

AN ANALYSIS OF GRADUATING AND NON-GRADUATING
STUDENT CHARACTERISTICS AT GRAND RAPIDS
JUNIOR COLLEGE

Thesis for the Degree of Ph. D.
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WILLIAM A. LOZANO
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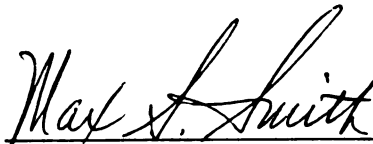


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thesis entitled
**AN ANALYSIS OF GRADUATING
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AT GRAND RAPIDS JUNIOR COLLEGE**
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AN ANALYSIS OF GRADUATING
AND NON-GRADUATING STUDENT CHARACTERISTICS
AT GRAND RAPIDS JUNIOR COLLEGE

By

William A. Lozano

AN ABSTRACT OF A THESIS

Submitted to
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ABSTRACT

AN ANALYSIS OF GRADUATING AND NON-GRADUATING STUDENT CHARACTERISTICS AT GRAND RAPIDS JUNIOR COLLEGE

by William A. Lozano

The Problem

The purpose of this study was to compare the graduates and the non-graduates on the basis of the data found in the student cumulative records and to determine if the findings could be used to determine if a student could graduate from the Junior College.

Delimitations of the Study

This study was limited to the investigation of those students who graduated during the academic year of 1965-66 and to those students who may have enrolled at the same time as the graduates did but did not graduate. The study was further limited in that the data are applicable primarily to Grand Rapids Junior College and may be applied to conditions in other institutions only to the extent that conditions in those other institutions are similar to those of Grand Rapids Junior College.

Review of Related Literature

Much has been published on the quantitative aspect of both the senior college student and the junior-community college student. Most of the four-year college studies deal with the problem of attrition. And although a number of two-year college studies also deal with attrition, there seemed to be a number of other studies which dealt with many of the other facets of the junior-community college student:

sex, residency, high school GPA, junior college GPA, the "Trial" student, and the time of admission to the junior college.

The review of related literature presented in this study was divided into three broad categories: (1) the DeLisle study of student characteristics, (2) studies of student characteristics of two-year college students, and (3) studies of student characteristics of four-year college students.

The literature reviewed for this study tends to support the idea that student characteristics can be used to identify the successful student who will probably graduate as compared to the unsuccessful student who will not graduate.

Methodology

The data upon which this study was based were obtained from both the student cumulative records kept in the office of the registrar and in the counseling center at Grand Rapids Junior College. The cumulative records for students who graduated in 1966 and a similar percentage of students who originally matriculated at the same time as the graduates but did not graduate were used.

Twenty-five variables were selected from the student cumulative records as being related to curriculum.

The data obtained from the student cumulative records were then divided into two groups: (1) those which required only one column on the IBM card, and (2) those which required two or more columns on the IBM card. Chi-square

was applied to each of the variables, and the five percent level of confidence was used for the test of statistical difference between the two groups.

The College and the Community

Grand Rapids Junior College was created in 1914 and is the oldest public junior college in Michigan. Early in its growth, the College was closely associated with the University of Michigan. Because of this affiliation, the College's curriculum tends to emphasize the transfer function. Only recently has greater attention in developing the technical-vocational curriculum been given.

The area that the College serves tends to be the center of population for Kent County. About one-half of the population of Kent County lives in the greater Grand Rapids area and its suburbs.

Review of the Findings

Thirteen of the twenty-five variables tested were found to be statistically significant at the five percent level of Chi-square. Presented in the order of significance, the variables found significant were: (1) Junior College cumulative GPA, (2) a student's pattern of continuous attendance, (3) the number of times summer school was attended, (4) cumulative high school GPA, (5) program affiliate, (6) student's pattern of discontinuous attendance, (7) number of times on probation, (8) age last semester of attendance, (9) semester of first withdrawal, (10) the type of high school attended, (11) Co-operative English Expression Test score, (12) the semester

of second withdrawal, and (13) Cooperative Reading Test score.

Two other variables were found to be only partially significant at the five percent level of Chi-square: (1) the number of Humanities, Social Science, and Science courses taken during a student's first semesters of attendance, and (2) the number of hours taken each semester.

The remaining ten variables and the remaining parts of the two multipartite variables were all found not to statistically differentiate between the graduates and the non-graduates.

In thirteen of the twenty-five variables tested it is possible to differentiate between those students who will probably graduate and those who probably will not succeed to graduation.

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DOCTORAL CANDIDATE

A THESIS

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To my son W. Robin goes a special thanks for assisting me in the tedious task of transferring the data from one ledger to another.

Lastly, there is a sincere expression of gratitude that I wish to convey to the Kellogg Foundation for the pre-doctoral fellowship assistance that they gave.

Foreword

The Michigan Community College Act of 1966 states that all public two-year colleges are to be known as community colleges. However, under the Grandfather Clause it is possible for any two-year public college that was in existence before the law was enacted to retain the use of the word "junior" in its title. Furthermore, there are still a few public two-year colleges that have not legally become community colleges. These colleges attempt to offer to the community that they serve some of the same services that a public community college would offer.

Grand Rapids Junior College was created before the Community College Act of 1966 and is therefore able to continue to use the word "junior" in its title. An examination of the college's catalog would show that aside from offering the traditional transfer courses, the college also offers technical-vocational courses and paramedical courses. In some respects Grand Rapids Junior College seems to parallel the functions of a community college. A further examination of the college's catalog would show that the college's evening adult education program is merely a duplication of the day schedule. In this fashion it can be seen that Grand Rapids Junior College does not parallel the community college's function. It seems that the College is in transition as it moves from the role of junior college in a narrow definition to that of community college.

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CHAPTER I

STATEMENT OF THE PROBLEM

Introduction

The number of two-year colleges that have come into being since World War II is indicative of the greater role that such colleges are to play in higher education. So great has been the proliferation of community and junior colleges that Clifford G. Erickson, President of Rock Valley College, claims that "New institutions are being established at the rate of one a week."¹ This may be an over-dramatization of the growth pattern, yet does emphasize the point. For example, during the early post World War II years, 1947-48, there were about 625 public and private institutions. Ten years earlier, 1937-38, there were about 500 public and private two-year colleges.² At the present time there are 837 community and junior colleges with a total enrollment of 1,464,099 students.³ The state of Michigan also reflects the national growth pattern of two-

¹Taken from President Erickson's presentation as given in Chicago, Illinois on March 6, 1966.

²Edmund J. Gleazer, Jr., Editor, American Junior Colleges (Washington, D.C.: American Council on Education, 1963), p.5.

³William A. Harper, Ed., 1967 Junior College Directory (Washington, D.C.: American Association of Junior Colleges, 1966), p. 5.

year colleges:

In 1965 Michigan's nineteen community colleges alone had a total enrollment of approximately 63,300 students. This year 1966 it's expected to hit 72,000.⁴

With the creation of new community and junior colleges and the subsequent increases in student enrollment, there would seem to be a need for information concerning both student course needs and institutional planning. Not only does this need tend to concern the newly established colleges, but it also would seem to apply to those colleges already in existence. Information relative to both the curriculum and the student characteristics associated with it would be necessary before institutional planning could begin. For example, Burton Clark's study of San Jose Junior College pointed out that had the San Jose community closely examined the student characteristics associated with the curriculum and the type of courses that students had taken in the past, the community would probably not have planned to make the junior college a joint technical and junior college.⁵ The student characteristics would have shown the citizens of San Jose that there had not been any great interest on behalf of the students in taking courses of a technical-vocational nature. It would also have become apparent to the community that the junior college was mainly a transfer oriented institution and would probably

⁴The Grand Rapids Press, September 25, 1966.

⁵Burton R. Clark, The Open Door College: A Case Study (New York: McGraw-Hill Book Company, Inc., 1960), pp.29-35.

continue to be so regarded by the students regardless of whether the junior college was to be controlled by the state or by a local board.

Not only curricular planning but matters of plant facilities, counseling techniques, and in-service training of the staff are dependent upon knowing if the institution and the students are compatible. It is to one of these points that Jesse Bogue directs himself when he comments upon the critical problems in community colleges: the college's selfportrait with respect to student-personnel service.⁶ He claims that several issues should be raised in developing the self-portrait, e.g., the testing program, the orientation program, the occupational testing, a follow-up program, and comprehensive reports to the college regarding defects in offerings and methods. Information relative to these issues would seem to be available in the student's cumulative records. Thus an investigation of student characteristics as found in student records would supply some answers to the above issues.

For some institutions, the problem of identifying student characteristics and institutional planning needed might seem to be insurmountable ones. Such institutions tend to construe planning to mean simply how an institution can use that which already exists--little attention is generally

⁶Jesse Parker Bogue, The Community College (New York: McGraw-Hill Book Company, Inc., 1950), pp. 323-24.

given to future plans. Such limited planning can, and too often does, result in a form of traditionalism that is neither practical nor economically feasible. It would seem that there would be some instrument that could be easily used so as to aid in institutional evaluation of whether it is meeting the needs of the community it serves. It is the contention of this researcher that the use of student cumulative record analysis is such an instrument.

Statement of Purpose

The purpose of this research is to study the variables (student characteristics) that exist between the graduating and the non-graduating student from a selected two-year college. The cumulative record folders of the students will be used as a basis for the gathering of information. A comparison of these variables will be used as a basis for measuring the significant relationship between the variables that apply to the graduating and non-graduating student. It is the belief of this researcher that this kind of information is necessary for sound educational planning for the determination and implementation of curricular changes to be made to satisfy the demands of the junior college student. Suggestions will be made relative to the in-service training approach to educational planning, including future curriculum and facilities.

The specific intent of this study is to determine:

1. Which variables (student characteristics) can be

identified as having relevancy to curriculum development and educational facilities planning.

2. And, whether these identified variables have a significant relationship to whether a student graduates or does not graduate.

Assumptions

The following assumptions are made relative to this study:

1. The use of cumulative records is a satisfactory method for identifying variables that are related to those students who graduate and those who do not graduate.
2. The selected junior college will provide a representative population that will give validity to the study.
3. That it will be useful for a junior college to measure its ability to meet the needs of those attending whether they graduate or not.
4. The importance of the need for continual educational planning will be more firmly emphasized.
5. An effective in-service education program based on information and data relative to the characteristics of students is necessary.
6. The student cumulative record folder has been so designed and used by the institution so that it contains information relative to the student's past

progress and performance that will be of value in educational planning.

Hypothesis to be Tested

There will be no significant relationship between the student characteristics of the graduates and the non-graduates as determined by analysis of selected characteristics available in their cumulative records. The specific variables to be tested are:

1. Sex
2. Residency
3. Program affiliate
4. Probation
5. Disqualification
6. Age of student last semester of attendance
7. Number of courses repeated
8. Number of summer sessions attended
9. Pattern of continuous attendance
10. Pattern of discontinuous attendance
11. Other institution(s) attended before enrolling at the junior college
12. Voluntary withdrawal to attend another institution and then returned to the junior college
13. Number of course hours taken during summer sessions
14. Grade point average last semester of attendance
15. High school grade point average
16. Type of high school attended

17. Cooperative Teading Test score
18. Cooperative English Expression Test score
19. Verbal SCAT Test score
20. SRA Social Studies Reading score
21. Type of courses taken each summer of attendance
22. Type of courses taken during each semester of attendance
23. Semester of first withdrawal
24. Semester of second withdrawal
25. Number of hours transferred in from institution (s)
student may have attended first

Rationale

In the increasingly important role that the demands for higher education have placed the two-year college, it is important to determine whether present assumptions relative to the characteristics of the junior college student are valid, because these assumptions are used as the basis for determining the kind of program that is to be implemented. For example, it would seem important for the college to be knowledgeable about such variables as student mobility and how it relates to other factors that are associated with attrition and with graduation. Furthermore, a study of student cumulative records may show that additional attention should be given to kinds and type of student services provided junior college students as demonstrated by various student characteristics. It is believed that this study

will demonstrate that there is a need for additional insights into the characteristics of the junior college student that will be beneficial in the planning of educational programs and experiences for various types of two-year college students. The appropriate deployment of the resources of the college can more effectively be planned and implemented.

Definition of Terms

In order to clarify pertinent terms for the reader and limit their interpretation to this study, the following definitions are presented:

1. Accelerators -- students in continuous attendance from the time of matriculation and who complete the two-year program requirements in less than the average number of four semesters.
2. Dropout -- students who withdraw and are non-return.
3. Institutional planning -- that process whereby data are compiled and used for developing educational specifications for planning of facilities.
4. Junior college -- traditionally the term has meant that the institution offers mainly transfer courses. In this paper it will be used only in conjunction with the title of the institution studied or other institutions like it. For further clarification, see "Foreword" page 11.
5. Late graduates -- students in continuous attendance

from the time of matriculation but who take more than the average number of four semesters in order to complete the two-year program.

6. Mobility -- the going from discontinuance to resumption of studies to, perhaps, another discontinuance.
7. Patterns of attendance -- the variety of length of time taken to complete a program or merely to attend an institution.
8. Predominant characteristics -- those distinctive traits which are demonstrable in a student's cumulative record, e.g., sex, age, residency, grade point average (see pages 6 and 7 above for a complete list).
9. Regulars -- students in continuous attendance from the time of matriculation and who complete the two-year program requirements in the average number of four semesters.
10. Transcript analysis -- the examining of a student's transcript for the purpose of recording those data which have relevancy for a comparative or analytical study.
11. Withdrawers -- students who discontinue by not returning the successive semester but later do return to resume the two-year program. The period of withdrawal may be one or more semesters, and the with

drawal may occur one or more times.

Delimitation of the Study

This study was limited to the investigation of those students who graduated during the academic year 1965-66 and those who enrolled at the same time that the graduates did but did not graduate with their class. The study was further limited in that the data are applicable primarily to Grand Rapids Junior College and may be applied to conditions in other institutions only to the extent that conditions in those other institutions are similar to those of Grand Rapids Junior College. Lastly, it is not known if those who dropped out will ever return. Some could reasonably be expected to return and finish their education at Grand Rapids Junior College. However, of the purposes of this study they are considered to be non-graduates.

Overview

In Chapter II it is planned to review the literature relative to student characteristics. Chapter III is to be used to describe the methodology of the study. Also to be included in Chapter III is a brief description of the population used for the study. Chapter IV will be used to describe the institution and the community that the Junior College serves. Chapter V will contain the findings of the study; percentile and numerical findings will be interpreted and presented on the basis of Chi-square measurements. Chapter VI, the last chapter, will contain

a collation of the earlier summaries. The collation will be followed by a discussion of the findings as they relate to the theories postulated. Lastly, conclusions will be drawn, recommendations made, and implications for further research will be presented.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

Although some reference to literature in the field was made in Chapter I and may be made in later chapters, as appropriate, most of the related literature is presented in this chapter. The purpose of such review is to provide a background of understanding based on studies that have been reported previously which should facilitate viewing the findings of this study in perspective.

