confined to the simulation by hour, that by day is analogous.

Simulation By Hour of the Day

The theoretical distribution of the interview attempts by hour of the day is rectangular because their times were randomly chosen.

However, because of schedule of library hours, some qualification is necessary. The library hours are as follows:

Monday through Friday:	8:00 a.m. to 10:30 p.m.
Saturday:	10:00 a.m. to 5:00 p.m.
Sunday:	2:00 p.m. to 10:30 p.m.

The hours between 2:00 p.m. and 5:00 p.m. are full library hours and occur daily; the others are either partial or do not occur every day. Account must be made of this disproportion in allocating the interview attempts.

Interpret a library hour to begin with an integer clock hour and end just before the next integer clock hour. For instance, the first library hour begins at 8:00 a.m. and ends just before 9:00 a.m. Giving full library hours a weight of 1 and the half hour from 10:00 p.m. to closing a weight of ½, the weighted frequency distribution of library hours is shown in Table 6 that follows.

Table 6

Library Hours	Number of Days Library Open	Weighted Value
8:00 a.m.-- 9:00 a.m.	5	5
9:00 a.m.--10:00 a.m.	5	5
10:00 a.m.--11:00 a.m.	6	6
11:00 a.m.--12:00 p.m.	6	6
12:00 p.m.-- 1:00 p.m.	6	6
1:00 p.m.-- 2:00 p.m.	6	6
2:00 p.m.-- 3:00 p.m.	7	7
3:00 p.m.-- 4:00 p.m.	7	7
4:00 p.m.-- 5:00 p.m.	7	7
5:00 p.m.-- 6:00 p.m.	6	6
6:00 p.m.-- 7:00 p.m.	6	6
7:00 p.m.-- 8:00 p.m.	6	6
8:00 p.m.-- 9:00 p.m.	6	6
9:00 p.m.--10:00 p.m.	6	6
10:00 p.m.--10:30 p.m.	6	3
		88

The interview attempts by hour of the day are allocated on the basis of the relative weighted values.

Five eighty-eighths (5/88) of the interviews are allocated to each of the hours between 8:00 a.m. and 10:00 a.m., 6/88 to each of the hours between 10:00 a.m. and 2:00 p.m. and between 5:00 p.m. and 10:00 p.m.; 7/88 to those between 2:00 p.m. and 5:00 p.m.; and 3/88 to the closing half hour.

For the first hour of the library day the expected number of interview attempts is:

$\frac{5I}{88}$ where I = total number of interview attempts.

The actual number of interviews completed during the first hour is tebulated by T_1, and the number of times a nonbook reader was found is estimated to be:

$\frac{5N}{88}$ where N = total number of nonbook readers found.

Hence, the expected relative frequency of finding a carrel occupied by a reader is given by:

$$PROB = \frac{T_1 + \frac{5N}{88}}{\frac{5I}{88}} \qquad (1.1)$$

But in each interview attempt five carrels are checked for a reader. Thus, PROB can be interpreted to be the probability of finding at least one carrel occupied in five attempts.

We have then:

$$\begin{aligned} PROB &= p \text{ (at least 1 of 5 carrels occupied)} \\ &= 1 - p \text{ (all 5 carrels empty)} \end{aligned} \qquad (1.2)$$

The question is: What is the percent of carrel occupancy if PROB is the probability of finding at least one of five randomly chosen carrels occupied?

Let P_1 be the average percentage of occupancy during the first hour. Approximating this probability using the binomial theorem, and substituting into (1.2), we have:

$$PROB = 1 - (0)^5 P_1^{\,0} (1 - P_1)^5; \text{ or, } (1.3)$$

upon substituting (1.1) into (1.3) and simplifying

$$\frac{T_1 + \frac{5N}{88}}{\frac{5}{88}I} = 1 - (1 - P_1)^5 \qquad (1.4)$$

Solving (1.4) for P_1, we get:

$$P_1 = 1 - \sqrt[5]{1 - \frac{T_1 + \frac{5N}{88}}{\frac{5}{88}I}}$$

, which is the simulated percentage of occupancy during the first library hour

The standard error of this estimate is given by:

$$\text{ERROR} = \sqrt{\frac{P_1 (1 - P_1)}{\frac{5}{88}I}}$$

Multiplying ERROR by 1.96 we get a 95 per cent confidence interval for P_1.

