

AN ABSTRACT OF THE THESIS OF

CHARLES ROBARDS FIELDS for the DOCTOR OF PHILOSOPHY
(Name) (Degree)
in Education presented on 6-21-72
(Major) (Date)

Title: THE INFLUENCE OF AID AWARDS ON THE EDUCATIONAL
DECISIONS OF APPLICANTS FOR FRESHMEN YEAR
FINANCIAL AID AT OREGON STATE UNIVERSITY

Abstract approved:

Redacted for Privacy

Dr. Morris LeMay

Purpose This study was conducted to investigate the influence that awards of financial aid have on the educational decisions and academic achievement of applicants for freshman year financial aid at Oregon State University. The study was primarily concerned with the effectiveness of financial aid in assisting students to enroll and become established in college. Thus, students were followed only to the point where they returned or failed to return for the sophomore year.

Design The design of the study was twofold. First, the 2801 applicants for freshman year financial aid at OSU for the 1969-1970 and 1970-1971 academic years were classified as Aid Recipients (N=1354) and Non-Recipients (N=1447), and were compared with a systematic sample of Non-Applicants (N=742) in terms of 1) matriculation rates, 2) withdrawal rates, 3) suspension rates, 4) freshman

year GPA, 5) number of credit hours completed, and 6) return rates for the sophomore year.

For the second part of the study, the Aid Recipient group was sub-grouped according to the type and amount of aid awarded and these sub-groups were compared in terms of the six variables above.

Data for each of the years under study were analyzed separately to permit comparisons between years. By controlling the variables of sex, age and scholastic aptitude and achievement, conclusions regarding the effects of aid awards were drawn.

Scholastic aptitude and achievement were controlled in the study by using multiple regression equations which were generated to predict freshman year GPA's for each student. The resulting predicted GPA was used as a covariate in testing the hypotheses concerned with academic achievement.

Several statistical models were employed to test the hypotheses regarding differences among the groups studied. Aid Recipients, Non-Recipients and Non-Applicants were compared using chi-square analysis and analysis of variance. Multi-variate discriminant analysis and least-squares analysis of covariance were conducted to compare Aid Recipients who were classified by the type and amount of aid awarded.

Conclusions When the students who applied for financial aid were grouped into the categories of Aid Recipients and Non-Recipients,

and compared to a sample of Non-Applicants, the following conclusions were drawn:

1. Awards of aid are effective in increasing the matriculation rates of applicants for freshman year financial aid at Oregon State University.
2. Aid Applicants have higher predicted GPA's and have higher levels of academic achievement at OSU during the freshman year than do Non-Applicants.
3. Awards of aid do not affect the withdrawal rates, suspension rates, freshman year GPA, number of credit hours completed, or return rates for the sophomore year of applicants for freshman year financial aid.

When the students in the Aid Recipient category were subgrouped according to the type and amount of aid awarded, and these sub-groups were compared, the following conclusions were drawn:

4. The type of aid awarded to Aid Recipients does not affect their matriculation rates, withdrawal rates, suspension rates, freshman year GPA, number of credit hours completed, or return rates for the sophomore year.
5. The amount of aid awarded to Aid Recipients does not affect their matriculation rates, withdrawal rates, suspension rates, freshman year GPA, number of credit hours completed, or return rates for the sophomore year.

The Influence of Aid Awards on the Educational Decisions of
Applicants for Freshmen Year Financial Aid at
Oregon State University

by

Charles Robards Fields

A THESIS

submitted to

Oregon State University

in partial fulfillment of
the requirements for the
degree of

Doctor of Philosophy

June 1973

APPROVED:

Redacted for Privacy

Associate Professor of Education
in charge of major

Redacted for Privacy

Acting ~~Dean of the School of Education~~
Dean of the School of Education

Redacted for Privacy

Dean of Graduate School

Date thesis is presented 6-21-72

Typed by Susie Kozlik for Charles Robards Fields

ACKNOWLEDGMENTS

I wish to express sincere appreciation to my major professor, Dr. Morris LeMay, who guided and prodded me along the path to the completion of this study. Dr. LeMay provided direction, encouragement and support during the entire doctoral program and I owe him a debt of gratitude.

I wish to thank the other members of my doctoral committee, Dean Robert Chick, Dr. Shelby Price, Dr. Tjeerd VanAndel, Dr. David Phelps and Dr. William Crooks, for their continued assistance and support.

Dr. Norbert Hartmann provided many hours of consultation in the design of this study and the analysis of the data. His efforts are sincerely appreciated.

I am indebted to Richard Pahre, Financial Aid Director at Oregon State University, for his complete cooperation in making the study data readily available.

My wife, Margie, has unselfishly supported my efforts throughout the doctoral program. Without her constant encouragement and support it would not have been completed. Thank you to a wonderful wife.