To minimize the confusion that may be caused by reporting data about student characteristics as found by two or more authors, the studies have been grouped into three: (1) the DeLisle study about student characteristics; (2) studies of student characteristics of two-year college students; and (3) studies of student characteristics of four-year college students.

The first study, the DeLisle study, is reported in greater length than are the others for two reasons. First, the method of selecting part of the sample from a graduating class was adopted from the DeLisle study. And second, her study also deals with a specific student characteristic which was reported on by only one other researcher, student

patterns of attendance.

Since two or more of the studies make reference to the same student characteristic, the variables are reported as a group rather than by individual studies: transferring graduates, age, college test scores, junior college GPA, senior college GPA, sex, persistence and/or withdrawal, high school GPA, resident versus non-resident, student profiles, and students admitted directly from high school.

LITERATURE AND STUDIES RELATED TO THE STUDY

Cumulative record analysis is one method that can be used in studying the student characteristics of college students. In the preliminary search of the literature, few studies were found that were specifically concerned with the junior college student characteristics, using the cumulative record as a basis. However, a number of studies at both the two- and four-year college level have been done relative to student characteristics using a questionnaire and, when necessary, cumulative records.

The DeLisle Study

Although Frances DeLisle was primarily concerned with studying the four-year graduating college student, some of her study's results can be used to aid in the classification junior college student characteristics.¹ For example, she found that by the use of student characteristics, particularly

¹Frances DeLisle, Patterns of Attendance, Office of Institutional Research, Michigan State University, 1966.

patterns of attendance, she was able to classify her sample (N=1082) population into five types of graduates: (1) accelerators; (2) regulars; (3) late graduates; (4) withdrawers who attend another institution of higher learning and then return to complete the educational process; and (5) discontinuers who do not continue their educational plans for one or more semesters and then return to complete the degree requirements.²

Another characteristic studied by DeLisle was the student attendance patterns at summer sessions. She claims that students generally enrolled for summer classes to either repeat unsatisfactory course work, to accelerate and thus graduate early, to fulfill the requirements of certain major fields, or to go ahead of one's class.³ However, she found that according to the number of students who had attended summer sessions at Michigan State University, there should either be a larger number of accelerators, or very few courses were being repeated during the regular year. But she instead found that only 23.2 percent of the graduates had repeated courses during the summer. Thus more than 75 percent of the repeat courses were taken during the regular academic year.³

When the accelerator group was examined, there were only 7.7 percent accelerators among the graduates. Hence

²Ibid., Chapter II, p. 2.

³Ibid., p. 13.

very few students attend summer classes in order to graduate ahead of their class.

Although DeLisle does not cite any statistics, she claims that more and more students are attending summer sessions in order to stay with their class:

In order to accomplish graduation in the spring they [students] arrange the credit load to fit their own individual needs, accelerating or postponing the time of completing the requirements.⁴

However, DeLisle points out that the number of courses that the student takes during the summer session is far less than he generally takes during the regular academic year. She concludes that the student does not yet recognize the summer period as a part of the regular academic year; for the student, she adds, summer is merely a way of picking up a few credits.⁵

Studies of Two-Year College Student Characteristics

The Transferring Graduate

In their study Medsker and Knoell found that 88 percent of the junior college students who had transferred to a four-year college had matriculated only at junior colleges before transferring. They also found that less than 10 percent of the transfer graduates had begun as freshmen in four-year colleges. The less than 2 percent remainder of the transfer graduates had matriculated at three or more other colleges before matriculating at the college from

⁴Ibid., Chapter III, p. 18.

⁵Ibid., p. 18.

which they graduated.

Age of Student

Spector found that over fifty percent of the newly enrolled students were seventeen or eighteen years old. He also found that 57 percent of the graduating students were twenty years old.⁷

In a study to determine the characteristics of students, teachers, and the curriculum of industrial-technical education in Michigan's public community colleges, Larson also found that fifty percent of the students initially matriculating at their respective colleges were either seventeen or eighteen years old. Only three percent were over 30 years old when they first registered. When the enrollment for all of the community colleges as a group were examined, Larson noted that 75 percent of those matriculating for the first time were under twenty-one years of age. Furthermore, 80 percent of the graduates were between 17 and 20 years of age.⁸

Johnson claims that in a 1953-54 study, more than one half of those enrolled in junior colleges consist of adult and special students.⁹

⁶Dorothy M. Knoell and Leland L. Medsker, Factors Affecting Performance of Transfer Students From Two- to Four-Year Colleges: With Implications for Coordination and Articulation, (Center for Study of Higher Education: University of California, Berkley, California, 1964), p. 15.

⁷Irwin L. Spector "An Analysis of Certain Characteristics and the Educational Success of Junior College Freshmen" (Unpublished doctoral dissertation: University of Arizona, Tuscon, 1966).

Medsker and Knoell in their national study found that 41 percent of the men and 16 percent of the women were between 17 and 19 years of age when they first enrolled at their respective colleges.¹⁰

College Test Scores

In their study to determine the influence of different types of public higher institutions on college attendance from varying socioeconomic and ability levels, Medsker and Trent determined that 57 percent of the entire college group in their study scored in the first and second quintiles of the SCAT Test scores.¹¹

Spector found that in his study aptitude scores and performance level of students admitted to junior college varied through approximately the entire percentile range; however, he does not give any data as to which testing instruments were used.¹²

Junior College Grade Point Average

Campbell studied the academic performance of students who had been admitted to a Michigan junior college on a trial basis. He found that 32 percent of the "Trial" students achieved a 2.00 average or better.¹³

⁸Milton E. Larson, "A Study of Characteristics of Students, Teachers, and the Curriculum of Industrial-Technical Education in the Public Community Junior Colleges of Michigan." (Unpublished Doctoral dissertation, 1960), p. 111.

⁹B. Lamar Johnson, "Purpose and Plan of the Yearbook," in The Public Junior College, ed. Nelson B. Henry (University of Chicago, 1956), p. 6.

¹⁰Medsker and Knoell, Articulation, p. 22.

Using selected factors bearing on the persistence and academic performance of low ability students in four California junior colleges, Ernest Berg found that 40 percent of the student achieved a grade point average below 1.50 and 67 percent had achieved below 2.00.¹⁴

There is also reported in the Medsker and Knoell study that about two-thirds of the students in their study earned a junior college grade point average between B and C, with a median average of 2.56.¹⁵

Sex

When Nogel compared transfer and terminal-occupational students on the basis of selected characteristics, he found that transfer men tended to be of higher scholastic ability as measured by a standard test than were terminal-occupational men; but he found no significant differences in the scholastic ability of similarly matched female students.¹⁶

Medsker and Knoell found that there were more men than women in the transfer program. The ratio reported was 2.6 men to each woman. However, the ratio of men to women was not found to exist for the college enrollment group as a whole.¹⁷

¹¹James W. Trent and Leland L. Medsker, The Influence of Public Higher Institutions on College Attendance from Varying Socioeconomic and Ability Levels (Berkeley: University of California, 1965), pp. 92-98.

¹²Sector, op. cit.

¹³Ronald Campbell, "A Study of the Academic Performance of Students Who Were Admitted to Henry Ford Community College on a Trial Admission Basis in 1956" (Unpublished doctoral dissertation, Wayne State University: Detroit, 1965).

Persistence and/or Withdrawal

Medsker and Trent reported that 83 percent of the sample they studied finished the academic year at each of their respective junior colleges. But not all of those who did complete the first year returned to enroll for the second year. 12 percent went no further than one semester or term, and four percent did not finish the first semester. Eight percent of the sample studied dropped out at the end of the first year, and five percent did not finish the remainder of the first year.¹⁸

Although Iffert reports that the sample he used in his national study may not have been a representational one of junior college students, he claims that 12 percent of the junior college students did not go beyond the first registration period; 28.3 percent did go beyond the first registration period but took no more than one year of junior college work; and 56.8 percent took more than one year but less than two years of junior college work.¹⁹

¹⁴Ernest H. Berg, "Selected Factors Bearing on the Persistence and Academic Performance of Low Ability in Four California Junior Colleges" (Unpublished doctoral dissertation, University of California, Berkley, 1964).

¹⁵Medsker and Knoell, op. cit. p. 55.

¹⁶Donald G. Nogle, "A Comparison of Selected Characteristics of Transfer and Terminal-Occupational Students in a California Junior College" (Unpublished doctoral dissertation, University of Southern California, Stanford, 1965).

¹⁷Medsker and Knoell, op. cit., p. 22.

¹⁸Medsker and Trent, op. cit., p. 92-98.

Hall T. Sprague, editor of Research on College Studies, reports that in a study carried out at two different junior colleges, the first college found that:

61 percent of the entering students completed the freshman year, 46 percent entered the sophomore year, and 35 percent graduated within two years of admission (N=1000).²⁰

And at the second institution they found that:

55 percent of the entering students completed the freshman year, 47 percent completed three semesters, 40 percent completed four semesters, and 25 percent graduated (N=710).²¹

In addition to his earlier findings Larson also reports that in his sample population 30 percent completed one year or less; 50 percent completed less than 62 semester hours; and nine students completed over 108 semester hours. Furthermore, 95 percent of the graduates had been in continuous attendance and only five percent of the graduates had a discontinuous pattern of attendance. Twenty-five percent of the graduates had completed the degree work in two years.²²

¹⁹Robert E. Iffert, Retention and Withdrawal of College Students United States Department of Health, Education, and Welfare, Office of Education, Bulletin 1958, No. 1 (Washington: Government Printing Office, 1958), p.111.

²⁰Research on College Students, ed. Hall T. Sprague (Co-sponsored by the Western Interstate Commission for Higher Education and the Center for Higher Education, Berkeley, California, 1960), p. p.48.

²¹Ibid., p. 48.

²²Larson, op. cit.

High School Grade Point Average

Larson found that 65 percent of the sample he studied had a C average in high school; 29 percent had a B average; two percent had a D average; and only one student had an A average.²³

Medsker and Knoell did not plan to study grade point average and thus had not attempted to gather that type of information. However, in spite of the limited data that they did gather relative to high school grade point average, they claimed that a junior college student was:

...a student who met at least the minimum course pattern requirements in high school which are expected of applicants to the major universities and who probably graduated in the top half of his high school class.²⁴

Students Admitted Directly From High School

Both Campbell and Spector in their respective studies found that the student admitted directly from high school was more apt to graduate than the student who delayed entry into the junior college for a year or two. Campbell also reported that high school achievement was not a good predictor of junior college success for students admitted on a "Trial" basis.²⁵

Residents versus Non-residents

Medsker and Trent found that 55 percent of all college students studied in their sample went to local public insti-

²³Larson, op. cit.

²⁴Medsker and Knoell, op. cit., p. 55.

²⁵Campbell, op. cit.

tuition;26 percent of local entry people ranked at the top of their high school class.²⁶

In his study Larson found that 54 percent of his sample population were residents; 40 percent were non-residents; two percent were from another state; and four percent had been residents at one time but had moved out of the college district during the time they were enrolled and attending classes.²⁷

Studies of Four-Year College Student Characteristics

Persistence and/or Withdrawal

Of all the studies reviewed in this chapter, the greater number that have been written are on persistence and withdrawal. In fact it seemed to this researcher that both the four- and two-year colleges have done more in the area of persistence-withdrawal than in any other area of student characteristics.

In a study of student persistence at the State University of Iowa, Baer reported that when the records of 1293 students who first enrolled in 1953 were examined four years later, 43 percent had withdrawn or, if currently enrolled, seemed unlikely ever to complete successfully a degree program.

²⁶Medsker and Trent, op. cit., pp. 92-98.

²⁷Larson, op. cit.

Thirty-two percent of the original group had graduated and, except for 12 percent who had transferred out and for whom there seemed to be no information, the remainder were still enrolled and could be considered as potential graduates.³⁰

Constance Waller in reviewing research related to college persistence reported that most people who withdraw do not do so solely on the basis of grades.³¹

In reviewing the records of students who had been advised to withdraw from college, Dressel reported that 34 of the 171 students advised to withdraw had withdrawn. Only seven of the withdrawal students had returned after staying out one or more semesters. Eighty-one percent of the sample population were freshmen and second year students who had not attained sophomore standing; seven percent were juniors or seniors -- all had a history of poor academic background.³²

Wolford did a study comparing dropout and persisting students in a small liberal arts college. He found that in his sample population the dropouts were older when they first enrolled. In addition he reported that dropouts had a lower high school and college grade point average.³³

³⁰Jean Baer, A Study of Student Persistence at the State University of Iowa, Office of the Registrar, Iowa City, 1959, p.4.

³¹Constance Waller, "Research Related to College Persistence" in College and University, Vol. 39, Spring 1964, p. 283.

³²Paul Dressel, "Liberal-Arts Students Advised to Withdraw" in Journal of Higher Education, Vol. 14, January 1943, pp. 43-45.

³³Melvin Wolford, "A Comparison of Dropouts and Persisters in a Small Private Liberal Arts College," (Unpublished doctoral dissertation, University of Oregon, Portland, 1965), Vol. XXV, p. 5661.

After reviewing the research on dropouts and completions, Verner and Davis claimed that according to most of the studies there seemed to be little difference in age between those who persist and those who discontinue their college careers.³⁴

When Sprague reviewed the literature relative to persistence and senior college students, he found that in a study done at the University of California:

48 percent of the freshmen withdrew from the campus of original registration before completing eight semesters; 35 percent of the freshmen earn the baccalaureate degree by the end of the eighth semester. From 10 to 15 percent withdraw and re-enter the University, or transfer between campuses.³⁵

And at a study carried out at the University of Wisconsin in 1948, Sprague found that:

...30 percent graduated in four years or less from the University, including 26 percent of the original male group and 37 percent of the entering female group. Of the total group, 28 percent stayed in school one year or less, 42 percent failed to reach the junior year, and 8.5 percent were registered in the eighth semester but failed to graduate with the class.³⁶

Inasmuch as the Lins and Pitt study was done in the early 1950's, it would appear that some of their findings

³⁴Coolie Verner and George S. Davis Jr., "Completions and Drop Outs: A Review of Research," in Adult Education, Vol. 14, Spring 1963, p. 164.

³⁵Sprague, op. cit., p. 46.