Similarly, the per cent of carrel occupancy is simulated for the rest of the library hours.

For example, the simulated per cent of occupancy for the seventh hour in the library day, i.e., between 2:00 p.m. and 3:00 p.m., is:

$$P_7 = 1 - \sqrt[5]{1 - \frac{T_7 + \frac{7}{88}N}{\frac{7}{88}I}}$$

the standard error, $\sqrt{\frac{P_7 (1 - P_7)}{\frac{7}{88}I}}$, and a 95 per cent confidence interval for P_7, 1.96 times the standard error.

Summary of Results

According to the simulation the highest per cent of hourly carrel occupancy is between 8:00 p.m. and 9:00 p.m. with an average occupancy of 27 per cent and a 95 per cent confidence interval of $\pm$ 12.9 per cent; the lowest per cent of hourly carrel occupancy is between 8:00 a.m. and 9:00 a.m. with an average occupancy of 3.5 per cent and a 95 per cent confidence interval of $\pm$ 5.9 per cent.

The highest per cent of daily occupancy is Sunday with an average occupancy of 19.9 per cent and a 95 per cent confidence interval of 9.8 per cent; the lowest per cent of daily occupancy is Saturday with an average occupancy of 5.6 per cent and a 95 per cent confidence interval of 6.2 per cent.

The overall average per cent of occupancy is 12.2 per cent with a 95 per cent confidence interval of $\pm$ 3.1 per cent.

VI. Summary and Conclusions

The original research plan called for a sample size of 600 with the reading locations and reading times selected at ramdom using random numbers tables. Two student organizations--Alpha Phi Omega fraternity and Phi Chi Theta fraternity--were used to conduct interviews and validate interviews, respectively. In the organizational context of the project, a problem presented itself in enlisting cooperation of various subunits in the Rider organization. To overcome these obstacles, the interest and support of the chief executive officer are needed.

Moving on to the details of the sampling plan, 700 5-minute intervals were selected at random from the approximately 8,900 5-minute intervals when the library whould be open during the period from September 11, 1969 to November 9. For each time thus selected, five carrel locations were selected at random. The interviewers were instructed to obtain the name of a book reader and bibliographical information about the book being read at a designated carrel which the interviewer would go to at the designated time. Validation procedure made use of a sample of 50 times selected at random from the original sample of 700 times.

Next, the data were coded drawing upon the interview results and a data bank maintained at the computer center.

The results of the statistical analysis can be summarized under the following seven headings:

1. General results
2. Reading of library and nonlibrary book by type of book
3. Characteristics of book readers
4. Matrix analysis
5. T test analysis
6. Profile of the student reader
7. Use of library carrels by time of day and day of week

Out of the 661 actual interview attempts, only 24 resulted in an interview of a library book reader. About three times as many book readers were reading nonlibrary books as were reading library books. Fifty per cent of the library books being read in the library are classified as Social Science books. The categories read least are Pure Science, Technology, and Geography and History running between 3 and 6 per cent of library books being read in the library. Of the 174 textbooks (nonlibrary book category) being read at time of interview, 101 are Liberal Arts textbooks; 66, Business Administration textbooks; and 7, Education textbooks.

With respect to characteristics of readers, Business Administration majors read relatively more frequently than either Liberal Arts or Education majors. However, only Education majors read less than in proportion to their number in the undergraduate population.

The mean cumulative average of library readers is higher than that of the daytime undergraduate population.