TABLE OF CONTENTS

<u>Chapter</u>		<u>Page</u>
I	THE PROBLEM	1
	Introduction	1
	Increasing Enrollments	1
	Increasing Costs	5
	Increasing Support	6
	Changing Philosophy	8
	Theoretical Background	11
	Purpose of the Study	13
	Statement of the Problem	15
	Hypotheses	16
	Importance of the Study	19
	Limitations of the Study	21
	Definitions of Terms	22
	Summary	25
II	REVIEW OF RELATED LITERATURE	26
	Talent Loss	27
	Talent Loss Before Initial College Enrollment	28
	Talent Loss During the College Years	33
	The Effects of Financial Aid	38
	Summary	47
III	RESEARCH DESIGN AND METHODOLOGY	48
	Description of Student Groups	48
	Financial Aid Applicants	48
	Non-Applicants	50
	Sub-Groups	51
	Sources of the Data	51
	Treatment of the Data	52
	Preparation of the Data	52
	Prediction Formula	54
	Analyses Employed	59
	Summary	62
IV	RESULTS AND DISCUSSION	62
	Results	62
	Hypothesis One	62
	Hypotheses Two Through Seven	65
	Hypothesis Eight	73

<u>Chapter</u>	<u>Page</u>
Hypotheses Nine Through Thirteen	77
Discussion	88
Matriculation	90
Achievement and Number of Hours Completed	91
Use of the Counseling Center	92
Persistence	93
Summary	94
V SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	95
Summary	95
Conclusions	97
Recommendations for Further Research	98
BIBLIOGRAPHY	100

LIST OF TABLES

<u>Table</u>	<u>Page</u>
1 Number of Aid Recipients and Non-Recipients at Oregon State University, 1969-1970 and 1970-1971	50
2 Number of Students in Samples of Non-Applicants	51
3 Number of Students in Sub-Groups	51
4 Number of Pre-Freshman Applicants for Financial Aid at Oregon State University, 1969-1970 and 1970-1971	63
5 Mean Predicted GPA of Pre-Freshman Applicants for Financial Aid	63
6 Matriculation Rates of Aid Recipients, Non-Recip- ients and Non-Applicants	64
7 Comparison of Matriculation Rates: Aid Recipients, Non-Recipients and Non-Applicants	64
8 Number of Matriculated Aid Applicants, 1969-1970 and 1970-1971	66
9 Number of Students in Samples of Non-Applicants	66
10 Mean Predicted GPA of Matriculated Aid Applicants and Non-Applicants	66
11 Withdrawal Rates of Aid Recipients, Non-Recipients and Non-Applicants	67
12 Comparison of Withdrawal Rates: Aid Recipients, Non-Recipients and Non-Applicants	67
13 Suspension Rates of Aid Recipients, Non-Recipients and Non-Applicants	68
14 Comparison of Suspension Rates: Aid Recipients, Non-Recipients and Non-Applicants	68

<u>Table</u>		<u>Page</u>
15	Counseling Center Usage by Aid Recipients, Non-Recipients and Non-Applicants	70
16	Comparison of Mean Freshman Year GPA: Aid Recipients, Non-Recipients and Non-Applicants	70
17	Comparison of Mean Number of Credit Hours Completed: Aid Recipients, Non-Recipients and Non-Applicants	71
18	Return Rates of Aid Recipients, Non-Recipients and Non-Applicants	72
19	Comparison of Return Rates: Aid Recipients, Non-Recipients and Non-Applicants	72
20	Number of Pre-Freshman Aid Recipients Awarded Various Types of Aid, 1969-1970 and 1970-1971	74
21	Mean Amount of Aid Awarded to Aid Recipients (Dollars)	74
22	Mean Predicted GPA of Aid Recipients	75
23	Comparison of 1969-1970 Aid Recipients: Students Who Matriculated Versus Those Who Did Not	76
24	Comparison of 1970-1971 Aid Recipients: Students Who Matriculated Versus Those Who Did Not	77
25	Number of Matriculated Aid Recipients Awarded Various Types of Aid, 1969-1970 and 1970-1971	78
26	Mean Amount of Aid Awarded to Matriculated Aid Recipients (Dollars)	79
27	Mean Predicted GPA of Matriculated Aid Recipients	79
28	Comparison of 1969-1970 Aid Recipients: Students Who Withdrew Versus Those Who Did Not	80
29	Comparison of 1970-1971 Aid Recipients: Students Who Withdrew Versus Those Who Did Not	80

<u>Table</u>		<u>Page</u>
30	Comparison of 1969-1970 Aid Recipients: Students Who Were Suspended Versus Those Who Were Not	81
31	Comparison of 1970-1971 Aid Recipients: Students Who Were Suspended Versus Those Who Were Not	82
32	Mean Freshman Year GPA of Aid Recipients Awarded Various Types of Aid	83
33	Relationship of Variables to Freshman Year GPA, 1969-1970	83
34	Relationship of Variables to Freshman Year GPA, 1970-1971	84
35	Mean Number of Credit Hours Completed by Aid Recipients Awarded Various Types of Aid	85
36	Relationships of Variables to Number of Credit Hours Completed, 1969-1970	85
37	Relationship of Variables to Number of Credit Hours Completed, 1970-1971	86
38	Comparison of 1969-1970 Aid Recipients: Students Who Returned Versus Those Who Did Not	87
39	Comparison of 1970-1971 Aid Recipients: Students Who Returned Versus Those Who Did Not	87

THE INFLUENCE OF AID AWARDS ON THE EDUCATIONAL DECISIONS OF APPLICANTS FOR FRESHMEN YEAR FINANCIAL AID AT OREGON STATE UNIVERSITY

I. THE PROBLEM

Introduction

The scope, complexity and philosophy of financial aid programs for college and university students have changed drastically in the years since World War II. Several trends can be identified which have influenced these rapid changes.

Recent years have seen a strengthening of society's commitment to implement the American goal of education for everyone who has the capacity to benefit from it. The results of this commitment have been an increase in the proportion and number of students attending college, an increase in financial support to students pursuing higher education, and fundamental changes in the underlying philosophy of student financial aid. These trends, coupled with expanding costs of higher education have and will continue to have a profound impact on programs of student financial aid.