³⁶Ibid., p. 45.

would not be consistent with the more contemporary studies. Yet the Lins and Pitt statistics do not greatly differ from some of those cited in the preceeding pages. For example, Lins and Pitt determined that of their sample population 28.1 were registered for two or less semesters; 38.3 percent were registered for all eight semesters; and 29.8 percent graduated in four years or less. Furthermore, they also found that the mean number of semesters that the students registered for was 5.2 semesters. Fifteen percent of the 1994 newly enrolled students failed to register for the second semester and only 65.4 percent of the entering group registered as sophomores. In the eighth semester of registration 46.1 percent of the original group registered. 40.5 percent of the original group were registered either as seniors or graduate students.³⁷

Academic Probation

After investigating factors relative to the academic success of students who had been reinstated after having been dismissed because of poor academic grade point average, Hansmier reported that 129 of the 294 freshmen were able to continue successfully to graduation while 169 were not.³⁸

³⁷L.J. Lins and Hy Pitt, "The 'Staying Power' and Rate of Progress of University of Wisconsin Freshmen," in College and University, Vol. 29, October 1953, pp. 87-89.

³⁸Thomas W. Hansmeir, "An Investigation of Factors Related to the Success After Readmission or Reinstatement of College Students Academically Dismissed," (Unpublished doctoral dissertation, Michigan State University, East Lansing, 1963), p. 111.

When Dye examined the records of students who had been readmitted to the University of Illinois after having been dropped because of low grade point average, he found that there was some relationship between selected factors and the ability to predict academic success of students who had been readmitted. He also reported that a combination of student's high school class rank, transfer grade point average, and university grades earned before he was dropped, showed the strongest relationship to the student's grade point average after readmission. In fact high school rank was the best single scholastic predictor of the student's grade point average after readmission.³⁹

In the Lins and Pitt study there was also reported that 22.9 percent of the 595 graduating students had had some kind of scholastic action taken against them, e.g., 9.6 percent had been put on strict or final probation or dropped and readmitted.⁴⁰

Baer reported that 24.3 percent of the students who withdrew voluntarily were already on probation and that over fifty percent of the withdrawal students had been on probation at least one time during their stay at the university.⁴¹

³⁹Victor C. Dye, "A Study of Academically Dropped Students Who Were Readmitted to the University of Illinois," (Unpublished doctoral dissertation, Urbana, 1965), as found in Dissertation Abstracts: vol. 26, p. 6510.

⁴⁰Lins and Pitt, op. cit., p. 98.

⁴¹Baer, op. cit., p. 17.

High School Grade Point Average

As a part of her study, Baer determined that the mean high school grade point average for those students who graduated from the institution she studied was 2.91. The non-graduates had a grade point average of 2.46. She also found that fifteen percent of those students who were admitted with a grade point average of 1.5 succeeded to graduation. However, the number is small compared to the 78 percent who graduated from the group that had a 3.1 or better when admitted to the college.⁴

When Lewis, Wolins, and Hogan examined the records of three types of students -- students who dropped out voluntarily, students who were dropped for academic failure, and students who dropped out but with failing grades-- the students who left with an average of C or better had a better grade point average when they were in high school than did the other two groups.⁴

According to Alexander and Woodruff, an examination of the records of graduating students at their sample institution revealed that, "An excellent record in high school tends to go hand in hand with a high freshman score."⁴

⁴³Baer, op. cit., p. 6.

⁴⁴Edwin C. Lewis, Leroy Wolins, and John Hogan, "Interest and Ability Correlates of Graduation and Attrition in a College of Engineering," in American Educational Research Journal, vol. 2, March 1965, p. 71.

⁴⁵Norman Alexander and Ruth J. Woodruff, "Determinants of College Success," in The Journal of Higher Education, vol. 11, p.483.

Additional investigation in the related research on persistence led Waller to determine that high school grades had a correlation range from .56 to .80 and was therefore a better predictor of college success than was the use of high school rank which only had a correlation range of .47 to .70.⁴⁵

Residency and Non-residency

In a comparison of commuter students and residents, Appleton determined that the commuters tended to have a lower mean score on the College Qualifying Test than the residents. In addition the commuters were older. Although there was a difference between both local and long distance commuters and residents, the greatest difference was between the non-local commuters and the residents: non-local commuters had a significantly lower mean score than the residents. Not only did the above differences exist between the commuters as a whole and the residents, but there were more non-local commuters who dropped out than did the other groups.⁴⁶

Grade Point Average of College Students

Baer and Sprague reported that in each of their respective studies the graduates had a grade point average between 2.33

⁴⁵Waller, op. cit., p. 283.

⁴⁶John R. Appleton, "A Comparison of Freshmen Commuter Students With Resident Students on Selected Characteristics, Experiences, and Change," (Unpublished doctoral dissertation, Michigan State University, East Lansing, 1965), p. p. 80.

and 2.40. Baer also found that in her sample population the non-graduates had a mean average of 1.78.⁴⁷

While investigating the relationship of selected variables to achievement and persistence, Lewis reported that grade point average in undergraduate business courses and quantitative aptitude test scores were significant as predictors of grade point average in required courses for a masters degree in business administration.⁴⁸

Patterns of Attendance

Alexander and Woodruff determined that students who completed their academic career in less than the average number of years generally taken for graduation had a higher academic average than did the regular or late graduates.

Baer reported that of the 1293 students in her sample population 37 percent had graduated in the average number of eight semesters; 14 percent were considered late graduates and were still enrolled at the time of her study but had a reasonably satisfactory grade point average of 1.6 or above; 12 percent were probable graduates or late graduates at other institutions; and 37 percent were discontinuers whose grade point average indicated that they had very little chance of

⁴⁷Baer, op. cit., p. 15.

⁴⁸John W. Lewis, "The Relationship of Selected Variables to Achievement and Persistence in a Masters Program in Business Administration," in Educational And Psychological Measurement, vol. 24, Winter 1964, p. 954.

⁴⁹Alexander and Woodruff, op. cit., p. 482.

of returning to complete the degree requirements.⁵⁰

Sex

Lins and Pitt determined that in their study there was little difference between the sexes with regard to "staying power" over eight semesters. However, they claim that more women were academically successful.⁵¹

Russel compared the first term dropouts and non-dropouts at a selected university. He determined that 70 percent males and 30 percent females were in the dropout group while in the non-dropout group there were 60 percent males and 39 percent females.⁵²

Hansmeir found that in his study 31 percent of the males were successful to graduation; 12 percent of the females also graduated; 28 percent of the males were not successful; and 15 percent of the females also were not successful.⁵³

Verner and Davis in their review found that although most studies revealed no difference between the sexes between persisters and dropouts, there was a slight tendency toward higher dropout for women.⁵⁴

⁵⁰Baer, op. cit., p. 4.

⁵¹Lins and Pitt, op. cit., p. 99.

⁵²James W. Russel, "A Comparison of Michigan State University First Term Dropouts and Non-dropouts According to Certain Factors," (Unpublished doctoral dissertation, Michigan State University, East Lansing, 1952), p. 81-83.

⁵³Hansmeir, op. cit., p. 111.

⁵⁴Verner and Davis, op. cit., p. 164.

Summary

The literature reviewed in this chapter is divided into three groups: (1) the DeLisle study; (2) student characteristic studies carried out at two-year institutions, and (3) student characteristic studies carried out at four-year institutions. In addition each group is further divided so that rather than reporting each study independent of the others and repeating similar data but at different times throughout the chapter, the student characteristics are grouped together and reported on at one time.

The DeLisle study showed that the use of one student characteristics, patterns of attendance, could be analyzed and from the findings conclusions and implications could be drawn. For example, summer school attendance was found not to be a time for repeating unsatisfactory course work but rather a time for many of the students to keep up with their class. She therefore concluded that further investigation was necessary in order to develop the summer term as a part of the regular year so that students would take just as many courses during the summer as they do the other three terms.

Studies carried out at two-year institutions and studies carried out at four-year institutions do not seem to differ greatly from each other. In those studies reviewed for this chapter this researcher found that both types of

studies gave ample attention to the problem of attrition. However, it seems that the two-year college studies were as equally concerned with attrition as they were about age, grade point average in high school and at the junior college, Trial admission, and sex. Four-year college studies reviewed for this chapter were mostly concerned with attrition and how the other student characteristics reflected upon it.

CHAPTER III

METHODOLOGY

Introduction

Originally it was planned to include in the study the findings from three two-year institutions which seemed to share a number of similar characteristics: (1) location near or in a large population center, (2) close proximity to industry, (3) large student enrollment, and (4) a history that would enable the students to identify with the institution. However, it became obvious that such an approach would be a difficult one. For example, early investigation showed that no two colleges used the same ability or aptitude test. Also confounding the results were the different kind of recording systems practiced by each institution's office of registration. But there was even a more logical reason for using only one institution for this study. An intensive examination of one institution's student cumulative records would yield more results than would a superficial examination of three different institutions.

The choice of the institution selected, Grand Rapids Junior College, was predicated upon three factors: (1) the College has a history of over fifty years, it was established in 1914; (2) the College has been the center of numerous

other studies and there is therefore ample resource material concerning the College; and (3) this researcher was formerly employed by the institution and thus has some empathy with the College's present and future plans.

The Population

Once it had been established that Grand Rapids Junior College would be the institution where the study would be conducted, the basis for selecting the sample population had to be determined. In the chapter dealing with the review of the literature, mention was made of the fact that of the studies reported only one differed in its method of selecting its sample, the DeLisle study. Thus rather than selecting an entering class and following it for two or three years, this researcher decided to use the DeLisle method and selected a graduating class for one academic year. However, this sample alone would only account for how those students who were successful and had graduated used the institution's services. It was then decided that a second group should also be investigated, those who had not persisted to graduation, the non-graduates.

Since all those who had graduated had originally matriculated at different times, some as long ago as ten years, it was necessary to establish a table showing what percentages had enrolled for each respective year prior to graduation (see Table I on succeeding page). Using the table, a random selection of non-graduates from each

TABLE I

FREQUENCY DISTRIBUTION AND YEAR OF ADMISSION
OF STUDENTS WHO GRADUATED IN JUNE 1966

	Fall of 1960 or before	Fall 1961	Fall 1962	Fall 1963	Fall 1964	Spring 1965
Number	27	5	20	79	251	7 = 389
% total	17	1	15	21	44	2 = 100%

year of matriculation was made. In this fashion it was possible to select a similar percentage of graduates and non-graduates who had matriculated at the same time.

The Variables

For each student there is maintained a file into which is placed any and all pertinent academic information. Such a file is called the "cumulative record file." It was this file from which the data were taken which were used in this study. Inasmuch as some of the graduates and non-graduates had been tested by different ability instruments and some had never been tested at all, it was not possible to compare every student by the same scores. However, of the twenty-five variables, only four of them presented this problem: (1) Cooperative Reading Test, (2) Cooperative English Expression Test, (3) SRA Social Science Reading Test, and (4) the SCAT Test. In such cases only those students who had been tested by the same instrument were compared.

When the information was gathered, it was transferred onto an IBM card. One column was used for each variable. However, eight of the variables required two or more columns: (1) age of student last semester of attendance required two columns, (2) the number of hours taken each semester of attendance required 10 columns, (3) GPA last semester of attendance at the Junior College required three columns, (4) high school GPA also required three columns, (5) the number of hours taken each summer session required three columns, (6) the type of courses taken each semester of attendance required 18 columns, (7) the number of technical-vocational courses taken each semester required 6 columns, and (8) the type of courses taken each summer of attendance required three columns.

The IBM cards with the information entered onto them were then run through the 3600 Computer at Michigan State University's Computer Center. Using the Michigan State University Technical Report No. 14, Analysis of Contingency Tables, ACT 1.01, Chi-square, percentage of each cell in the table row totals, percentage of each cell in the column totals, and percentage of each cell in the grand total was programed into the computer. The results of the computer print-outs enabled the researcher to enter a Chi-square table at the predetermined five percent level and determine the significant relationship of graduates and non-graduates for each of the variables tested.

Summary

Originally three institutions were to be used in the study; however, a preliminary investigation showed that it would be more practical to do an intensive examination of only one institution. Grand Rapids Junior College was selected as the institution to be studied.

Using the DeLisle method of selecting the sample population from a graduating class, the graduates for the academic year 1965-66 were chosen. After determining the dates of original matriculation for the graduates, an equal percentage of students who had not graduated were randomly selected. Both of these groups represent the population studied.

Using the student cumulative record file as a basis for selecting the variables to be tested in this study, twenty-five variables were chosen as those having relevancy to curriculum development and educational facilities planning. Once the data had been recorded on IBM cards and Michigan State University's Technical Report No. 14, Analysis of Contingency Tables, Act 1.01 had been programed into the 3600 Computer, the Chi-square was used to determine the significant relationship of graduates and non-graduates for each of the variables used. A five percent level of Chi-square was used.

CHAPTER IV

CHARACTERISTICS OF GRAND RAPIDS JUNIOR COLLEGE

AND THE COMMUNITY IT SERVES

The Junior College

According to Riekse, on the afternoon of June 10, 1914, "The citizens of Grand Rapids were first notified in one of the local newspapers that courses would be offered in a newly created junior college which was to be located in the Central High School Building."¹ On that opening date, September 21, 1914, forty-one students officially enrolled.² The Junior College was to be housed in the Central High School building, yet the college was not established by the Grand Rapids Board of Education as an extension of Free public school education. According to an article in The Grand Rapids Press of June 10, 1914, it was stated that the Junior College was to be a junior college in connection with, but distinctly apart from the public school work at the high school.³ Riekse further points out that considerable material was published in order to assure the local

¹Robert J. Riekse, "Analysis of Selected Significant Historical Factors in the History of the Pioneer Junior College in Michigan: Grand Rapids Junior College, 1914-1962" (Unpublished doctoral dissertation, Michigan State University, East Lansing, 1964), p. 18.

²Ibid., p. 18.

citizens that there would be no additional financial burden placed upon them inasmuch as the junior college would be self supporting through tuition. Even the faculty would not be financially burdensome; most of the faculty at the high school were not teaching a full load and thus could be used to teach in the junior college.⁴ Such was the coming into being of the Grand Rapids Junior College.

The connection between the University of Michigan and the Junior College was evident from the beginning. According to Riekse, many of the junior college classes used the same examinations that were used at the University of Michigan for similar courses. And furthermore, most of the college parallel courses at the junior college had the same numbers as similar courses at the University. It was not until 1962 that the numbering system was changed.⁵ Further proof that Grand Rapids Junior College was closely tied to the University of Michigan is found in the first paragraph of the Junior College's first course bulletin:

"The purpose of the Junior College is to offer to the students of Grand Rapids and Western Michigan the advantages of the first two years of the Department of Literature, Science and the Arts at the University of Michigan...."⁶

Although the basic purpose of the Junior College was

³The Grand Rapids Press, June 10, 1914.

⁴Ibid., pp. 26-29.

⁵Ibid., p. 20.