Interestingly, commuting students read books more frequently than in proportion to their share of the student population, while fraternity and sorority students read less. Together Freshmen and Sophomores make up two-thirds of the book readers. However, Freshmen read less and Sophomores more than their proportionate share of the student population.

Men students read about twice as frequently as women, and men read more frequently than their proportionate share, while women do not read as much as their proportionate share.

The χ^2 test has been applied to the matrix analysis. The rejection of the null hypotheses by the χ^2 test permitted the following relationships to be identified:

> relationship between reading library book or not and whether one is a student or nonstudent reader
>
> relationship between major field of study of the reader and the sex of the reader
>
> relationship between residence of a reader and these characteristics of a reader: sex; time of week; time of day; class year.

No other relationships exist.

When individual cells were tested using the T test, relationships were found that were not revealed by the χ^2 test. The detail of the interrelationships is shown in the body of this report. The richness of the detail is illustrated in the statement below on the relationship between whether a reader is reading a library book or nonlibrary book and the cumulative average of the student reader:

> Students who have the highest cumulative averages read nonlibrary books with greater relative frequency than do those who have middle and lowest cumulative averages.
>
> However, the students who have the highest cumulative averages read library books relatively less frequently.
>
> Students who have middle cumulative averages read library books more frequently than nonlibrary books. The reverse holds for the students who have the highest cumulative averages. For the lowest students, there is no significant difference.

Finally, the data on book readership inside the library support a simulation of library carrel utilization. The highest per cent--27 per cent-- are occupied between 8:00 p.m. and 9:00 p.m.; the lowest per cent of 3.5 per cent falls between 8:00 a.m. and 9:00 a.m. Sunday is the day of highest occupancy with an average occupancy of 19.9 per cent, while Saturday has the lowest carrel occupancy at 5.6 per cent. The overall rate of carrel occupancy is 12.2 per cent.

Important conclusions can be derived from the research project being reported here. First, the research has demonstrated the feasibility of using statistical sampling to determine book readership inside a library. Second, the project has shown the feasibility of enlisting students as interviewers in the collecting of information on the sample. Third, the project has demonstrated the value of programing a computer in order to expedite the numerous calculations entailed in the analysis of data. Fourth, and last, the research demonstrates the feasibility of obtaining valid statistical inferences that can be used in place of intuition and something called experience as planning assumptions and control information. The valid inferences can be introduced into virtually all phases of library planning and control, such as, in decisions on building construction, layout of stacks and related equipment, book acquisition needs, hours of operation, staffing needs, evaluation of library effectiveness, and effectiveness of academic uses of the library.

VII. Certification

Stephen A. Maurer
Signature of Contract Officer

January 21, 1970
Date

Robert J. Daiute
Signature of Project Co-Director

Kenneth A. Gowan
Signature of Project Co-Director

January 21, 1970
Date

APPENDIXES

APPENDIX A

RANDOM TIMES AND RANDOM LOCATIONS

FOR FIRST TWO DAYS OF INTERVIEWING

September 11, 1969	
10:15 a.m.	
	150
	087
	167
	325
	110
10:25 a.m.	
	190
	169
	054
	023
	271
10:30 a.m.	
	082
	325
	249
	334
	217
12:05 p.m.	
	154
	002
	330
	107
	034
1:20 p.m.	
	033
	337
	297
	076
	250
2:25 p.m.	
	362
	216
	033
	098
	173
3:05 p.m.	
	129
	135
	018
	262
	260

September 11, 1969	
3:20 p.m.	
	029
	309
	365
	271
	144
3:25 p.m.	
	211
	005
	322
	363
	337
3:50 p.m.	
	319
	245
	312
	030
	266
5:40 p.m.	
	273
	162
	278
	134
	187
6:55 p.m.	
	099
	200
	302
	091
	172
8:30 p.m.	
	323
	014
	129
	364
	315
8:55 p.m.	
	360
	025
	230
	071
	273

September 11, 1969 continued

9:[illegible] p.m.

110
25[illegible]
367
041
036

9:50 p.m.