Increasing Enrollments

The 1960's evidenced sharply increased enrollments in institutions of higher education; this trend is expected to continue. The

rapid rise in enrollments stems in part from America's growing population and is compounded by a developing national feeling that post-high school education should be available to every student who wants it. It is expected that by 1975 college enrollments will equal more than four times the 2.2 million students enrolled in 1951 (Young and Taylor, 1967).

Hoyt (1968) stated that there has been an increasing proportion of youngsters seeking education beyond high school:

The ratio of number of college students to the total number in the 18-21 age group has risen steadily from 14 out of 100 in 1939 to 46 out of 100 in 1965. It is expected to reach 55 out of 100 by 1974. (p. 1)

Edith Green (1971) reported figures for the percentage of young people aged 18-24 who were in colleges and universities during the past two decades. The proportion rose from 14.2 percent in 1950, to 22.2 percent in 1960, and to 31.1 percent in 1970.

Data from the U. S. Office of Education documented the rapid growth of colleges and universities between 1950 and 1971. While private institutions had gains of 89 percent during that period, public institutions experienced gains of 447 percent (U. S. News and World Report, 1971b).

Tickton (1969), making projections based on data from the Census Bureau, the U. S. Office of Education, the Bureau of Labor Statistics, and the Department of Commerce, projected a jump of 41 percent in the size of the college-age population between December 1965 and July 1980. Given the changing aspirations for higher education

of American youth, particularly at the lower socioeconomic levels, he foresaw a 103 percent increase in the number of college students during this same 15 year span. Tickton also pointed out that expected increase in college-going among adults beyond the typical college age will influence enrollments considerably.

Aspirations of the poor to college education has begun to catch up with those of the rich. For the lowest income quartile, the proportion of high school seniors who hoped to attend college doubled from 23 percent in 1959 to 46 percent in 1966 (Froomkin, 1970).

Many feel that increases in college enrollment will taper off in the early 1980's and others believe that growth will decline even sooner. A recent survey of 227 colleges and universities conducted by the College Entrance Examination Board projected that Western area colleges and universities may be about three percent smaller in 1972 than they were in 1971. Nationally, admission of new students is expected to be up about one percent (Oregonian, 1972).

Cartter (1971), in predicting an oversupply of Ph.D.'s in the near future, projected that college enrollments will peak out in the early 1980's and then continue to decline. Others feel that while the 1980's will see a leveling off of college enrollment, this will be followed by a period in the 1990's when enrollments will soar again. These projections, included in a report by the Carnegie Commission

on Higher Education, were based on data collected in 1971 (Newsweek, 1971).

Many of the institutions which are showing decreases are small private colleges with relatively high costs (U. S. News and World Report, 1971a). Many students who might have gone to private institutions are now attending local two-year schools or large state institutions. Gallant and Prothero (1972) pointed out that accompanying the tremendous growth of college enrollments in the last decade has been a trend toward concentration of students in immense state institutions.

In attempting to make enrollment projections, researchers point out factors which seem to be at work in slowing the growth of college enrollments. These factors include rising costs, growing doubts among parents and students about the worth of a college diploma, reduced pressure from the military draft, changing life styles of young people, and declining birth rates (U. S. News and World Report, 1971a and 1971b).

Although enrollment projections vary, there appears to be general agreement that while enrollments may level off in a decade or so, the long-range prediction is for continued growth in the number of students attending colleges and universities. The rising population coupled with increasing propensity to attend college will have a substantial influence on financial aid programs in the years ahead.

Increasing Costs

As are virtually all goods and services in the United States today, educational costs are rising sharply. Young and Taylor (1967) indicated that institutional educational expenses per student (1965-66 dollars) rose in public institutions from \$944 in 1955-56 to \$1131 in 1965-66, and projected that the figure will jump to \$1314 by the year 1975-76.

Of particular interest is the fact that these increasing institutional costs are causing tuitions of public colleges and universities to rise faster than family income (Young and Taylor, 1967).

The U. S. Office of Education (U. S. News and World Report, 1971b) documented the increase of educational costs to students in its data regarding average costs to undergraduates for tuition, fees, room and board. The average cost jumped in public colleges from \$845 in 1960-61 to \$1324 in 1971-72. For private colleges these figures were \$1599 and \$2844, respectively. The costs cited were for undergraduates paying resident tuition and did not include such items as books, clothing, transportation and other personal expenses.

The rise in educational expenses coupled with the efforts of many families to put most or all of their youngsters through college can have a considerable effect on average family finances.

Increasing Support

The recent federal commitment to higher education has been impressive. Beginning shortly after the launching of Russia's first Sputnik satellite in 1957, federal legislatures have appropriated unprecedented amounts of funds for student financial aid.

The National Defense Student Loan Program and the Graduate Fellowship Program, authorized by the National Defense Education Act of 1958; the College Work-Study Program, part of the Economic Opportunity Act of 1964; and the Educational Opportunity Grants Program and Insured Student Loan Program, both provisions of the Higher Education Act of 1965, have provided a great amount of financial assistance to college students.

From 1963 to 1968 undergraduate student support from the U. S. Office of Education increased from \$91 million to \$494 million. By 1968 federally supported programs provided some aid to one out of every four undergraduates in the United States. This meant that the number of college students receiving federal grants and loans reached 1 1/4 million in that year (U. S. Dept. of H. E. W., 1969). During the fiscal year of 1969 federal student financial aid amounted to over one-half billion dollars (Hester, 1970).