⁶Grand Rapids Junior College Bulletin: Number 1, p.3.

to offer parallel work to the freshmen year at the University of Michigan, there was at the same time some indication that the curriculum was to be much more broad. For example, Riekse refers to a speech made by Mr. Davis, the first dean and one of the more influential persons in creating the college, that "...the philosophy of the junior college was service to the youth of the community,"⁷ Hence by 1916 the college bulletin had included an additional paragraph:

"It is also the purpose of the Junior College to offer special lines of advanced study as the needs of the community may demand. At the present time students may pursue work along several lines, viz --the college literary course, a brief commercial course, an industrial arts course and a course for teachers of public school music."⁸

In some measure of the phrase "community college," the Grand Rapids Junior College has attempted to meet the needs of its public. However, because of the College's early association with the University of Michigan, there seems to have been a noticeable lag in the development of a full technical-vocational curriculum:

"There is little evidence to indicate the importance of these early technical-vocational curricula in relation to the total program."⁹

Yet the present finds that the technical-vocational part of

⁷Riekse, p. 21.

⁸Grand Rapids Junior College Bulletin: No. 3, 1916.

⁹Wayne Rodehorst, "An Analysis of the Introduction of Vocational-Technical Education Programs in Michigan Community Colleges Established Before 1930" (Unpublished doctoral dissertation, Michigan State University, East Lansing, 1964), p. 29.

the curriculum has begun to increase in its importance.

As pointed out in the first chapter, student enrollment figures for the state of Michigan have tended to reflect the national norms. According to the 1960 census, the number of students aged 25 and over who had had one to three years of college numbered about eight percent of the national population. In Michigan the same group was listed at about seven percent.¹⁰ The statistics for Grand Rapids Junior College are equally revealing. In 1954-55 the enrollment figure reported was 917 full time equated students. In 1956-57 the figure was 1,234 students; and in 1965-66 the enrollment figure was 2,167.¹¹

In light of the number of students who have sought admission to the College (in 1965-66 there were 4,679 students enrolled at Grand Rapids Junior College), there has begun to be some public concern for the future role of the institution. The Grand Rapids Press reported that a citizen's committee had taken it upon itself to do an objective study of the Junior College's future. The Committee claimed that as a result of preliminary findings, "...the study predicts it [the Junior College] has 'a tremendous future' and that a central downtown complex would be the most desirable site."¹³

¹⁰General Population Characteristics: Data on Age, Race, Household Relationship, Sex, Marital Status, Education., U.S. Department of Commerce, L. H. Hodges, Secretary, p. 179.

¹¹The Michigan Economic Record, Vol. 5, (February, 1963), Michigan State University: East Lansing, Michigan, p.3.

In December of the same year another news article claimed that the Junior College was to be the focal point of a \$10 to \$20 million dollar cultural center. As of the present, most of the planning and developing remains on the drawing board.¹³

A still more significant issue has been presented to the citizenry. Does the College remain a part of the K-12 program, or should it become a county wide college? For example, in a recent meeting between the Junior College faculty and some of the Grand Rapids Board of Education members, it was learned that the board members thought of the Junior College as an extension of the senior high school and "...repeatedly referred to the educational park concept as including the 13th and 14th grades."¹⁴ And in a meeting which took place two weeks later, Dr. Pylman, Grand Rapids Superintendent of Schools, states that:

Yes, we consider this [the including of the Junior College as a part of the Cultural Center] an integral part of the school system.¹⁵

But Dr. Pylman also pointed out that although the

¹²The Grand Rapids Press, July 13, 1966.

¹³The Grand Rapids Press, December 1, 1966.

¹⁴The Grand Rapids Press, January 29, 1967.

¹⁵The Grand Rapids Press, February 12, 1967.

Junior College would probably remain in the downtown area of Grand Rapids, there was a strong possibility that the control of the College might be changed.¹⁶

That the Junior College is to remain within the Grand Rapids educational system does not mean that the enrollment is to be limited only to residents. In the academic year 1965-66, 4,679 students enrolled for either full-time or part-time work at the College. More than one half of those who enrolled were non-residents, 1,967. Of the total enrollment figures, 4,065 students were from Kent County; 545 students were from outside of the county. Ninety-six of those from outside of the county had actually come from outside of the state.¹⁷

The future of the College seems quite assured. However, if the College is to become a county community college in the legal sense, that change is still some time away. For the immediate future, the College will be strongly associated with the Grand Rapids Board of Education's K-12 program plans.

The Community

Grand Rapids is as polyglot as any community in the United States. All European nationalities are represented in the population, many of the Near East lands, and transiently if not permanently, a number of Oriental and African countries. There are Australians, New Zealanders, Ca-

¹⁶The Grand Rapids Press, February 12, 1967.

¹⁷Unpublished study conducted by the Junior College Office of the Registrar in 1967: memiographed.

nadians, Mexicans, and Puerto Ricans. Then there are Indians from whom the land was "inherited."

Although Negroes first came to Grand Rapids as long ago as 1840, growth of the Negro population was slow, and appreciable acceleration did not come until after World War II. Yet there is one notable distinction in the population of Grand Rapids which differentiates it from other equally large cities, and that is "the measure of Holland stock in the total melting pot."¹⁸ The profound influence of the Hollanders on Grand Rapids religiously, politically, economically, socially, and culturally is confirmed by the city's history. People of Dutch blood, more and more mixed, were estimated in 1966 to account for 30 percent of the city's population.¹⁹

According to the 1960 census, Grand Rapids had a population of 177,313 and was thus the third largest city in Michigan. Since Kent County, the fifth largest county in the State, had only some 363,187 people in 1960, it would seem that well over one third of the county's population resided in Grand Rapids. Furthermore, if one were to include the population for the Greater Metropolitan Grand Rapids, the population figure would be 185,874. A closer examination of the figure would show that more than one half of the population in Kent County lives in the Grand

¹⁸Z. Z. Lydens, The Story of Grand Rapids (Grand Rapids: Kregel Publications, 1966), p. 559.

¹⁹Ibid., p. 540.

Rapids area.²⁰

Basically, Grand Rapids owed much to the trees that grew on the land, the gypsum imbedded in the land, the limestone in the river, the clay which was the land itself, and that early vital element, water power. These factors accounted for much of the early sound wealth on which the community was built.

Although the city is best known for its construction of fine furniture, it would be misleading not to mention that there is great diversity in the type of industry that is to be found in the Grand Rapids area. For example, there is a considerably large construction industry. There are also numerous foundries in the area. They were an early operation and are still instrumental in the role they continue to play in that industry. And although both the automotive and aviation industries attempted to establish themselves in the area, they were unable to sell their products in large enough quantities in order to maintain these industries in the area. There are, however, numerous small "shops" which make the component parts needed by these larger industries in other parts of the country.

According to the 1960 census, 36.2 percent of those employed in the Greater Grand Rapids area are engaged in manufacturing industries. But most of the area people are white collar workers: 43 percent. All together, the

²⁰U.S. Census of Population: 1960, Luther B. Hodges, Secretary, Department of Commerce, 1961, pp. 12-18.

wage earners in the above occupations and employments have a median income of \$6,329, and as many as 16.1 percent of the workers earn over \$10,000. However, there are areas of poverty in the "great society." As many as 13.5 percent earned less than \$3,000 at that time.²¹

As in all communities, there were numerous "acorns" of industry that were planted. Some grew and still exist, and others never grew beyond the sapling stage. The gypsum mine is now used for storing apples and next year's holiday turkeys. The limestone quarries are no longer worked, and muck farming is no longer as popular as it still is in communities more to the west of Grand Rapids. The City is still known for its fine furniture construction; however, the local wits claim that since quality Grand Rapids furniture is so expensive, the natives of the area have to buy their furniture from out of the area sources.

As in most communities, Grand Rapids has its social, political, and civic groups. Unlike many of the surrounding communities, Grand Rapids does not have an annual festival to which are attracted the summer or winter tourist crowds. However, the city does have a large college age population. In addition to those attending the Junior College, there are others who come to Grand Rapids in order to attend two of the sectarian colleges in the city: Calvin College and Aquinas College. Calvin College which is associated with

²¹Ibid., p. 180.

the Fundamentalist Churches in the country had a 1966-67 enrollment of about 6,000 students. Aquinas College which is a part of the Roman Church had an enrollment of about 2,000 students for the same period. In addition to the above colleges, there are many smaller educational institutions within the city limits which also attract a significant number of students to the Grand Rapids area.

Summary

In Chapter IV the two subjects discussed were the Grand Rapids Junior College and the community it serves. The College has a history of fifty years and is the oldest public two-year college in the State of Michigan. When the College was first created, it was not because of popular choice. In fact its creation seems to have been almost capriciously an act of the then existing Board of Education. The College's early history is almost that of a branch college of a four-year institution, specifically the University of Michigan. Because of the close association of the Junior College with a large four-year institution, the transfer program seems to have been given more attention. Only recently has there been a stronger move in the direction of developing the technical-vocational curriculum. The present finds the institution in somewhat of a quandary. Because of the rapid growth of both the community and the College enrollment, there has been some concern as to whether the institution should become a community college in the

legal sense or remain a part of the local educational system. Although the local papers have stated that the College's future is being planned as if the College were to remain a part of the Grand Rapids educational system, the chief administrator of the city's school system, Dr. Jay Pylman, has gone on record to claim that control of the Junior College may change but not the location of the institution.

When one views the community, there seems to be little that distinguishes it from other communities of similar size. Although the city is noted for its fine furniture construction, in many other respects it differs very little from its sister cities. It does, however, share one characteristic that only a few of the other cities in Michigan have, it has two four-year colleges within the city's boundaries.

CHAPTER V

FINDINGS OF THE STUDY

Introduction

The findings reported in this chapter were derived from the student cumulative records which are kept in the Office of the Registrar and in the Counseling Center at Grand Rapids Junior College.

The findings are presented in the following order:

(1) variables which were found to be significant at the five percent level of Chi-square are presented first; they are listed in the order of most significant to least significant, (2) multipartite variables which were found to be partially significant are presented next and in the order of most to least, and (3) variables which were found not to be significant at the five percent level of Chi-square are presented last.

Variables Significant at the Five Percent Level

Thirteen variables were found to be statistically significant when comparing graduates and non-graduates on the basis of the data found in the student cumulative records:

(1) Junior College grade point average, (2) continuous attendance, (3) attended summer sessions, (4) high school grade point average, (5) program affiliate, (6) discontinu-

ous attendance, (7) probation, (8) age, (9) semester of first withdrawal, (10) type of high school attended, (11) Cooperative English Expression score, (12) semester of second withdrawal, and (13) Cooperative Reading score. The data on each of these variables are presented in the Tables II through LVIII and Appendices A, B, C, and D. In all of the tested variables Chi-square was used as the measuring instrument. Five percent was used as the level of significance.

TABLE II

JUNIOR COLLEGE GRADE POINT AVERAGE
LAST SEMESTER OF ATTENDANCE

	Less than a	2.00 to	2.60 to	3.10 to	3.60 to	Totals
	2.00	2.50	3.00	3.50	4.00	
Grads	4	182	104	84	14	389
%	1	47	27	22	3	100%
Non- grads	188	115	48	19	19	389
%	48	30	12	5	5	100%
Totals	192	297	153	103	33	778

Chi-square = 252.218

df = 4 (9.488)

The research cited in Chapter II indicated that grade point average was a good predictor of academic success leading to graduation. When comparing the graduates and

and the non-graduates at Grand Rapids Junior College, of the thirteen variables found to be significant, the cumulative grade point average was the most significant (see Table II for Chi-square). Table II shows that almost 47 percent of the graduates had a GPA between 2.00 and 2.50. For the non-graduates it was found that 48 percent had less than a 2.00 GPA the last semester of attendance. As it might be expected, the greatest difference between theoretical frequency and actual numbers was in the number of graduates and non-graduates who had less than a 2.00 their last semester of attendance.

These findings are corroborated by Medsker and Knoell who found that two-thirds of the junior college students in their study earned a GPA between B and C.¹

Students in Continuous Attendance

Nearly as significant as the GPA of a student is his pattern of continuous attendance. This variable had a Chi-square of 219.077. At eight degrees of freedom, Chi-square is given as 15.507. Of the 389 graduates, 331 had been in continuous attendance from the time of original matriculation to their graduation (see Appendix A). Of the non-graduates, 242 had also been in continuous attendance up to the semester of their last attendance. Of the graduates, 233 had been in continuous attendance for four semesters up to the time of their graduation. This was about seventy percent

¹See reference to Medsker and Knoell, p. 17.

of the graduates. The data are similar to the studies reported in Chapter II.² Twelve percent of the graduates needed five continuous semesters to complete the degree requirements, and twelve percent more needed six continuous semesters. Only three students took three or less semesters to complete their degree requirements. An additional twelve students took seven or more continuous semesters to complete the degree requirements.

The records for the non-graduates show that 40 percent had completed four continuous semesters before discontinuing; 35 percent had completed two continuous semesters before their discontinuance; 20 percent had completed three continuous semesters; and less than five percent had been in attendance five or more continuous semesters. The data are similar to that cited by Sprague, Larson, and Medsker and Trent.

²See reference to Sprague, p. 20; Larson, p. 20; and Medsker and Trent, p. 19.

TABLE III

ATTENDANCE AT SUMMER SESSIONS

	Never	attended once	attended twice	attended 3 or more	Totals
Grads	245	119	24	1	389
%	63	30	6	1	100%
Non- grads	343	40	6	0	389
%	87	10	3	0	100%
Totals	588	159	30	1	778

Chi-square = 65.114

df = 3 (7.815)

Next in order of significance, but almost one-fifth as significant was the variable Attendance at Summer Sessions. Table III above shows that 144 of the graduates had attended summer sessions. Only 46 of the non-graduates had attended summer sessions. Although none of the studies carried out at the two-year institutions and reviewed in Chapter II included the above variable, the data are similar to those given by DeLisle in her four-year college study.³

There is a statistical difference between graduates and non-graduates and their attendance at summer sessions.

³See reference to DeLisle, p. 14.

TABLE IV

HIGH SCHOOL GRADE POINT AVERAGE

	less than 2.00	2.00 to 2.50	2.60 to 3.00	3.10 to 3.50	3.60 to 4.00	Totals
Grads	62	114	72	77	18	343
%	18	33	21	22	6	100%
Non- grads	119	99	39	21	11	389
%	41	34	13	7	5	100%

Chi-square = 58.319 df = 4 (9.488)

High School GPA was found to be significant when graduates and non-graduates were compared. Of the graduates whose records included this statistic, 33 percent had a cumulative high school GPA between 2.00 and 2.50.⁴ Twenty-one percent of the graduates had a GPA between 2.60 and 3.00, and another 22 percent of the graduates had a GPA between 3.10 and 3.60.

Forty-one percent of the non-graduates had less than a 2.00; 34 percent had a GPA between 2.00 and 2.50. Less than 25 percent had earned a GPA greater than 2.60. The above data are similar to the findings reported in Chapter II.⁵

⁴46 graduates and 100 non-graduates did not have this statistic in their records.