039
116
209
176
245

10:15 p.m.

175
245
368
238
016

September 12, 1969

8:45 a.m.

209
367
381
174
252

9:45 a.m.

099
358
331
378
204

9:55 a.m.

091
290
041
351
184

10:00 a.m.

337
274
208
094
254

12:25 p.m.

272
030
265
235
156

September 12, 1969 continued

1:10 p.m.

064
250
386
182
175

3:30 p.m.

027
352
182
342
159

4:00 p.m.

378
165
169
390
359

4:15 p.m.

075
056
100
279
210

5:00 p.m.

038
235
087
231
159

8:30 p.m.

061
005
231
038
192

8:45 p.m.

267
192
110
150
395

9:25 p.m.

266
126
357
264
089

APPENDIX B
QUESTIONNAIRE AND DATA FORM

INSTRUCTIONS: At the time designated below, report to the first library carrel listed. Before proceeding with the interview, the interviewee must meet the following requirements:

1. Seated at the designated carrel.

2. Reading any BOOK.

Then, proceed to obtain the desired information. If reader is a student, obtain student's name, campus address, and full bibliographical description of book, including library call number if book is a library book. Other information on the student can be obtained at the Office of the Dean of Students at a later time. If reader of book is not a student, obtain name and address of the reader, as well as purpose for reading the book Also, of course, obtain full bibliographical description of book.

REMEMBER: At no time is the normal function of the library to be interrupted. Conduct interviews as QUIETLY and QUICKLY as possible.

SPECIAL NOTE: There is a high probability that you will find a reader at one of the five carrels. If you are unable to find a qualified interviewee at the first carrel listed, proceed to the second listed carrel. If still unable to find a qualified person, proceed to the third listed number, and so forth. If unable to find a suitable interviewee at any of the designated carrels, indicate this fact and the reason at the bottom of this page in the space provided. It should be understood that your interview activities will be monitored.

IT IS OF EXTREME IMPORTANCE THAT THE INTERVIEW BE HELD AT THE DESIGNATED TIME. PLEASE BE PROMPT.