The U. S. government has traditionally been a major provider of funds to support education at all levels. However, as Bowman

(1967) pointed out, the form of this support is changing:

Historically, the support has been directed toward the institutions in terms of grants, appropriations, tax support, and a host of other means. With the growing emphasis on accessibility to higher education for more of America's youth, has come an increasing support of programs devoted to student financial aid. (p. viii)

The Secretary of the Department of Health, Education and Welfare, William J. Cohen, reported that federal commitment to higher education jumped from \$2.5 billion in 1963 to almost \$6 billion in 1968. He added (U. S. Dept. of H. E. W., 1969) that:

Expenditures by institutions of higher education have increased from about 1.4 per cent of the gross national product in 1960 to about 2.3 per cent at the present time. It is essential that we make as our goal an increase to about 3.3 per cent by 1976 in order that higher education may offer high-quality education to the 10 million young people who will be attending college at that time. (p. iii)

Twenty-one states presently have scholarship programs which amplify the total picture of student assistance. The largest of these state programs is New York's, which distributed \$75 million for the year 1967-68 (Chambers, 1968).

Representative Edith Green, in pointing out the broad spectrum of student aid, describes programs in addition to those that are institutionally based. Under veterans' and social security programs funds are sent directly to students rather than being administered by the college or university. Both programs are substantial and have grown in recent years. Veterans received \$939 million in fiscal year

1970; the educational program of Social Security amounted to nearly \$44 million during that year (Green, 1971).

There is every indication that these dramatic increases in direct financial assistance to college students will continue in the forthcoming years. Currently there are bills before the House of Representatives and the Senate which deal with student financial aid in the future. Representative Edith Green introduced in the House the Higher Education Act of 1971 (H. R. 7248), Title IV of which extends, with revisions, existing programs of student aid for five years. In the Senate, Senator Claiborne Pell sponsored a bill entitled the Educational Amendments of 1971 (S. 659) which contains the reauthorization of present higher education programs, also with revisions, until mid-1975 (Pell, 1971; Newsletter, 1971). It would appear that programs of student financial aid will continue to expand in the years ahead.

Changing Philosophy

Financial assistance to college students has traditionally been offered to make possible attendance for those who could not afford to attend otherwise. During and shortly after World War II, however, with the reduced supply of students there existed a surplus of scholarship funds at many institutions of higher education (Dickson, 1969). Given this surplus of scholarship endowments, many colleges in the early 1950's offered scholarships not on the basis of need but as an

effort to attract and reward outstanding students. These surpluses quickly disappeared and institutions returned to the criterion of need as a basis for offering student aid.

There has been a recent emphasis on utilizing student financial aid to reduce inequities in educational opportunity which exist in American society. Ample evidence exists that the higher the family income the more likely a youngster will attend college. The President's Task Force on Higher Education (Hester 1970) reported that while less than 20 percent of high school graduates whose family incomes were under \$3000 enrolled in college by the February after graduation, this figure was over 86 percent for those whose family incomes were \$15,000 and over.

Most of the present rationale given for student aid programs centers around the desire and need to promote educational opportunity for American citizens. This concern for raising the level of education in the United States is founded on two basic arguments. First, it is felt that our increasingly complex society requires greater numbers of highly trained citizens to deal with the sophisticated problems which will need to be faced. Education is expected to bring about a major advance in American life and in American efforts toward a peaceful and progressive world (Chambers, 1968).

The second basic argument for raising the educational level in the United States is that higher education breaks down barriers to

social mobility and is likely to equalize incomes and help achieve a society with fewer inequalities and tensions (Froomkin, 1970).

Froomkin stressed democratization of education as an element in social stability:

As our society becomes more affluent, more and more parents desire some college experience for their children. Denying these expectations may very well create social stresses detrimental to the fiber of this democracy. (p. 18).

Nichols (1965) saw an additional benefit of increasing numbers of college students from lower socioeconomic levels. He stated that diversity among students is educationally constructive, an educational resource that contributes to the actual learning experiences of students.

In President Johnson's education message of February, 1968, he directed the Secretary of Health, Education and Welfare to begin preparing a long-range plan for the support of higher education in America. The changing philosophy of higher education and financial aid administration was manifested in the report of Secretary William J. Cohen (U. S. Dept. of H. E. W., 1969):

The Federal Government should adopt as its explicit long range goal the removal of financial barriers so that post-secondary education is guaranteed to all persons capable of benefitting from it. (p. 30)

Theoretical Background

One basic theory which underlies most financial aid programs for college and university students is that such aid makes higher education available to students who otherwise would not be able to attend college because of financial reasons. It is assumed that removing the financial barrier to colleges will increase the number and proportion of college students coming from lower socioeconomic levels. Proponents of aid programs point out the nation's talent loss from capable youth who do not pursue higher education because of financial limitations.

This theory was supported by Crawford's study (1966) designed to measure the effectiveness of offers of financial aid in securing the college attendance of talented students with financial need. In studying 1958-1959 National Merit Scholarship participants he found that students who were offered aid more frequently enrolled in college immediately after high school and were less apt to interrupt or discontinue their college studies than the same type of students not offered aid.

A report from the Secretary of the Department of Health, Education, and Welfare listed two major objectives of federal support to higher education (U. S. Dept. of H. E. W. , 1969). They were to increase the number and proportion of educated people in the United

States and to insure equality of opportunity for higher education. The secretary was optimistic about student financial aid's potential in bringing about this equal opportunity when he estimated that giving a \$500 subsidy to every high school graduate in the lowest half of the income distribution would increase first-year enrollment for this group by over 25 percent in two years. He concluded that lack of funds, rather than lack of talent, prevents many students from pursuing higher education.