⁵See reference to Larson, p. 21, and Medsker and Knoell, p. 21.

TABLE V
PROGRAM AFFILIATE

	Honors	regular	Practical Nurses	Registered Nurses	Totals
Grads	37	351	1	0	389
%	9	90	1	0	100%
Non- grads	9	343	12	24	389
%	2	89	3	6	100%
Totals	46	649	13	24	778
Chi-square = 49.074 df = 3 (7.814)					

Ninety percent of the graduates took regular course work in contrast to 9 percent of their classmates who had taken English and/or history. Only one graduate had earned the one-year Practical Nursing Certificate before working toward an associate degree.

Of the non-graduates, 89 percent took regular course work which closely approximates the graduate numbers. The area of greatest difference was in the number of Nurses not taking work leading to an associate degree. According to the theoretical Chi-square frequency, there should have been more in both of these groups earning the associate degree. Part of the fault lies in the recording system used at the College; however, more comment is made on this matter in Chapter VI.

Discontinuous Attendance

Although Chi-square shows that this variable is statistically significant when comparing graduates and non-graduates (see Appendix B), the variable is almost one-sixth as significant as the comparison between graduates and non-graduates in continuous attendance. The Chi-square for continuous attendance was 219.007, and for discontinuous attendance Chi-square was 40.062.

Examination revealed that 53 graduates had been in discontinuous attendance as compared to 147 non-graduates. Of the graduates, 41 percent took five discontinuous semesters to complete their degree requirements; 18 percent took seven discontinuous semesters; and 17 percent took six discontinuous semesters to earn their degree. Only three students took less than four discontinuous semesters to complete their program. The remaining 14 students took eight or more discontinuous semesters in order to graduate.

Although 89 percent of the non-graduates were in discontinuous attendance for five or less semesters, in actual numbers there were only 33 students.⁶

⁶110 non-graduates withdrew at the end of the first semester and at the time of the study had not returned to the college. They are counted in the group who withdrew for the first time at the end of the first semester. They could not be called neither continuers nor discontinuers and are not included in the above Table.

TABLE VI

PROBATION

	Never on probation	once	twice	three or more times	Totals
Grads	321	21	24	23	389
%	82	5	6	7	100%
Non- grads	260	74	34	21	389
%	66	19	9	6	100%
Totals	581	95	58	44	778

Chi-square = 37.589 df = 3 (7.815)

Slightly less significant than discontinuous attendance was the variable probation (see Table IV above). It was found that as many graduates had been on probation once as there were graduates who had been on probation two or more times. However, more non-graduates had been on probation once than had all of the graduates who had been on probation.

There is a significant statistical difference between graduates and non-graduates and the number of times that they are placed on probation.

TABLE VII

AGE

	19 yrs.	20 yrs.	21 yrs.	22 yrs.	23 or more	Totals
Grads	93	146	60	22	50	386*
%	23	37	15	5	17	100%
Non- grads	61	80	56	40	88	363*
%	18	23	17	15	27	100%
Totals	154	226	116	62	138	749
*3 grads and 26 non-grads did not have this data in records.						

Chi-square = 35.533 df = 4 (9.488)

Sixty percent of the graduates were either 19 or 20 years of age when they completed their Junior College experience. The data are similar to that recorded by Larson and Spector.⁷ Fifty graduate students were 23 years or older when they completed their degree requirements, and eighty-eight non-graduates were 23 years or older their last semester of attendance.

⁷See reference to Larson, p. 16, and Spector, p. 16.

Semester of First Withdrawal

As in the findings reported in Chapter II relative to withdrawal,⁸ it was found that most non-graduates tend to withdraw during the first year of attendance. In this study 126 non-graduates withdrew during or at the end of the first semester. This was 41 percent of the total number enrolled. The rate of withdrawal was less for the next three years. Thirty percent withdrew the second semester; fifteen percent withdrew the third semester; and twelve percent withdrew in the fourth semester. At no time were there fewer than 37 students withdrawing each of the first four semesters. Of the forty-two graduates who had withdrawn before returning to complete the degree requirements, thirty-one of them withdrew either at the end of the first, second, or third semester (see Appendix C). Less than two percent of the non-graduates withdrew as late as the fifth, sixth, or seventh semester. Yet as much as 27 percent of the graduates withdrew for the first time at the end of the fourth, fifth, sixth, and seventh semesters.

TABLE VIII

TYPE OF HIGH SCHOOL ATTENDED

	public school city	private school city	public school county	private school county	Totals
Grads	168	64	143	9	384*
%	44	17	37	2	100%
Non- grads	105	77	189	14	385*
%	27	20	49	4	100%
Total	273	141	332	23	269

* 9 students did not include this data in records.

Chi-square = 23.196 df = 3 (7.815)

It is possible for a student who attends Grand Rapids Junior College to come from four types of high school systems: (1) a public school from the city system, (2) a private school from within the city limits, (3) a public school from a school system outside of the city limits, and (4) a private school located outside of the city limits. For this reason, it was decided to compare the graduates and the non-graduates according to this variable (see Table VIII above). More of the graduates and the non-graduates had attended public schools from either the city or from outside of the city limits. Forty-four percent of the graduates had attended Grand Rapids public school. Thirty-three percent of the graduates had attended public schools outside of the city. Forty-nine percent of the non-graduates had attended a public school outside of the city and only

twenty-seven percent of the non-graduates had attended a public school in the city. Less than twenty percent of the graduates and the non-graduates had attended a private high school outside of the city limits.

TABLE IX

COOPERATIVE ENGLISH EXPRESSION TEST SCORES

	0 to 25	26 to 50	51 to 75	76 to 100	Totals
Grads	4	26	47	124	221*
%	2	12	30	56	100%
Non-grads	9	18	52	40	119*
%	7	15	44	34	100%
Totals	13	44	119	164	340

Chi-square = 19.443 df = 3 (7.815)

Of the two Cooperative Tests that had been given to some of the students, more than half of the graduates had taken both tests and less than one half of the non-graduates had taken the same tests. The test results from the English Expression Test were found to have a higher Chi-square of 19.443 as compared to a 14.982 for the Cooperative Reading Test scores.

Dividing the test scores into quartiles, 56 percent of the graduates had scored between 76 and 100; and 30 percent of them had scored between 51 and 75. Of the non-graduates, 48 percent had scored between 76 and 100; 43 percent had scored

between 51 and 75. Less than 14 percent of the graduates scored lower than 50, and less than 22 percent of the non-graduates scored below 50.

There is a statistical difference between graduates and non-graduates and the scores that they receive on the Cooperative English Expression Test.

Semester of Second Withdrawal

Not quite as significant as the semester of first withdrawal which had a Chi-square of 23.753, but still significant at the five percent level of Chi-square, the variable of semester of second withdrawal has a Chi-square of 12.592. There were a total of 31 students who had withdrawn at least two separate times. Only six of these students were graduating students (see Appendix D). Of the non-graduates, 70 percent had withdrawn for the second time by the end of the second semester. Only seventeen students were so involved. Thirty-one percent more of the graduates withdrew by the end of the fourth semester.

Five of the graduating students withdrew for the second time before returning to complete the degree requirements. The five represented 83 percent of the graduates who had withdrawn during their third, fourth, and fifth semesters. Only one graduate withdrew at the end of his ninth semester.

There is a statistical significance between graduates and non-graduates and the semester of their second withdrawal.

TABLE X
COOPERATIVE READING SCORES

	0 to 25	26 to 50	51 to 75	76 to 100	Totals
Grads	4	22	72	122	220
%	2	10	33	55	100%
Non-grads	10	22	42	50	124
%	8	17	34	41	100%
Totals	14	44	114	172	344

Chi-square = 14.982 df = 3 (7.815)

As in the case of the Cooperative English Expression Test, less than half of the 124 non-graduates had taken the Cooperative Reading Test and only 220 of the graduates had taken the test. For the graduates, the scores tend to be similar to the results earned on the English test: 55 percent in the upper quartile and 33 percent in the second quartile. The scores for the non-graduates tended to be lower than they had been in the English test. Twelve percent of the graduates scored less than 50 but 25 percent of the non-graduates had scored in the lower quartiles.

The results for both tests are similar to the findings reported by Medsker and Trent.⁹

There is a statistical significance between graduates and non-graduates and the scores they earn on both the Cooperative English Expression Test and the Cooperative Reading Test.

⁹See reference to Medsker and Trent, p. 17.

Multipartite Variables Found to be Partially Significant

The next two variables measured three separate student characteristics: (1) the type of courses taken during the student's attendance at the Junior College for six or less semesters, and (2) the number of hours taken each semester of attendance for ten or less semesters.

Types of Courses Taken

Grand Rapids Junior College lists all the courses that it offers under three groupings (see Table XI). In addition to these groupings this researcher created two other identifying groups; one for courses of a technical-vocational nature as listed in the Catalog, e.g., business studies, engineering, retailing, secretarial studies, and technology; and another for courses in physical education.

TABLE XI

SUBJECT CLASSIFICATION BY GROUPS

Group I	Group II	Group III
Art	Anthropology	Astronomy
English	Economics	Biology
Foreign Language	Geography	Chemistry
Music	History	Mathematics
Philosophy	Political Science	Nutrition (Home
Speech	Psychology	Economics)
	Sociology	Physical Geography
		Physics

Using the above Table, it was possible to determine how many different types of courses were taken by each student. However, inasmuch as less than ten percent of the graduates had taken seven or more semesters to earn their degree and

only one percent of the non-graduates attended more than six semesters, it seemed that the data from the first six semesters would be more meaningful than including those semesters after the sixth. It is for the above reasoning that only six semesters were programed.

When the data were recorded onto the IBM cards, twenty-five separate findings were gotten: three for each separate semester; one for physical education; and six for six semesters of technical-vocational courses. Of the 25 findings, seven were found to be statistically significant and twenty-three were not statistically significant at the five percent level. The seven that were significant and given below in the order of their significance were:

- (1) the number of Humanities courses taken the third semester the student was in attendance,
- (2) the number of Social Science courses taken the student's third semester of attendance,
- (3) the number of Humanities courses taken the second semester of the student's attendance,
- (4) the number of Social Science courses taken the second semester of attendance,
- (5) the number of Humanities courses taken the first semester of attendance,
- (6) the number of Science courses taken the first semester of attendance, and
- (7) the number of Humanities courses taken the fourth semester of attendance.

TABLE XII
HUMANITIES COURSES TAKEN THIRD SEMESTER

	one	two	three or more	Totals
Grads	131	93	55	279
%	47	33	20	100%
Non-grads	77	25	17	119
%	65	21	14	100%
Totals	208	118	72	298

Chi-square = 20.595 df = 6 (12.592)

The number of Humanities courses taken the third semester was the most statistically significant variable compared to the other six. Examination reveals that more non-graduates took one course in the Humanities than did graduates. However, more graduates took two or more Humanities courses than did non-graduates. The greatest difference occurred among the two groups of students taking two Humanities courses.

Since the Junior College Catalog states that, "English is required each semester of all students whether they plan to graduate or not, until English 101 & 102, English Composition, are completed satisfactorily."¹⁰ it is possible for a student to take two or more Humanities courses and satisfy the requirements for a degree. Therefore, if a student in his third semester selects three or more courses in the Humanities, it could well be that he is specializing. Twenty percent of the graduates have then begun to specialize and

¹⁰Grand Rapids Junior College Catalog: 1966-67, p. 25.

14 percent of the non-graduates had also begun to specialize.

TABLE XIII

SOCIAL SCIENCE COURSES TAKEN THIRD SEMESTER

	one	two	three or more	Totals
Grads	122	119	61	302
%	40	39	21	100%
Non-grads	67	37	12	116
%	58	32	10	100%
Totals	189	156	73	418

$$\text{Chi-square} = 11.974 \quad \text{df} = 4 \quad (9.488)$$

Next in order of statistical significance was the number of Social Science courses taken during the student's third semester of attendance. More non-graduates took only one Social Science course than did graduates. However, the percentage of graduates taking two Social Science courses (see Table XIII above) was nearly similar to the percentage of graduates taking two such courses. There is also a notable difference in the number of graduates taking three or more Social Science courses as compared to the non-graduates.

Since the State of Michigan makes it obligatory for all students who plan to earn a degree at the College to take three credit hours in political science, it is not possible

to determine if a student has begun to specialize when he enrolls for the third semester.¹¹ Most of the students are urged to take the social science requirement early in their college career, it is not known how many do this. However, it is quite possible that those students selecting three or more courses in the Social Science are probably beginning to specialize.

¹¹Grand Rapids Junior College Catalog: 1966-67, p. 25.

TABLE XIV

HUMANITIES COURSES TAKEN SECOND SEMESTER

	one	two	three or more	Totals
Grads	172	126	39	337
%	51	37	12	100%
Non-grads	142	55	22	219
%	65	25	10	100%
Totals	314	181	31	556

Chi-square = 19.828 df = 7 (14.067)

More non-graduates than graduates took one Humanities course in their second semester of attendance. Yet more graduates took two Humanities than did non-graduates.

Unless a student were repeating an English course, it would seem that at this point most of the graduates and the non-graduates would be completing their English requirements. Those taking three or more Humanities courses could well be beginning to specialize; however, it is still too early to be certain.

TABLE XV

SOCIAL SCIENCE COURSES TAKEN SECOND SEMESTER

	one	two	three or more	Totals
Grads	154	100	10	264
%	58	38	4	100%
Non-grads	116	39	4	159
%	73	25	2	100%
Totals	270	139	14	423

Chi-square = 10.004 df = 3 (7.815)

More non-graduates continue to take only one course as compared to the number taken by the graduates. Seventy-three percent took only one Social Science Course in their second semester of attendance; 58 percent of the graduates took only one course. And as found in the earlier tables, more graduates take two or more courses in the Social Sciences than do non-graduates. Since the Social Science requirements can be met by registering for one specific course or two other sequential courses, slightly more than half of the 778 students in the study had probably had satisfied the Social Science requirements by the end of the second semester.

TABLE XVI

HUMANITIES COURSES TAKEN FIRST SEMESTER

	one	two	three or more	Totals
Grads	163	147	32	342
%	48	43	9	100%
Non-grads	188	88	23	299
%	63	29	8	100%
Totals	351	235	55	641

Chi-square = 19.737 df = 6 (12.592)

The difference between the graduates and the non-graduates is not as great as in the previous tables. This is understandable. As one approaches the points of entry and leaving the college, it would become more difficult to differentiate between the two types of students. However, in the above table it is still possible to see how the graduates and the non-graduates differ, even at this early date. Non-graduates take more single courses of Humanities than do graduates. Almost as many non-graduates as graduates took three or more Humanities courses in their first semester of attendance.