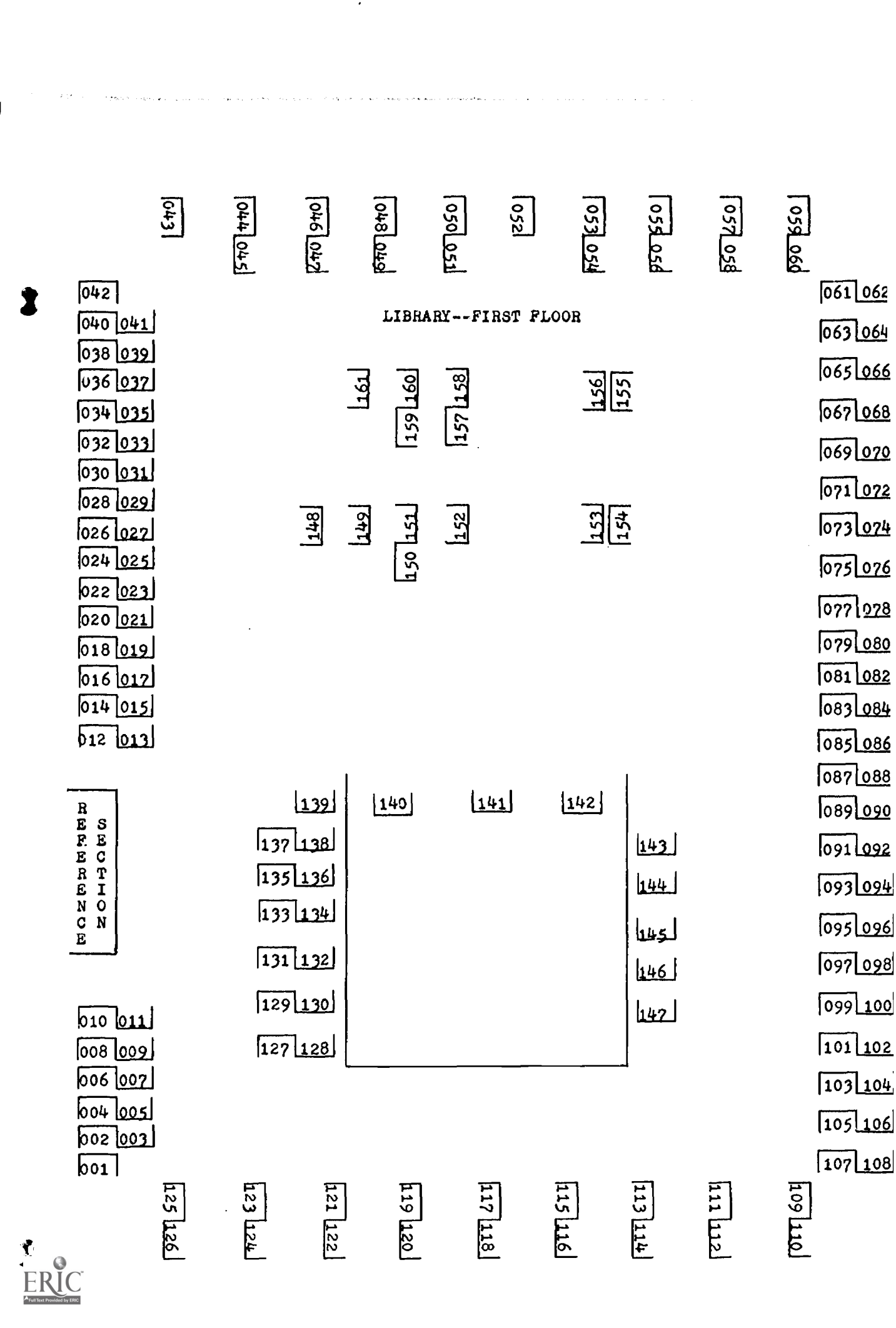
DESIGNATED TIME: _____

DESIGNATED CARRELS: 1. _____ 2. _____ 3. _____

4. _____ 5. _____

UNABLE TO FIND A QUALIFIED INTERVIEWEE: _____

THE UPPER NUMBER ON THE GUMMED LABEL REFERS TO THE NUMBER OF THE INNER CARREL. THE LOWER NUMBER REFERS TO THE OUTER CARREL.


LIBRARY--FIRST FLOOR
REFERENCE SECTION
001 002 003 004 005 006 007 008 009 010 011 012 013 014 015 016 017 018 019 020 021 022 023 024 025 026 027 028 029 030 031 032 033 034 035 036 037 038 039 040 041 042
043 044 045 046 047 048 049 050 051 052 053 054 055 056 057 058 059 060
061 062 063 064 065 066 067 068 069 070 071 072 073 074 075 076 077 078 079 080 081 082 083 084 085 086 087 088 089 090 091 092 093 094 095 096 097 098 099 100 101 102 103 104 105 106 107 108
109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126
127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147
148 149 150 151 152 153 154 155 156 157 158 159 160 161

Name of Interviewer: _____

Time of Interview: _____

Number of Carrel: _____

Name of Reader: _____

Sex of Reader: _____

[redacted] _____

Complete Bibliographical Description of Book Being Read : _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Name of Author : _____