In addition to enabling low-income students to enroll in college, it is assumed that financial aid, in the process of lessening financial problems for students, reduces personal problems which are linked to financial worries.

Concern is being expressed as to whether student financial aid is fulfilling its stated goal of equalizing educational opportunity, and research is needed in this area. The question arises whether student aid equalizes opportunities or simply makes it easier for those who would attend college anyway.

Hester (1970) pointed out the many reasons beside lack of funds that prevent talented young people from attending college. Among these reasons he included lack of motivation, confidence, knowledge of opportunities, and lack of academic preparation.

Both Hoppock (1957) and Super (1953) in their theories of choice described factors in addition to financial position which affect

educational and occupational choices made by individuals. Personality characteristics, self-concept, interests, values, and cultural and sociological factors all have influences on college-going decisions made by students.

Loan programs may be ineffective in encouraging low-income youth to attend college. Critchfield (1967), in a paper on the implications for colleges and universities of long-term credit, described the problem.

For too many of the students who should be reached in society's growing efforts to provide equal opportunity, the thought of borrowing recalls only past parental indebtedness that was the center of strife and disappointment within a life of poverty. (p. 67)

Critchfield also pointed out the possibility that loan programs might just enable students to attend more expensive institutions rather than make it possible for all qualified students to enroll in some institution of higher education.

More needs to be known about the field of student financial aid, about the true effectiveness of aid programs in encouraging capable low-income students to seek higher education, and about the performance of aid recipients who attend college.

Purpose of the Study

The purpose of this study was to investigate the effects of awards of financial aid on the educational decisions of freshman aid applicants

at Oregon State University for the 1969-1970 and 1970-1971 years.

The study was composed of two basic segments. The first compared three groups: 1) Aid applicants who were awarded aid (Aid Recipients), 2) Aid applicants who were not awarded aid (Non-Recipients), and 3) Students who did not apply for aid (Non-Applicants).

The second segment of the study compared Aid Recipients who were classified by the amount and type of aid they were awarded.

The above groups were compared in terms of 1) matriculation rates, 2) withdrawal rates, 3) suspension rates, 4) use of the Counseling Center, 5) freshman year GPA, 6) number of credit hours completed, and 7) return rates for the sophomore year.

By making the above comparisons, conclusions regarding the effects of financial aid could be drawn.

Applicants for student financial aid at OSU may be awarded one or more of three basic types of aid: non-repayable grants, repayable loans, or work in a work-study program. Those students awarded aid are most frequently awarded a financial aid "package" which consists of a combination of two or three types of aid.

Using the three basic types of aid there were seven possible packages which an applicant might have been awarded:

1. Grant only
2. Loan only
3. Work only

4. Grant and loan
5. Grant and work
6. Loan and work
7. Grant, loan and work

Aid Recipients were classified in this study according to which of the above seven financial aid packages they were offered and by the dollar amount of aid offered by the OSU Financial Aid Office.

The primary purpose of the study was to investigate the influence that financial aid awards, and type and amount of aid awarded, had on the educational decisions of aid applicants.

In addition, the study attempted to make some estimate of the adjustment of aid recipients to the college environment. It was assumed that a student's use of the Counseling Center was evidence of a perceived personal problem on the part of the student which he sought assistance in solving. The study attempted to investigate the effect that receiving aid had on freshman student usage of the Counseling Center.

Statement of the Problem

The problem investigated by this study can be summarized by a series of questions:

1. Do awards of financial aid affect matriculation rates of students who apply for freshman aid at OSU?

2. Do awards of aid affect students during their freshman year in terms of the following:
 - A. Withdrawal rates
 - B. Academic suspension rates
 - C. Academic achievement
 - D. Number of credit hours completed
3. Do awards of aid to students during their freshman year affect their return rates for the sophomore year?
4. Do the type of aid and amount of aid awarded affect aid recipients in terms of the variables in questions one-three above?
5. Do awards of aid affect student usage of the OSU Counseling Center?

Hypotheses

To permit tests of statistical significance, hypotheses developed from the above five questions were stated as null hypotheses.

The following thirteen hypotheses were the basic ones tested. It was believed that a measurement of the predicted achievement of each student would be valuable as a control so that differences in the value of a given dependent variable would not be largely the result of original differences in potential for academic achievement.

At the time the basic hypotheses were tested the effects of sex and predicted achievement on each of the dependent variables were also tested, as were hypotheses regarding the effects of the interaction of sex and type of aid awarded.

Hypothesis One: There is no significant difference in the freshman year matriculation rates of

- A. Aid Recipients
- B. Non-Recipients
- C. Non-Applicants

Hypothesis Two: There is no significant difference in the freshman year withdrawal rates of

- A. Aid Recipients
- B. Non-Recipients
- C. Non-Applicants

Hypothesis Three: There is no significant difference in the freshman year academic suspension rates of

- A. Aid Recipients
- B. Non-Recipients
- C. Non-Applicants

Hypothesis Four: There is no significant difference in the freshman year usage of the Counseling Center by

- A. Aid Recipients
- B. Non-Recipients

C. Non-Applicants

Hypothesis Five: There is no significant difference in the mean freshman year GPA of

- A. Aid Recipients
- B. Non-Recipients
- C. Non-Applicants

Hypothesis Six: There is no significant difference in the mean number of credit hours completed during the freshman year by

- A. Aid Recipients
- B. Non-Recipients
- C. Non-Applicants

Hypothesis Seven: There is no significant difference in the return rates for the sophomore year of

- A. Aid Recipients
- B. Non-Recipients
- C. Non-Applicants

Hypothesis Eight: There is no significant difference between Aid Recipients who matriculate and those who do not in terms of

- A. Type of aid awarded
- B. Amount of aid awarded

Hypothesis Nine: There is no significant difference between Aid Recipients who withdraw and those who do not in terms of

A. Type of aid awarded

B. Amount of aid awarded

Hypothesis Ten: There is no significant difference between Aid Recipients who are suspended and those who are not in terms of

A. Type of aid awarded

B. Amount of aid awarded

Hypothesis Eleven: There is no significant relationship between the type and amount of aid awarded to Aid Recipients and freshman year GPA.