TABLE XVII

SCIENCE COURSES TAKEN FIRST SEMESTER

	one	two	three or more	Totals
Grads	177	77	15	269
%	66	29	5	100%
Non-grads	154	39	23	207
%	70	19	11	100%
Totals	322	116	38	476

Chi-square = 9.396 df = 2 (5.991)

As pointed out in the preceeding page, the differences between graduates and non-graduates during their first semester of attendance is very slight. The above table shows that almost as many graduates as non-graduates took one course. However, none of the earlier tables has made reference to Science courses before this. According to the above, more than half of either the graduates and the non-graduates have begun to fulfill the science requirements for their degree at this early date.

TABLE XVIII

HUMANITIES COURSES TAKEN FOURTH SEMESTER

	one	two	three or more	Totals
Grads	111	90	53	264
%	42	34	24	100%
Non-grads	46	21	11	78
%	59	27	14	100%
Totals	157	111	64	342

Chi-square = 17.673 df = 6 (12.592)

What is especially interesting about the above table is that less than 100 of the non-graduates are still in attendance. Those who persist still continue to take more courses in the Humanities than in the other disciplines. It also seems that those graduates who took Humanities courses in their last semester of attendance had probably taken more than the minimum number needed for their degree.

There seems to be a statistical difference between the number of courses in Humanities, Social Sciences, and Science taken during specific semesters of attendance by the graduates and the non-graduates.

The Number of Hours Taken Each Semester of Attendance

According to the Junior College Catalog:

Every student who graduates from the College must take a minimum of sixty (60) credit-hours exclusive of general physical education. At least thirty (30) credit-hours must be earned in attendance at the College.¹²

Since 237 of the graduates were able to complete their degree requirements in the average number of our semesters and another group completed their program requirements without discontinuing but graduated after their class, drawing a meaningful comparison between graduates and non-graduates becomes difficult. However, statistically one is able to compare the two groups of students for the first five to six semesters of attendance. But beginning with the sixth semester and on to the tenth semester, there was no statistical significance between graduates and non-graduates when measured by Chi-square at the five percent level.

TABLE XIX

HOURS TAKEN FIRST SEMESTER OF ATTENDANCE

	1 to 3	4 to 6	7 to 9	10 or more	Totals
Grads	14	10	28	337	389
%	4	3	7	86	100%
Non-grads	51	44	40	254	389
%	14	12	11	63	100%
Totals	65	54	68	591	778
Chi-square = 63.443 df = 3 (7.815)					

¹²Junior College Catalog: 1966-67, p. 25.

The table on the preceeding page, Table XIX, is illustrative of the pattern of hours that graduate and non-graduates took for their first four semesters of attendance. In terms of Chi-square the table above for the number of hours taken the first semester of attendance was the more significant one. The second semester was next with a Chi-square of 59.093, followed in successive order by the third with a Chi-square of 45.663, the fourth semester with a Chi-square of 28.247, and finally the fifth semester with a Chi-square of 10.985. Between 85 and 90 percent of the graduates took 10 or more hours during the first four semesters in which they were in attendance. Between five and twelve percent took 7 to 9 hours their first four semesters. Between two and four percent took 6 hours, and between one and four percent of the graduates took one to three hours during their first four semesters of attendance.

For the non-graduates, the pattern of the number of hours taken was less varied. Between 63 to 70 percent took ten or more hours during their first four semesters of attendance. Between seven to eleven percent took 7 to 9 hours their first four semesters; 12 to 15 percent took four to six hours; and between 9 and 14 percent took one to three hours their first four semesters. Not as many of the non-graduates are willing or able to take 10 or more hours during their first four semesters of attendance. About 30 percent of the non-graduates took nine or less hours during their first four

semesters of attendance as compared to about ten percent of the graduates who took nine or less hours their first four semesters of attendance.

Also to be considered is the fact that during the first semester there were 778 graduates and non-graduates who first enrolled. For the second semester 662 students enrolled: 389 graduates and 273 non-graduates. The enrollment for the graduates does not vary for the next two semesters, 389 students, but the enrollment for the non-graduates was 184 for the third semester, and finally 126 for the fourth semester.

TABLE XX

HOURS TAKEN FIFTH SEMESTER OF ATTENDANCE

	1 to 3	4 to 6	7 to 9	10 or more	Totals
Grads	6	17	16	103	142
%	4	12	11	73	100%
Non-grads	4	6	3	10	23
%	17	26	13	44	100%
Totals	10	23	19	113	165
Chi-square = 10.985 df = 3 (7.815)					

Since most of the graduates had succeeded by the end of the fourth semester, only 35 percent enrolled for the fifth semester (see above Table). By the end of the fourth semester there were very few non-graduates left. Even with so few numbers, it can be seen that the graduates continue to take more hours each semester than do non-graduates.

There is a statistical difference between graduates and non-graduates and the number of hours they take during their first five semesters. The significance is greatest at the beginning of the college career and becomes less significant with each successive semester. The last semester that shows there to be any statistical difference is the fifth semester of attendance.

Variables Not Statistically Significant at the Five Percent Level of Chi-Square

Nine separate variables were found not to be statistically significant: (1) SRA Social Science Reading scores, (2) disqualification, (3) hours transferred in from a higher education institution first attended before enrolling at the Junior College, (4) number of courses repeated, (5) attendance at another institution before enrolling at the Junior College, (6) residency, (7) total SCAT score, (8) sex, and (9) withdrawal to attend another institution of higher education and then returned to the Junior College.

TABLE XXI

SOCIAL SCIENCE SRA READING SCORE

	0 to 25	26 to 50	51 to 75	76 to 100	Totals
Grads	0	4	1	3	1
%	0	50	12	38	100%
Non-grads	3	2	5	7	17
%	18	12	30	40	100%
Totals	3	6	6	10	25

Chi-square = 5.392 df = 3 (7.815)

There was no statistical difference between the scores earned by those graduates and non-graduates who had taken the SRA Reading Test. Perhaps the use of this particular part of the SRA Test was not a wise decision. However, it was randomly selected from the other SRA scores given on

the National Merit Test. To have selected one of the others after having found out how weak the Reading part was would have contaminated the findings.¹³

TABLE XXII

DISQUALIFICATION

	Disqualified once	Disqualified 2 or more	Totals
Grads	18	1	19
%	95	5	100%
Non-grads	68	20	88
%	77	23	100%
Totals	86	21	107

Chi-square = 3.021 df = 1 (3.841)

The statistical difference between the graduates and the non-graduates who were disqualified was near significant. Yet the variable must be considered not statistically significant.

¹³Oscar Buros, ed., Mental Measurements Yearbook, (New Jersey: Gryphon Press, 1959), p. 20.

TABLE XXIII
HOURS TRANSFERRED IN

	1 to 15	16 to 30	31 to 45	46 plus	Totals
Grads	24	8	2	0	34
%	71	24	5	0	100%
Non-grads	9	2	1	1	13
%	69	15	8	8	100%
Totals	33	10	3	1	47

Chi-square = 2.959 df = 3 (7.815)

There was no statistical significance between the graduates and the non-graduates and the number of hours that they may have transferred in from an institution of higher education before first enrolling at the Junior College. As Table XXIII above shows, only 55 students had attended another institution before coming to Grand Rapids Junior College.

TABLE XXIV

REPEATING COURSES

	Never	once	twice	three or more	Totals
Grads	306	56	17	10	389
%	79	14	4	3	100%
Non-grads	319	49	16	5	389
%	82	12	4	2	100%
Totals	625	105	16	5	778

Chi-sqaure = 2.476 df = 3 (7.815)

When the graduates who had repeated courses were compared with non-graduates who had also repeated courses, there was found to be no statistical difference between the two groups and the number of courses each may have taken. As Table XXIV above shows, almost as many graduates as non-graduates had repeated courses the same number of times.

TABLE XXV

RESIDENCY

	Resident	Nonresident	Totals
Grads	276	112	389
%	71	29	100%
Non-grads	258	131	389
%	66	34	100%
Totals	535	243	778

Chi-square = 2.091 df = 1 (3.841)

There was found to be no statistical difference between graduates and non-graduates and whether they were residents or non-residents of the city of Grand Rapids. The above table shows that almost as many graduates were residents as non-graduates, and almost as many graduates as non-graduates were non-residents of Grand Rapids.

TABLE XXVI

ATTENDED ANOTHER INSTITUTION BEFORE
ENROLLING AT THE JUNIOR COLLEGE

	Once	twice	Totals
Grads	31	2	33
%	94	6	100%
Non-grads	18	4	22
%	82	18	100%
Totals	49	6	55

Chi-square = 1.995 df = 1 (3.841)

There was no statistical difference between the graduates and the non-graduates and the number of institutions that they may have attended before enrolling at the Junior College. This lack of statistical significance is in keeping with the findings on Table XXIII on page 80 that showed that there was also no statistical difference between the graduates and non-graduates and the number of hours that they may have transferred in from the institution they may have attended before enrolling at the Junior College.

TABLE XXVII

SCAT SCORES

	0 to 25	26 to 50	51 to 75	76 to 100	Totals
Grads	4	15	17	23	59
%	7	25	29	39	100%
Non-grads	2	13	18	27	60
%	3	21	30	46	100%
Totals	6	28	35	50	119

Chi-square = 1.150 df = 3 (7.815)

There was no statistical difference between graduates and non-graduates and the results of their SCAT scores when measured at the five percent level of Chi-square.

TABLE XXVIII

SEX

	Males	Females	Totals
Grads	225	164	389
%	58	42	100%
Non-grads	237	157	389
%	60	40	100%
Totals	457	321	778

Chi-square = 0.325 df = 1 (3.841)

There was no statistical difference between the graduates and the non-graduates and the number of males and females in each group. There were almost as many male graduates as there were male non-graduates, and almost as many non-graduates were females as there were female graduates. The data are similar to that reported by Medsker and Knoell in their study.¹³

¹³See reference to Medsker and Knoell, p. 18.

TABLE XXIX

VOLUNTARILY WITHDREW TO
ATTEND ANOTHER INSTITUTION OF
HIGHER EDUCATION

	Once	Twice	Totals
Grads	5	5	10
%	50	50	100%
Non-grads	1	1	2
%	50	50	100%
Totals	6	6	12

Chi-square = 0.000 df = 1 (3.841)

There was no statistical difference between graduates and non-graduates and the number of times that they may have withdrawn to attend another institution before they graduated from the Junior College.

Multipartite Variables Found Not to be Statistically Significant at the Five Percent Level of Chi-square

Types of Courses Taken First Six Semesters of Attendance

TABLE XXX

TECHNICAL-VOCATIONAL COURSES TAKEN THIRD SEMESTER

	One	two	three or more	Totals
Grads	40	20	25	89
%	45	22	33	100%
Non-grads	40	13	5	58
%	69	22	19	100%
Totals	80	33	30	147

Chi-square = 13.666 df = 7 (14.067)

There was found to be no statistical difference between graduates and non-graduates and the number of technical-vocational courses that they may have taken the third semester of attendance.

TABLE XXXI

TECHNICAL-VOCATIONAL COURSES TAKEN SECOND SEMESTER

	one	two	three or more	Totals
Grads	42	15	26	83
%	51	18	31	100%
Non-grads	39	14	13	66
%	59	21	20	100%
Totals	81	29	39	149

Chi-square = 11.331 df = 6 (12.592)

There was found to be no statistical difference between graduates and non-graduates and the number of technical-vocational courses that they may have taken their second semester of attendance.

TABLE XXXII

TECHNICAL-VOCATIONAL COURSES TAKEN FIRST SEMESTER

	One	two	three or more	Totals
Grads	44	7	19	70
%	63	10	28	100%
Non-grads	56	13	17	86
%	65	15	20	100%
Totals	100	20	30	156

Chi-square = 7.396 df = 6 (12.592)

There was found to be no statistical difference between graduates and non-graduates and the number of technical-vocational courses that they may have taken during their first semester of attendance.

TABLE XXXIII

TECHNICAL-VOCATIONAL COURSES TAKEN FOURTH SEMESTER

	One	two	three or more	Totals
Grads	41	18	28	88
%	47	20	34	100%
Non-grads	22	11	5	38
%	58	29	13	100%
Totals	63	29	33	126

Chi-square = 7.369 df = 7 (14.067)

There was found to be no statistical difference between graduates and non-graduates and the number of technical-vocational courses that they may have taken their fourth semester of attendance.

TABLE XXXIV

SOCIAL SCIENCE COURSES TAKEN FOURTH SEMESTER

	One	two	three or more	Totals
Grads	118	99	69	286
%	41	34	25	100%
Non-grads	38	30	12	80
%	47	37	16	100%
Totals	156	129	81	366

Chi-square = 3.488 df = 4 (9.488)

There was found to be no statistical difference between graduates and non-graduates and the number of Social Science courses that they may have taken during their fourth semester of attendance.

TABLE XXXV

SCIENCE COURSES TAKEN SECOND SEMESTER

	One	two	three or more	Totals
Grads	177	74	20	271
%	65	27	8	100%
Non-grads	100	50	11	161
%	62	31	7	100%
Totals	277	124	31	432

Chi-square = 3.172 df = 3 (7.815)

There was found to be no statistical difference between graduates and non-graduates and the number of Science courses that they may have taken during their second semester of attendance.

TABLE XXXVI

SCIENCE COURSES TAKEN FOURTH SEMESTER

	One	two	three or more	Totals
Grads	116	66	26	208
%	56	32	12	100%
Non- grads	35	23	4	62
%	56	37	4	100%
Totals	151	89	30	270

Chi-square = 2.597 df = 4 (9.488)

There was found to be no statistical difference between graduates and non-graduates and the number of Science courses that they may have taken during their fourth semester of attendance.

TABLE XXXVII

TECHNICAL-VOCATIONAL COURSES TAKEN SIXTH SEMESTER

	One	two	three or more	Totals
Grads	5	5	8	18
%	28	28	44	100%
Non-grads	1	2	0	3
%	33	67	0	100%
Totals	6	7	8	21

Chi-square = 2.528 df = 3 (7.815)

There was found to be no statistical difference between graduates and non-graduates and the number of technical-courses that they may have taken during their sixth semester of attendance.

TABLE XXXVIII

SCIENCE COURSES TAKEN THIRD SEMESTER

	One	two	three or more	Totals
Grads	136	71	25	232
%	59	31	10	100%
Non-grads	56	33	7	96
%	58	34	8	100%
Totals	192	104	31	328

Chi-square = 2.520 df = 3 (7.815)

There was found to be no statistical difference between graduates and non-graduates and the number of Science courses that they may have taken during their third semester of attendance.

TABLE XXXIX

SOCIAL SCIENCE COURSES TAKEN FIRST SEMESTER

	One	two	three or more	Totals
Grads	178	88	11	277
%	64	32	4	100%
Non-grads	136	78	4	218
%	62	36	2	100%
Totals	314	166	15	495

Chi-square = 2.490 df = 2 (5.991)

There was found to be no statistical difference between graduates and non-graduates and the number of Social Science courses that they may have taken during their first semester of attendance.