Title of Book: _____

Place of Publication: _____ Name of Publisher: _____

Date of Publication: _____

Library Call Number on Book: _____

Place of Residence: ☐ Dormitory ☐ Sorority ☐ Fraternity or Off-Campus ☐

Academic Average of Reader: _____ Major Field of Study: _____

Freshman ☐ Sophomore ☐ Junior ☐ Senior ☐ Evening School Student ☐

Graduate School Student ☐

LIBRARY--SECOND FLOOR

STAIRWAY

APPENDIX C

FORM FOR CLASSIFYING AND CODING BOOKS BEING READ

CLASSIFICATION OF BOOKS

Interview Information	Verbal Description	Program Code Number
No interview conducted	No Interview	
Interview conducted but no Rider Library call number	Not Rider Library Book	
300-399 call number	Rider Library Social Sciences Book	
500-599 call number	Rider Library Pure Sciences Book	
600-699 call number	Rider Library Technology (Applied Sciences) Book	
800-899 call number	Rider Library Literature and Rhetoric Book	
900-999 call number	Rider Library Geography and History Book	
000-099 Generalities 100-199 Philosophy and related disciplines 200-299 Religion 400-499 Language 700-799 The arts	Rider Library Other Book	

NOTE: For a description of the call number classification see: Melvil Dewey, Dewey Decimal Classification and Relative Index, Edition 17. (Lake Placid, New York: Forest Press, Inc. of Lake Placid Club Education Foundation, 1965), especially pp. 109-120.

APPENDIX D CODE SHEET FOR RIDER COMPUTER CENTER DATA BANK ON STUDENTS

RIDER COLLEGE

REGISTRATION CARD CODES:

OCTOBER 1969

Col 28 A) RACE

1. American Indian
2. American Negro
3. Oriental American
4. Spanish American
5. Foreign Student
6. Other (including caucasian)

29 B) SEMESTER

No. of semesters completed based on credits passed:

Semester	Credits Passed
1	0 to 16
2	17 to 32
3	33 to 48
4	49 to 64
5	65 to 80
6	81 to 96
7	97 to 112
8	113-
9	SPECIAL STUDENTS

30 C) SEX

1. Male
2. Female

31 D) MARITAL STATUS

1. Single
2. Married

32 E) MILITARY

1. Veteran
2. Non-Veteran

33 F) FRATERNITY-SORORITY

1. PKP	6. AKD
2. PSE	7. DPR
3. TKE	8. DZ
4. TC	9. ZTA
5. ZBT	

Col

34 G) HOUSING
1. Commute
2. Dormitory
3. Sorority
4. Fraternity
5. Private Home

35-36 H) RELIGION BLANK IF NO PREFERENCE

10. Baptist
11. Lutheran
12. Methodist
13. Reformed
14. Presbyterian
15. Episcopalian
16. United Church of Christ
20. Reformed Jewish
21. Conservative Jewish
22. Orthodox Jewish
30. Roman Catholic
31. Eastern Orthodox
40. Other
41. Christian Science

37 I) ENTERING COLLEGE
1. First Time
2. Transfer
3. Re-entering Rider (continuing or readmit)

38-40 J) CURRICULUM CODES

1) Bus. Admin
1-01 A.A. Bus Adm
1-02 A.A. Med Sci
1-03 A.A. Sec Sci
1-41 B.S. Acct
1-42 B.S. Ind Rel
1-43 B.S. Bus Adm
1-46 B.S. Econ
1-47 B.S. Finance
1-48 B.S. Insurance
1-49 B.S. Management
1-50 B.S. Marketing
1-51 B.S. Real Estate
1-52 B.S. Sec Sci
1-59 Basic Business Curr

2) Liberal Arts
2-10 B.A. General L.A.
2-11 B.A. American Studies
2-12 B.A. Biology
2-13 B.A. Chemistry
2-14 B.A. English
2-15 B.A. Fine Arts
2-16 B.A. French
2-17 B.A. History
2-18 B.A. Journalism
2-19 B.A. Math
2-20 B.A. Philosophy
2-21 B.A. Pol Sci
2-22 B.A. Psychology
2-24 B.A. Sociology
2-25 B.A. Spanish
2-42 B.S. Biology
2-45 B.S. Chemistry
2-26 B.A. German
2-27 B.A. Communications
2-28 B.A. Physics

3) Education
3-53 B.S. Dist Education
3-44 B.S. Bus Education
3-23 B.A. Sec Education
3-25 B.A. Elem Education

4) Special (non-degree Candidates)
4-99 Special

K) GRADUATION
Expected year of Graduation... if Graduation is 1970
70-1 January Grad.
70-2 June Grad.
70-3 Summer Grad.