Hypothesis Twelve: There is no significant relationship between the type and amount of aid awarded to Aid Recipients and the number of credit hours completed during the freshman year.

Hypothesis Thirteen: There is no significant difference between Aid Recipients who return to OSU for the sophomore year and those who do not in terms of

A. Type of aid awarded

B. Amount of aid awarded

Importance of the Study

Student financial aid as it functions today is a very new field and much research is needed. Little is known about financial aid recipients and the influence that aid has on them. Even less is known about the effects of specific types of aid such as grants, loans and work.

The effectiveness of present financial aid programs is of great concern to financial aid administrators, faculty, students, legislators, and parents. Research involving students who are offered aid as well as those who are not can enable administrators to better evaluate their programs and determine the extent to which they are meeting stated goals.

College and university administrators need to know how much and in what ways the objectives of financial aid programs relate to the overall goals of the institution. It is important that they know if aid programs complement the educative mission of the college and if aid to students reduces hardships and worries which prohibit them from taking full advantage of the institution's educational offerings.

Taxpayers and legislators have a legitimate interest in the use of state and federal funds for student aid. It is important that financial aid administrators be able to demonstrate the effectiveness of aid programs in equalizing educational opportunity and to indicate the extent to which aided students find academic success in college.

Research and evaluation is a basic component of any effective student personnel program. Increased knowledge of students and the effectiveness of programs will enable student personnel administrators to improve their services to students and gain support for their programs.

Limitations of the Study

This study is concerned with the effectiveness of aid awards in securing the college attendance of applicants for freshman financial aid at Oregon State University. The study deals only with students who have shown enough confidence and motivation to apply for college admission and financial aid. It does not attempt to answer the question of how effective financial aid would be in effecting the college enrollment of capable students with financial need who do not apply for aid. There may well be significant motivational differences between high school students who apply for financial aid and those who do not.

Another factor not considered in this study is the effect that guarantees of aid would have on the college-going decisions of capable needy students if the aid offers were received early in their high school careers, while students were beginning to solidify educational and vocational plans.

Disadvantaged students who were provided for through the OSU Educational Opportunity Program were not included in the study. Also excluded were applicants for freshman financial aid who were not Oregon high school seniors at the time of application for aid. It was felt that inclusion of these groups might produce unique variables which would make results of the study less meaningful.

The study is limited to the matriculation rates and performance of freshman students, and follows students only to the point where they return or fail to return for their second year. The study does not deal with the influence of aid on the persistence and graduation rates of college students.

While certain factors were controlled in the selection and comparisons of groups (i. e. age, sex, and academic aptitude and achievement), other potentially important factors related to college-going were not considered. These possible influences include birth order, size and location of home town, quality of high school counseling, socioeconomic status, and parental encouragement.

Conclusions are based on an investigation of freshman aid applicants at one state university over a period of two years. Replications of this study at other institutions would demonstrate the extent to which valid generalizations could be made.

Definition of Terms

Oregon State University Oregon State University (OSU), one of three state universities in Oregon, is located in Corvallis. A land-grant institution, it emphasizes programs in agriculture, science and technical fields, and has approximately 16,000 students.

Financial Aid Applicant To be considered for financial aid a student must have submitted to Oregon State University an application

for aid and a statement of his family's financial situation.

Financial Need Financial need exists when a student's educational expenses exceed what he and his parents can reasonably be expected to contribute toward his education. OSU requires that each applicant for aid have his parents submit a Parent's Confidential Statement to the College Scholarship Service (CSS) of the College Entrance Examination Board. The CSS computes expected family contributions and sends a report to the Financial Aid Office at OSU. This report as well as judgements made by the financial aid officers are used to determine the amount and type of aid to be awarded. Financial need is the primary consideration in awarding most financial aid.

Predicted GPA For each aid applicant an OSU freshman year grade-point-average was predicted based on the applicant's high school grade-point-average and Scholastic Aptitude Test scores. The prediction formula was generated from data on 1970 OSU freshmen and is described in Chapter III.

Student Financial Aid The three basic types of financial aid awarded to students (grants, loans and work) are described below:

1. Grants may be called grants, scholarships or awards and are non-repayable. They may be funded from federal, state or other sources. Scholarships for freshmen from the state

of Oregon and federal Educational Opportunity Grants are the primary sources of grant aid awarded at Oregon State University.

2. Loans are repayable, with the interest usually being deferred or paid by the federal government until a specified time following graduation or withdrawal from college. National Defense Student Loans (NDSL) and Guaranteed Student Loans (GSL) are the basic types of loans issued or recommended by OSU. NDSL funds come from the federal government and are administered by the institution, while GSL funds come from students' local banks with the government guaranteeing the loans and in most cases paying interest which accrues while the student is in college.
3. Work as a type of financial aid is provided through the federal government's College Work-Study Program. In this program new positions are created for college students. Students may work up to an average of 15 hours per week while attending classes and may work full-time during vacations. Eighty percent of their wages are paid by the government, the remainder is paid by the departments for which they work.