TABLE XL

SOCIAL SCIENCE COURSES TAKEN FIFTH SEMESTER

	One	two	three or more	Totals
Grads	40	26	15	81
%	49	32	19	100%
Non-grads	5	3	0	8
%	62	38	0	100%
Totals	45	29	15	89

Chi-square = 1.794 df = 4 (9.488)

There was no statistical difference between graduates and non-graduates and the number of Social Science courses that they may have taken during their fifth semester of attendance.

TABLE XLI

HUMANITIES COURSES TAKEN FIFTH SEMESTER

	One	two	three or more	Totals
Grads	37	31	10	78
%	47	40	13	100%
Non-grads	6	5	0	11
%	55	45	0	100%
Totals	43	36	10	89

Chi-square = 0.158 df = 5 (11.020)

There was found to be no statistical difference between graduates and non-graduates and the number of Humanities courses that they may have taken during their fifth semester of attendance.

TABLE XLI I

HUMANITIES COURSES TAKEN SIXTH SEMESTER

	One	two	three or more	Totals
Grads	25	9	4	38
%	66	24	10	100%
Non-grads	5	3	0	8
%	63	37	0	100%
Totals	30	12	4	46

Chi-square = 1.337 df = 3 (7.815)

There was found to be no statistical difference between graduates and non-graduates and the number of Humanities courses taken sixth semester of their attendance.

TABLE XLIII

SOCIAL SCIENCE COURSES TAKEN SIXTH SEMESTER

	One	two	three or more	Totals
Grads	19	10	5	34
%	56	29	15	100%
Non- grads	2	2	0	4
%	50	50	0	100%
Totals	21	12	5	38

Chi-square = 1.091 df = 3 (7.815)

There was found to be no statistical difference between graduates and non-graduates and the number of Social Science courses that they may have taken during their sixth semester of attendance.

TABLE XLIV

SCIENCE COURSES TAKEN SIXTH SEMESTER

	One	two	three or more	Totals
Grads	20	6	2	28
%	71	21	8	100%
Non- grads	3	1	0	4
%	75	25	0	100%
Totals	23	7	2	32

Chi-square = 0.312 df = 2 (5.991)

There was found to be no statistical difference between graduates and non-graduates and the number of Science courses they may have taken during their sixth semester of attendance.

TABLE XLV

SCIENCE COURSES TAKEN FIFTH SEMESTER

	One	two	three or more	Totals
Grads	43	11	4	38
%	74	19	7	100%
Non-grads	8	2	0	10
%	80	20	0	100%
Totals	51	13	4	68

Chi-square = 0.734 df = 2 (5.991)

There was found to be no statistical difference between graduates and non-graduates and the number of Science courses that they may have taken during their fifth semester of attendance.

TABLE XLV I

TECHNICAL-VOCATIONAL COURSES TAKEN FIFTH SEMESTER

	One	two	three or more	Totals
Grads	14	9	12	35
%	40	26	34	100%
Non-grads	5	3	2	10
%	50	30	20	100%
Totals	19	12	14	45

Chi-square = 0.782 df = 3 (7.815)

There was found to be no statistical difference between graduates and non-graduates and the number of technical-vocational courses that they may have taken during their fifth semester of attendance.

The Number of Hours Taken Each Semester of Attendance

TABLE XLVII

NUMBER OF HOURS TAKEN THE EIGHTH SEMESTER

	1 to 3	4 to 6	7 to 9	10 plus	Totals
Grads	4	6	7	6	23
%	17	26	31	26	100%
Non-grads	1	0	0	0	1
%	100	0	0	0	100%
Totals	5	6	7	6	24

Chi-square = 3.965 df = 3 (7.815)

There was found to be no statistical difference between graduates and non-graduates and the number of hours that they may have taken during their eighth semester of attendance.

TABLE XLVIII

NUMBER OF HOURS TAKEN THE SIXTH SEMESTER

	1 to 3	4 to 6	7 to 9	10 or more	Totals
Grads	7	16	11	49	83
%	8	19	13	60	100%
Non-grads	3	3	1	5	12
%	25	25	8	42	100%
Totals	10	19	12	54	95

Chi-square = 3.662 df = 3 (7.815)

There was found to be no statistical difference between graduates and non-graduates and the number of hours that they may have taken during their sixth semester of attendance.

TABLE XLIX

NUMBER OF HOURS TAKEN THE SEVENTH SEMESTER

	1 to 3	4 to 6	7 to 9	10 or more	Totals
Grads	2	10	9	15	36
%	6	28	25	41	100%
Non- grads	1	1	1	1	4
%	25	25	25	25	100%
Totals	3	11	10	16	40

Chi-square = 2.074 df = 3 (7.815)

There was found to be no statistical difference between graduates and non-graduates and the number of hours that they may have taken during their seventh semester of attendance.

TABLE L

NUMBER OF PHYSICAL EDUCATION COURSES TAKEN

	Three	four	five or more	Totals
Grads	49	33	17	99
%	49	34	17	100%
Non- grads	16	11	5	32
%	50	34	16	100%
Totals	65	44	22	131

Chi-square = 1.583 df = 6 (12.592)

There was found to be no statistical difference between graduates and non-graduates and the number of physical education courses beyond the required number of two hours taken during their college career.

TABLE LI

NUMBER OF HOURS TAKEN THE NINTH SEMESTER

	1 to 3	4 to 6	7 to 9	10 or more	Totals
Grads	3	5	4	3	15
%	20	33	27	21	100%
Non-grads	0	0	0	0	0
%	0	0	0	0	0
Totals	3	5	4	2	15

Chi-square = 0.000 df = 0

Inasmuch as there were no non-graduates who took course work during their ninth semester, it was not possible to compare the graduates with any other group.

TABLE LII

NUMBER OF HOURS TAKEN THE TENTH SEMESTER

	1 to 3	4 to 6	7 to 9	10 or more	Totals
Grads	2	4	0	2	8
%	25	50	0	25	100%
Non-grads	0	0	0	0	0
%	0	0	0	0	0
Totals	2	4	0	2	8

Chi-square = 0.000 df = 0

Inasmuch as there were no non-graduates in attendance the tenth semester, it was not possible to compare the graduates with any other group.

Number of Different Courses Taken During Summer Sessions

TABLE LIII

SCIENCE COURSES TAKEN SUMMERS

	One	two	three	Totals
Grads	57	5	1	63
%	90	8	2	100%
Non-grads	16	0	0	16
%	100	0	0	100%
Totals	73	5	1	79

Chi-square = 1.649 df = 2 (5.649)

No statistical difference was found between graduates and non-graduates and the number of Science courses that they may have taken during their attendance at summer sessions.

TABLE LIV

SOCIAL SCIENCE COURSES TAKEN DURING SUMMER SESSIONS

	One	two	three	Totals
Grads	54	21	1	76
%	71	28	1	100%
Non-grads	20	4	0	24
%	83	17	0	100%
Totals	74	25	1	100

Chi-square = 1.565 df = 2 (5.991)

There was found to be no statistical difference between graduates and non-graduates and the number of Social Science courses that they may have taken during their summer session attendance.

TABLE LV

NUMBER OF HUMANITIES COURSES TAKEN DURING SUMMER SESSIONS

	One	two	three	Totals
Grads	33	15	5	53
%	62	28	9	100%
Non- grads	12	6	1	19
%	63	32	5	100%
Totals	45	32	6	72

Chi-square = 0.345 df = 2 (5.991)

There was found to be no statistical difference between graduates and non-graduates and the number of Humanities courses taken during attendance at summer sessions.

TABLE LVI

TECHNICAL-VOCATIONAL COURSES TAKEN SUMMER SESSIONS

	One	two or more	Totals
Grads	5	2	7
%	71	29	100%
Non-grads	3	0	3
%	100	0	100%
Totals	8	2	10

Chi-square = 1.071 df = 1 (3.841)

There was found to be no statistical difference between graduates and non-graduates and the number of technical-vocational courses that they may have taken during their attendance at summer sessions.

Number of Hours Taken During Summer Attendance

TABLE LVII
NUMBER OF HOURS TAKEN FIRST SUMMER

	1 to 3	4 to 6	7 or more	Totals
Grads	21	71	14	136
%	15	52	33	100%
Non-grads	14	24	10	48
%	29	50	10	100%
Totals	35	95	54	184

Chi-square = 5.151 df = 2 (5.991)

There was found to be a near statistical difference between graduates and non-graduates and the number of hours that they may have taken during their first attendance at summer sessions. However, the findings were below the five percent level of Chi-square and are therefore not significant.

TABLE LVIII

NUMBER OF HOURS TAKEN SECOND SUMMER

	1 to 3	4 to 6	7 or more	Totals
Grads	5	10	7	22
%	23	45	32	100%
Non-grads	2	5	2	9
%	22	56	22	100%
Totals	7	15	9	31

Chi-square = 0.338 df = 2 (5.991)

There was found to be no statistical difference between graduates and non-graduates and the number of hours they may have taken the second summer session of attendance.

TABLE LVIX

NUMBER OF HOURS TAKEN THE THIRD SUMMER

	1 to 3	4 to 6	7 or more	Totals
Grads	1	4	0	5
%	20	80	0	100%
Non-grads	0	0	0	0
%	0	0	0	0
Totals	1	4	0	5

Chi-square = 0.000 df = 0

Inasmuch as there were no non-graduates who took any hours during a third summer session, it was not possible to statistically compare the graduates with any other group.

Testing the Hypothesis

The hypothesis to be tested was:

There will be no significant relationship between the student characteristics of the graduating group and the non-graduating group as determined by an analysis of selected characteristics available in the student cumulative records.

Thirteen of the variables tested were found to be statistically significant beyond the five percent level of Chi-square: (1) Junior College grade point average, (2) continuous attendance, (3) attended summer sessions, (4) high school cumulative grade point average, (5) program affiliate, (6) discontinuous attendance, (7) number of times on probation, (8) age last semester of attendance, (9) semester of first withdrawal, (10) type of high school attended, (11) Cooperative English Expression Test score, (12) semester of second withdrawal, and (13) Cooperative Reading Test score.

Two other variables were also found to be statistically significant, but only in part. The first variable, the type of courses taken each semester of attendance, consisted of twenty-five parts. Seven of the parts were found to be statistically significant beyond the five percent level of Chi-square: (1) number of Humanities courses taken the third semester of attendance, (2) number of Social Science courses taken the third semester of attendance, (3) the number of Humanities courses taken the second semester of attendance, (4) the number of Social Science courses taken the second

semester of attendance, (5) the number of Humanities courses taken the first semester of attendance, (6) the number of Science courses taken the first semester of attendance, and (7) the number of Humanities courses taken the fourth semester of attendance. These seven parts of the variable tested --the type of courses taken each semester of attendance-- therefore reject the hypothesis and prove the thesis.

The second multipartite variable, the number of hours taken each semester of attendance, consisted of ten parts: one for each of ten semesters. Because the first five semesters were found statistically significant beyond the five percent level of Chi-square, they therefore rejected the hypothesis and prove the thesis.

Nine separate variables which were found not to be statistically significant at the five percent level of Chi-square did not reject the hypothesis: (1) SRA Social Science Reading score, (2) disqualification, (3) hours transferred in, (4) number of courses repeated, (5) attended another institution first, (6) residency, (7) SCAT score, (8) sex, and (9) voluntarily withdrawal to attend another institution and then return to the Junior College. These nine variables disprove the thesis.

Also not statistically significant at the five percent level of Chi-square was the three-part variable measuring the number of hours taken during three different summer sessions. This variable does not reject the hypothesis and therefore disproves the thesis.

In thirteen of the twenty-five variables the hypothesis is rejected and the thesis proved. Two other variables consisting of thirty-five parts only partially reject the hypothesis: seven of the parts rejected the hypothesis, the other eighteen did not reject the hypothesis. These two multipartite variables therefore only partially prove the thesis.

Summary

The purpose of this chapter was to present the findings of the statistical comparison between graduates and non-graduates for twenty-five variables. Thirteen of the variables were found to have a statistical significance at the five percent level of Chi-square when graduates and non-graduates were compared:

1. Junior College grade point average
2. Attended in a continuous pattern
3. Attended summer sessions
4. High school cumulative GPA
5. Program affiliate
6. Attended in a discontinuous pattern
7. Number of times on probation
8. Age last semester of attendance
9. Semester of first withdrawal
10. Type of high school attended
11. Cooperative English Expression Test score
12. Semester of second withdrawal

13. And, Cooperative Reading Test score.

Of the thirteen variables found to be statistically significant, Junior College GPA was the most significant with a Chi-square of 252.218. Cooperative Reading Test score was the lowest with a Chi-square of 14.982.

Two other multipartite variables were found to be statistically significant only in part. The first of these multipartite variables, the type of courses taken each semester of attendance, consisted of twenty-five parts. Seven of the parts were found to be statistically significant beyond the five percent level of Chi-square:

1. The number of Humanities courses taken the third semester of attendance.
2. The number of Social Science courses taken the third semester of attendance.
3. The number of Humanities courses taken the second semester of attendance.
4. The number of Social Science courses taken the first semester of attendance.
5. The number of Humanities courses taken the first semester of attendance.
6. The number of Science courses taken the first semester of attendance.
7. And, the number of Humanities courses taken the fourth semester of attendance.

The number of Humanities courses taken the third semester of attendance had the highest Chi-square of the

seven with a Chi-square of 20.595. The seventh part had a low Chi-square of 17.637.

The second multipartite variable, the number of hours taken each semester of attendance, was found to have five of the ten parts statistically significant beyond the five percent level of Chi-square. Beginning with the first semester of attendance and continuing on in numerical order, the Chi-square for each of the first five semesters of attendance was 63.443; 59.093; 45.663; 28.247; and 10.985.

There were nine separate variables which were found not to be statistically significant beyond the five percent level of Chi-square:

1. SRA Social Science Reading score
2. Disqualification
3. Hours transferred in from institutions attended before enrolling at the Junior College
4. The number of courses repeated
5. Attended another institution before enrolling at the Junior College
6. Residency
7. Total SCAT score
8. Sex
9. And, voluntary withdrawal to attend another institution and then return to the Junior College.

SRA scores had the highest Chi-square of 3.393, and the lowest Chi-square was the ninth variable Withdrawal to attend another institution and then return to the Junior College

with a Chi-square of 0.000.

The last variable to be tested was the multipartite variable measuring the number of hours taken during summer sessions. All three parts of the variable were found not to be statistically significant beyond the five percent level of Chi-square: three separate summer sessions were measured.

Of the twenty-five variables tested, thirteen were found to be statistically significant when graduates and non-graduates were compared at the five percent level of Chi-square. Two multipartite variables were found to be partially significant with only twelve of the thirty-five parts being found to be statistically significant. Nine separate variables were found not to be statistically significant, and one multipartite variable was also found not to be significant in any of its parts.