Col

L) STATE CODES

44-45

01	ALA	11	IDAHO	22	MINN	33	N.D.	44	VT
50	ALASKA	12	ILL	23	MISS	34	OHIO	45	VA
02	ARIZ	13	IND	24	MO	35	OKLA	46	WASH
03	ARK	14	IOWA	25	MONT	36	ORE	47	W. VA
04	CALIF	15	KANS	26	NEB	37	PENNA	48	WISC
05	COLO	16	KY	27	NEV	38	R.I.	49	WYO
06	CONN	17	LA	28	N.H.	39	S.C.		
07	DEL	18	ME	29	N.J.	40	S.D.		
08	D.C.	19	MD	30	N.M.	41	TENN		
09	FLA	20	Mass	31	N.Y.	42	TEX		
10	GA	21	MICH	32	N.C.	43	UTAH		
51	HAWAII								

M) COUNTY CODES N.J. ONLY
Blank if State is not N.J.

46-47

01	ATLANTIC	15	GLOUCESTER	29	OCEAN
03	BERGEN	17	HUDSON	31	PASSAIC
05	BURLINGTON	19	HUNTERDON	33	SALEM
07	CAMDEN	21	MERCER	35	SOMERSET
09	CAPE MAY	23	MIDDLESEX	37	SUSSEX
11	CUMBERLAND	25	MONMOUTH	39	UNION
13	ESSEX	27	MORRIS	41	WARREN

N) SCHOLARSHIP - Blank if none

48

1. Fellowship
2. Scholarship
3. Loan Fund
4. Educational opportunity Grant
5. Work-Study Program
6. Research or Teaching Assistantship
7. Athletic Scholarship
8. Other

49-60 O) SELECTIVE SERVICE NUMBER

61-66 P) BIRTH DATE

APPENDIX E - CODING SYSTEM OF RESEARCH PROJECT

C C 1-3

Interview form number.

C C 4

0 If no interview because all 5 carrels unoccupied.
1 If no interviews because carrel occupant is not reading a book.
2 If interview.

C C 5

1 If male.
2 If female.

C C 6

1 If reader found on Monday.
2 If reader " " Tuesday.
3 If reader " " Wednesday.
4 If reader " " Thursday.
5 If reader " " Friday.
6 If reader " " Saturday.
7 If reader " " Sunday.

C C 7-8

1 If reader found between 8 and 8:59 am.
2 If " " " 9 and 9:59 am.
3 If " " " 10 and 10:59 am.
4 If " " " 11 and 11:59 am.
5 If " " " 12 and 12:59 pm.
6 If " " " 1 and 1:59 pm.
7 If " " " 2 and 2:59 pm.
8 If " " " 3 and 3:59 pm.
9 If " " " 4 and 4:59 pm.
10 If " " " 5 and 5:59 pm.
11 If " " " 6 and 6:59 pm.
12 If " " " 7 and 7:59 pm.
13 If " " " 8 and 8:59 pm.
14 If " " " 9 and 9:59 pm.
15 If " " " 10 and 10:30 pm.

C C 9

0 If not Rider library book.
1 If Rider library book.

C C 10

0 If not Rider student.
1 If Rider student.

C C 11

1 If social science library book.
2 If pure science library book.
3 If technology (applied science) library book.
4 If literature library book.
5 If geography or history library book.
6 If other library book.

C C 12

1 If Rider freshman.
2 If " sophomore.
3 If " Junior.
4 If " senior.
5 If " graduate student.
6 If " evening student (non-matriculated).

Note. If Rider evening student is matriculated, translate his status, by means of credit hours completed, into terms of freshman, sophomore etc.

C C 13

1 If Liberal Arts major.
2 If Education major.
3 If Business major.
4 If Education master.
5 If Business master.

Note. If Rider evening student is matriculated, his major is Business.