Matriculation Matriculation is enrolling in classes at Oregon State University after having been admitted. Many students are

admitted who do not in fact matriculate.

Withdrawal A student was considered to have withdrawn from OSU if he did not complete the three quarters of his freshman year. This included withdrawing during a quarter or between quarters. Students who were suspended academically were not included in the withdrawal rates as suspension rates were studied separately.

Summary

The field of student financial aid is one which is growing and changing rapidly. While increasing numbers of students are seeking higher education, college costs are rising and institutions are distributing greater amounts of aid to students than ever before. Accompanying these changes is the need to evaluate programs of financial aid and determine the extent to which student financial assistance meets its stated objectives.

This study investigated the influence of financial aid on students who sought assistance in meeting educational expenses at Oregon State University.

II. REVIEW OF RELATED LITERATURE

A review of literature related to student financial aid reveals surprisingly little in the area of measuring the effectiveness of student aid. While the volume of publications regarding student financial aid has recently increased sharply along with the rapid growth of aid programs, there appears to be a minimum of well-designed research efforts in the field.

Joseph Froomkin (1968), assistant commissioner for program planning and evaluation for the United States Office of Education, pointed out the scarceness of well-conducted research and how little is known about the role student financial aid plays. He emphasized the need for financial aid officers to research the effect of the funds that they administer.

Most financial aid literature deals with descriptions of federal, state or private scholarship programs; philosophical discussions; personal opinions; or limited research studies, many of which failed to control potentially significant variables such as age, sex and aptitude of the students studied.

Literature related to this study may be grouped into two general categories: 1) talent loss, and 2) effects of financial aid.

Before reviewing the literature related to talent loss, "talent loss" should be analyzed. In the financial aid literature this phrase

is often used to describe the situation when a capable high school student does not continue his education in a traditional college or university. The theme that all capable youngsters should attend college runs through much of the literature.

Talent loss occurs when a capable young person who has the interest and desire to attend college is unable to do so. Perhaps in describing talent loss some authors fail to mention the element of desire to attend college because they feel it is assumed and there is no need to mention it. The writings of many authors, however, appear to reflect the philosophy that any capable young person who fails to attend college represents a talent loss.

Surely there are many capable youngsters whose motivations, talents, personalities and interests are such that they would be more productive and much happier citizens by pursuing some alternative type of post-high school training. Their not attending college does not represent a talent loss.

Talent Loss

The loss of talent to institutions of higher education can occur prior to the initial enrollment in college or during the college years once the student has enrolled.

Talent Loss Before Initial College Enrollment

Research findings vary as to the role that limited finances play in the college-going decision even though there is general agreement that a considerable number of talented high school graduates fail to attend college.

Joseph Froomkin (1968) reported that 42 percent of the freshmen entering colleges and universities in the United States in 1968 would come from families which ranked in the highest socioeconomic quartile. Freshmen with parents in the lowest socioeconomic quartile would account for only 12 percent of the entering freshman class. He pointed out that because of the dropout differential these figures will become even further out of balance as the students progress through college.

Sanders and Palmer (1965) conducted one of the most extensive studies found in the literature. In studying 5000 students in California they found that minority groups were markedly under-represented in California colleges, and that there was considerable under-representation from the lower to middle income groups.

The President's Task Force on Higher Education (Hester 1970) reported a direct relationship between family income and the probability that a youngster would attend college.

The conclusions reached by the above studies are that many talented high school graduates from low-income families never attend college, representing a tremendous talent loss to the nation.

Elmer West (1963) described a study concerned with the talent loss among National Merit examinees. In an analysis of reasons given for not going to college it was found that males indicated financial need and military service as the major reasons. Among females the first reason given was financial need; second, early marriage; and third, lack of interest in study. It was found that the greatest single deterrent to attending college among both males and females was financial need and that this reason was cited much more often by students from families with limited resources.

It was concluded that at least 60 percent of the males and 40 percent of the females from the population of National Merit examinees not enrolling in college could have been recruited for higher education if suitable financial aid had been available. It was felt that even more capable students could have been recruited into college if aid had been awarded as early as the junior year of high school.

Greenshields (1957) followed up graduates from eight public high schools in the state of Washington. In the spring of 1955 he received returns from 656 respondents and found that lack of finances was the reason most frequently stated for not going to college, but only 20 percent mentioned this reason. Greenshields warned that responses

given by those who completed the questionnaires might not always have been the true reasons why students made the decisions they did.

He mentioned that:

Uncertainty about ability is probably a more frequent reason for deciding not to attend college or being uncertain than the returns indicated. It is not flattering to admit that there is a doubt about ability to perform successfully in college. (p. 213)

Greenshields also concluded that his study supported the sociological hypothesis that a person is influenced in his attitudes and motivations by members of a primary group. In the decision to attend or not to attend college, he found that parents had the greatest influence while teachers, counselors and principals made up the second most important group of people influencing high school seniors. This second group was only about a third as important as the home influence.

Sewell and Shaw (1968), in a study of Wisconsin high school seniors who were followed for seven years, examined the influence of parents' education on educational aspirations and achievement of their children. The father's education had a slightly stronger effect on the perceived encouragement, plans, attendance, and graduation for males. The effect for females was that both the father's and mother's education had equal weight.