It can therefore be said that in thirteen of the twenty-five variables the hypothesis was rejected and the thesis proved. In two multipartite variables the hypothesis was partially rejected and thus in this case the thesis is only partially proved. In nine separate variables the hypothesis was not rejected and therefore the thesis was not proved; and in one other multipartite variable the hypothesis was not rejected and thus the thesis was not proved.

CHAPTER VI

SUMMARY, CONCLUSIONS, RECOMMENDATIONS, AND IMPLICATIONS FOR FURTHER STUDY

Summary

The Problem

The purpose of this study was to compare the graduates and the non-graduates on the basis of the data found in the student cumulative records and to determine if the findings could be used to determine if a student could graduate from the Junior College.

Delimitations of the Study

This study was limited to the investigation of those who graduated during the academic year of 1965-66 and to those who may have enrolled at the same time that the graduates did but did not graduate. The study was further limited in that the data are applicable primarily to Grand Rapids Junior College and may be applied to conditions in other institutions only to the extent that conditions in those other institutions are similar to those of Grand Rapids Junior College.

Review of Related Literature

Much has been published on the quantitative aspect of both the senior college student and the junior-community

college student. Most of the four-year college studies deal with the problem of attrition. And although a number of two-year college studies also dealt with attrition, there seemed to be a number of others which dealt with other facets of the junior-community college student: sex, residency, high school GPA, junior college GPA, the "Trial" student, and the time of admission to the junior college.

The review of related literature presented in this study was divided into three broad categories: (1) the DeLisle study of student characteristics, (2) studies of student characteristics of two-year college students, and (3) studies of student characteristics of four-year college students.

The literature reviewed for this study tends to support the idea that student characteristics can be used to identify the successful student who will probably graduate as compared to the unsuccessful student who will not graduate.

Methodology

The data upon which this study was based were obtained from both the student cumulative records kept in the office of the registrar and in the counseling center at Grand Rapids Junior College. The cumulative records for students who graduated in 1966 and of those who had originally matriculated at the same time as the graduates but did not graduate were used. A total of 389 graduates and 389 non-graduates comprised the sample used.

Twenty-five variables were selected from the student

cumulative records as being related to curriculum.

The data obtained from the student cumulative records were then divided into two groups: those which required only one column on the IBM card and those which required two or more columns on the IBM card. Chi-square was applied to each of the variables, and the five percent level of confidence was used for the statistical test of significance.

The College and the Community

Grand Rapids Junior College was created in 1914 and is the oldest public junior college in Michigan. Early in its growth, the College was closely associated with the University of Michigan. Because of this association, the College's curriculum tends to emphasize the transfer function. Only recently has greater attention in developing the technical-vocational curriculum been given.

The area that the College serves tends to be the center of population for Kent County. About one-half of the population of Kent County lives in the greater Grand Rapids area and its suburbs.

Review of the Findings

Thirteen of the twenty-five variables measured were found to be statistically significant at the five percent level of Chi-square. Presented in the order of significance, the Junior College GPA was found to be the most significant variable for differentiating between graduates and non-graduates. A student's pattern of continuous attendance

was nearly as significant as Junior College GPA. Chi-square for Junior College GPA was 252.218, and for continuous attendance, it was 219.077. The third variable which was found to be significant was the variable which measured the number of times that a student attended summer sessions. It had a Chi-square of 65.115. The cumulative high school GPA for the last semester of attendance had a Chi-square of 58.319; the fifth variable, program affiliation, had a Chi-square of 49.074; discontinuous attendance was next with a Chi-square of 40.624; probation was seventh with a Chi-square of 37.589; age was eighth and had a Chi-square of 35.533; the ninth variable, semester of first withdrawal, had a Chi-square of 23.753; the tenth variable, the type of high school attended, had a Chi-square of 23.196; the score of the Cooperative English Expression Test was eleventh with a Chi-square of 19.443; twelfth was the semester of second withdrawal with a Chi-square of 16.051; and the score of the Cooperative Reading Test was the thirteenth variable to be found to show a statistical difference. It had a Chi-square of 14.982. There is therefore a statistical difference between graduates and non-graduates and the above thirteen variables.

Two other multipartite variables were found to be significant at the five percent level of Chi-square and thus indicated that there was some measureable difference between graduates and non-graduates. However, there were only seven areas out of thirty-five that showed that there was a difference between the two groups. It was found that graduates tended

to take more courses in the Humanities and the Social Sciences during their third and second semesters of attendance. In their fourth semester of attendance graduates tended to take two or more Humanities courses. And in the first semester the graduates tended to take more Science and Humanities courses. The data is presented in the order of statistical significance. Only in these seven areas was there a statistical difference between graduating and non-graduating students.

The second multipartite variable, the number of hours taken each semester of attendance, was found to have five of the ten parts showing a statistical difference between graduating and non-graduating students. Beginning with the first semester of attendance and continuing on in numerical order, the Chi-square for each of the first five semesters of attendance was 63.443; 59.903; 45.663; 28.247; and 10.983. After the fifth semester of attendance, there was found to be no statistical difference between graduates and non-graduates.

Nine of the remaining variables were not found to be statistically significant at the five percent level of Chi-square when graduating and non-graduating students were compared:

(1) SRA Social Science Reading score, (2) disqualification from college, (3) the number of hours transferred in from an institutions first attended, (4) the number of courses repeated, (5) residency, (6) the number of institutions first attended, (7) SCAT score, (8) sex, and (9) the number of times a student voluntarily withdraws to attend another institution and then returns to the Junior College.

Lastly, there was one multipartite variable which measured the number of hours taken during the student's attendance for three separate summer sessions. It too was found not to be statistically significant at the five percent level of Chi-square and therefore shows that there was no statistical difference between the graduating and nongraduating student.

Conclusion

It is possible on the basis of thirteen of the twenty-five variables tested which were found in the student cumulative record to determine which students will probably succeed to graduation. It is also possible on the basis of twelve parts of two different multipartite variables found in the student cumulative records to determine which students will probably succeed to graduation. Specifically, it can be concluded that:

1. Students who have completed their degree requirements and have a cumulative GPA between 2.00 and 3.50 the last semester of attendance will probably graduate. Thus although there may be students who also have a cumulative GPA between 2.00 and 3.50 their last semester of attendance, they may not have completed their degree requirements.

2. Students who are in attendance for successive semesters will probably graduate from the Junior College.

3. Students who had a cumulative high school GPA between 2.00 and 3.50 are more likely to graduate from the Junior College.

4. Students who attend summer sessions will probably graduate from the Junior College.

5. Students who pursue a Practical or Registered Nursing program will probably not graduate from the Junior College.

6. Students who do not follow a pattern of not enrolling for successive semesters will probably graduate from the Junior College.

7. Students who avoid being placed on probation will probably graduate from the Junior College.

8. Graduating students at Grand Rapids Junior College are more apt to be 19 or 20 years of age than 21 or older.

9. Students who withdraw once are less apt to graduate.

10. Students who attend the Grand Rapids public high schools are more apt to graduate from the Junior College.

11. Graduating Junior College students tend to score in the upper quartile on the Cooperative English Expression Test.

12. Students who withdraw a second time will probably not graduate from the Junior College.

13. Graduating Junior College students tend to score in the upper quartiles of the Cooperative Reading Test.

14. Junior College students who take two or more courses of Humanities, Social Science, and Sciences during their first four semesters of attendance will probably graduate.

15. And, students who take ten or more hours during their first five semester that they are in attendance will probably graduate.

In thirteen of the twenty-five variables tested there is a strong statistical difference between graduating and non-

graduating students. In two other variables the statistical difference is not as pronounced but does exist in twelve of the thirty-five parts of the two multipartite variables.

As a further result of this inquiry into some of the quantitative and qualitative aspects of the differences between graduating and non-graduating students at Grand Rapids Junior College, several overriding conclusions appear warranted.

High school students who anticipate a college career should be made aware of the high degree of relationship between both high school and the Grand Rapids Junior College GPA and academic success leading to graduation. This is a job that can not be done solely by the high school staff. The current popularity of the "follow-up" of the high school student to the college he has matriculated is the type of program that can be used. To some degree the staff at the Junior College does this. However, when the high schools are visited generally the remarks are directed to the seniors or the juniors.

Although most of the Junior College graduates came from the city public high schools, an even larger number of non-graduates came from non-city public high schools. It would seem that greater effort to articulate between the Junior College and the non-city public high schools is needed. Also needed is a more effective orientation program for the non-city public high school student.

According to the 7th Mental Measurements Yearbook, the random selection of the SRA Social Studies Reading scores was an unfortunate choice. Euros, the editor of the "Yearbook," claims that the Social Studies Reading test is not a good

instrument for measuring a student's reading ability. Since there was found to be no statistical difference between the graduating and non-graduating student who had taken the SRA Test, the information supplied by Buros becomes unimportant. However, Buros claims that the SCAT Test is an acceptable instrument for measuring ability. Since the SCAT scores for the Grand Rapids Junior College student who graduated and the non-graduate were found not to be statistically different, some question could be raised over the lack of difference found between the two groups. One can conclude that not enough of either group took the test and thus lowered the significant difference or that those who did take the test may have been mainly from one ability level and thus confounded the results. More investigation would be necessary in order to accurately answer the rhetorical question.

As in the findings reported in Chapter II, withdrawal by the non-graduating student was greatest during or at the end of the first semester of attendance. Either these students did not find their needs being fulfilled by the type of programs open to them and thus transferred to another institution, or they found that they were unable to keep up with their classmates and withdrew dissatisfied and perhaps disappointed.

Inasmuch as only about one-half of the variables were found to be statistically significant in showing that there were measureable differences between graduating and non-graduating students, it becomes difficult to defend the theory that the data in the cumulative records could be used for institutional development. Of course, some of the data have

indirect reference to institutional development, but some of the more meaningful variables such as sex, residency, and the use of the college's facilities during the summer months were not proved. Any argument defending institutional development on the basis of student cumulative records can not be substantiated. However, two observations about curriculum can be made and thus indirectly reflect upon institutional development: (1) more planning and program development is needed in the Evening College so as to be truly serving that segment of the population seeking courses of an Adult Education type--many of the students who withdraw during or at the end of the first semester may be those who found that evening courses were too academic in their orientation; and (2) more planning and program development is needed for the developmental or low level ability student who may also be withdrawing during or at the end of the first semester because he cannot compete with the more able student on a regular basis.

Inasmuch as the Grand Rapids Junior College is in a state of transition as it slowly moves toward becoming a comprehensive community college in the legal sense of the word, the need for in-service training becomes paramount. The information obtained from the student cumulative records would be helpful in aiding the teacher to structure his course material so as to best serve the various ability levels of his students. Furthermore, the data obtained from the records tend to be of the type that would aid the staff in becoming aware of the population changes and thus differing needs of the student body: e.g., the ratio of men to women; the number of non-city

public high school students who graduate; the patterns of attendance for graduating and non-graduating students; and the scholastic averages of both the graduating and non-graduating students.

Thus in two of the three areas that this researcher thought that the cumulative records would be helpful--curriculum development and in-service training -- were the theories able to be defended. The third area, facilities planning, although lacking in substantiation in a more direct manner, was indirectly proved by those type of data relative to curriculum development.

Recommendations

As a result of the study and the use of the student cumulative records as a basis for this study, a few observations are necessary:

1. The use of student cumulative folder and the type of filing system used need to be carefully planned. Presently there is duplication of both effort and material. For example, grades are recorded on the student transcript and then there is also a duplicate copy of the student's grade slip kept in the cumulative folder. Student records are kept by the semester of withdrawal and thus the graduating and non-graduating student records are located in the same files.

2. More evening and perhaps day Adult Education type courses seemed to be needed. If the public high schools are already meeting this need, then more emphasis is needed to inform the public as to where the adult educations are being offered.

3. More courses for the low ability level student are needed. For example, courses which enable students to take a slow pace English or Mathematics course, or even courses that take two semesters in order to cover the same material that is normally offered in one semester should be considered.

4. And, lastly, some record of the type of information one is apt to find in the cumulative records should be kept.

Implications for Further Study

The data gathered for this study have provided some evaluation and recommendations concerning curriculum development, in-service training, and probable institutional planning. They have also revealed other problem areas that will need more information. The following topics are noted as suggestions for further study and research:

1. An evaluative study of methods or systems of keeping student cumulative records.

2. An investigation on both a local basis at the Grand Rapids Junior College and on a statewide basis on some of the data which were found in the student cumulative records but were not used in this study: where transcript of grades are sent, the number of activities that the student was involved, and the length of time that the student or his family may have lived in Michigan.

3. And, to gather and publish the past and present institutional studies that many of the Michigan two-year colleges have done but have not made available to those interested in seeking to obtain such information.

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APPENDICES

PATTERN OF CONTINUOUS ATTENDANCE

Semesters -	two	three	four	five	six	seven	eight	nine	ten or more
Graduates	1	7	233	39	38	2	7	1	3 = 331
% across	.5	2.0	70	11.0	11.5	1.0	2.0	.5	1.5 = 100%
Non-graduates	85	47	98	5	6	1	0	0	0 = 242
% across	35	19	41	2	2	1	0	0	0 = 100%
Totals	86	54	331	44	44	3	7	1	3 = 573

Chi-square = 219.077 df = 6 (15.507)

PATTERNS OF DISCONTINUOUS ATTENDANCE

Semesters	two	three	four	five	six	seven	eight	nine	ten	Totals
Graduates	0	1	2	22	9	10	3	2	9	58
% across	0	2	4	42	17	18	6	4	17	
Non- graduates	9	11	4	9	1	2	1	0	0	37
% across	24	30	11	24	3	5	3	0	0	100%
Totals	9	12	6	31	10	12	4	2	9	90

Chi-square = 40.624 df = 8 (15.507)

SEMESTER OF FIRST WITHDRAWAL

Semester	First	second	third	fourth	fifth	sixth	seventh	Totals
Graduates	10	11	10	6	2	1	2	42
% across	24	26	24	14	5	2	5	100%
Non- graduates	126	91	44	37	3	4	0	305
% across	41	30	14	12	1	2	0	100%
Totals	136	102	54	43	5	5	2	347

Chi-square = 23.753 df = 6 (12.592)

SEMESTER OF SECOND WITHDRAWAL

Semester	First	second	third	fourth	fifth	sixth	seventh	eighth	ninth
Graduates	0	0	2	2	1	0	0	0	1
% across	0	0	33	33	16.5	0	0	0	16.5
Non-graduates	6	11	2	4	0	0	2	0	0
% across	24	44	8	16	0	0	8	0	0
Totals	6	11	4	6	1	0	2	0	1

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Chi-square = 16.051 df = 6 (12.592)