C C 14

1 If Rider dormitory student.
2 If " commuter.
3 If " fraternity or sorority.

C C 15-18

Cumulative average in form X.XX.
Count only Rider undergraduates (day and matriculated evening students).

APPENDIX F

Validation of Interview Procedure

A random sample of 50 interview occasions was selected from the original sample of 700 planned interview attempts. Members of the women's fraternity served as validators. The validators were supposed to conduct themselves just as regular interviewers would, except that the validators would give the right-of-way to the regular interviewers.

The 50-item validating sample is listed below:

Schedule of Validating Interviews

	Date and Time			Date and Time	
1.	9-11-69	12:05 p.m.	26.	10- 9-69	9:15 a.m.
2.	9-11-69	10:15 p.m.	27.	10-10-69	9:25 a.m.
3.	9-18-69	11:15 a.m.	28.	10-12-69	2:20 p.m.
4.	9-18-69	3:15 p.m.	29.	10-14-69	10:15 a.m.
5.	9-19-69	12:10 p.m.	30.	10-14-69	2:55 a.m.
6.	9-23-69	10:45 a.m.	31.	10-14-69	9:35 p.m.
7.	9-23-69	2:45 p.m.	32.	10-16-69	9:15 a.m.
8.	9-24-69	9:15 a.m.	33.	10-16-69	7:55 p.m.
9.	9-24-69	1:00 p.m.	34.	10-16-69	9:35 p.m.
10.	9-24-69	7:50 p.m.	35.	10-17-69	8:25 a.m.
11.	9-25-69	2:30 p.m.	36.	10-18-69	1:00 p.m.
12.	9-25-69	7:45 p.m.	37.	10-18-69	4:10 p.m.
13.	9-26-69	9:50 a.m.	38.	10-20-69	11:30 a.m.
14.	9-26-69	12:25 p.m.	39.	10-20-69	12:05 p.m.
15.	9-29-69	10:20 a.m.	40.	10-20-69	4:15 p.m.
16.	9-29-69	3:10 p.m.	41.	10-22-69	2:35 p.m.
17.	9-29-69	8:30 p.m.	42.	10-22-69	6:55 p.m.
18.	9-30-69	10:15 a.m.	43.	10-26-69	6:40 p.m.
19.	9-30-69	6:40 p.m.	44.	10-28-69	1:00 p.m.
20.	10- 1-69	12:30 p.m.	45.	10-29-69	8:00 a.m.
21.	10- 2-69	9:30 p.m.	46.	10-29-69	5:40 p.m.
22.	10- 3-69	10:00 a.m.	47.	10-31-69	3:50 p.m.
23.	10- 3-69	10:15 a.m.	48.	11- 3-69	12:20 p.m.
24.	10- 4-69	2:05 p.m.	49.	11- 4-69	1:15 p.m.
25.	10- 6-69	11:35 a.m.	50.	11- 7-69	10:00 a.m.

A discrepancy of one kind or other has been found between the validator's report and the regular interviewer's report for eleven interviews. The interview dates and times for the discrepancies are:

1.	9-18-69	11:15 a.m.
2.	9-23-69	10:45 a.m.
3.	9-23-69	2:45 p.m.
4.	9-24-69	9:15 a.m.
5.	9-24-69	7:50 p.m.
6.	9-29-69	10:20 a.m.
7.	10-16-69	9:15 a.m.
8.	10-18-69	1:00 p.m.
9.	10-22-69	6:55 p.m.
10.	10-26-69	6:40 p.m.
11.	11- 3-69	12:20 p.m.

Seven of the discrepancies are reconcilable; however, four of the discrepancies stand as identified invalidated interviews. This result means that 8 per cent (4:50) of the interviews conducted should be regarded as not being validated.

The validation procedure used has been an effective instrument for measuring the extent to which interviews conducted by regular interviewers were not validated as having observed the requirements of the sample design.