A state-wide study conducted by Ralph Berdie (1953) sought answers to the question of why high school graduates do not attend

college. In the January before they graduated, all high school seniors in the state of Minnesota were given questionnaires in order to identify their plans for the following year and to determine what background factors might be related to those plans.

One year after these students graduated from high school, a random sample of 2700 was selected. Questionnaires were sent to them to determine what they had done during the year following graduation. Three-fourths of those who planned to attend college actually did.

The results of Berdie's study supported the view that a student's home situation determines to a large extent whether or not he will attend college. Berdie felt that perhaps the most important thing that could be done to insure a qualified student's attending college would be to have him born into the proper home. He further pointed out that any program that hopes to affect the decisions made by capable students regarding college-going must attempt to influence the attitudes of both students and parents, as well as to reduce the economic barriers.

A National Science Foundation study (1962) declared that among the upper 30 percent scholastically of seventeen year-olds the largest single reason for failure to enter college appears to be inadequate financial resources. The study added that lack of money caused up to one-half of the male and one-third of the female college drop-outs.

Holland, Astin and Nichols (1963), in a published report for the National Merit Scholarship Corporation, attempted to quantify the extent of the nation's talent loss. They stated that if the top third of the graduating seniors in terms of scholastic ability is taken as the definition of talent, then the annual talent loss nationally is probably between 60,000 and 90,000.

The Project Talent study of a large national sample of high school students estimated that between 80,000 and 100,000 students in the upper one third of their graduating class in 1960 did not enter college, at least partly due to limited financial resources (Nash, 1969).

West (1963) pointed out that financial aid for students of high ability might tend to hasten rather than to increase college enrollment. This does reduce talent loss by making talent productive at an earlier age. West indicated that new funds might be more effective in reducing talent loss if awards were offered to less highly talented students. He added that the most important reservoir of wasted talent falls in the 70-95 percentile range of ability.

A perusal of the literature clearly indicates that there is a large number of capable high school graduates who do not go to college. This appears to be accepted as a fact. Controversy comes in trying to ascertain what role limited student funds play in this talent loss.

While the decision to attend or not to attend college is based on a complex of factors (i. e. socioeconomic background, student's

perception of his ability to succeed, sex, where the student lives, attitude of parents toward education, etc.) there appears to be little doubt but that the student's financial situation plays a considerable role in that decision.

Talent Loss During the College Years

In addition to the number of capable high school graduates who never enter college, there is a substantial number who begin college but drop out. A nation-wide study by Iffert (1957) estimated that 40 percent of entering freshmen never achieve a baccalaureate degree.

Different studies find a variety of reasons why students persist or withdraw. While the student's financial situation affects this decision, it does not appear to have the impact on the decision to continue or drop out that it has on the initial decision to start college or not.

Waller (1964) reviewed research over the prior thirty years and attributed one-third of college withdrawals to academic reasons, one-third to financial reasons, and one-third to motivational factors.

Summerskill (1962) suggested that the largest number of drop-outs is due to motivational reasons. He added that "unfortunately we do not know what motivational factors are predictive and we do not know how to measure accurately such motives in students." (p. 656)

Summerskill did state that lack of funds is among the leading causes of attrition.

Robert Hull (1969) studied freshmen in Oregon colleges and universities who received state scholarships for the 1967-68 year. Of the 963 recipients, 16.7 percent dropped out of college during their freshman year. A breakdown of the data showed the drop-out rates to be 5.4 percent at private colleges, 15.3 percent at state universities, and 19.3 percent at regional state colleges. Males tended to drop out at a slightly higher rate than females.

There was no extreme difference between the drop-out group and the total freshman scholarship recipient group in terms of variables such as family income, size of family, high school GPA, SAT scores, predicted college GPA, rank in high school class, size of high school, or amount of aid, although the drop-out group tended to be slightly lower in all areas except size of high school. Huff did not attempt to determine the reasons why students withdrew from college.

Faunce (1968a) studied academically gifted women who withdrew from the University of Minnesota before completing baccalaureate degree requirements. She followed up by mail 98 women who had entered the College of Liberal Arts in the years 1950 through 1958 and asked among other things why they had withdrawn from college.

Most of the 81 who responded to the questionnaire indicated several reasons for leaving the University of Minnesota. Forty-five

percent gave reasons involving marriage for withdrawing. Thirty-three percent of the women listed reasons related to lack of satisfactory educational goals and motivation, while work and financial reasons were stated by 31 percent of the sample.

Faunce (1968b) in another study probed personality differences between academically gifted women who persisted in college and those who did not. Using the Minnesota Multiphasic Personality Inventory she discovered that non-graduates had less insight into their own personality structures, greater difficulty in interpersonal relationships, more problems with impulse control, and greater inner tensions.

A 1961 study conducted at Indiana University by Clinton Chase (1968) looked at the non-persisting freshman. The drop-outs when compared to persisters had significantly lower SAT scores, were older, came from families where the father and mother had less education and ranked lower in their high school class.

In questionnaires which asked why students had withdrawn from college, the item checked most often was adjustment to college. Fifty-two percent of the respondents indicated this reason for dropping out. At least in the minds of the drop-outs, personal adjustment played an important role in their decision not to continue.

The second most often checked reason for withdrawal was uncertainty of vocational goals, indicated by 32 percent of the respondents. Health reasons were mentioned by 24 percent of the group

while 20 percent mentioned inadequate finances. Financial problems were not a major cause of withdrawal for freshmen at Indiana University.

A study conducted at Washington State College by Slocum (1956) found that financial problems played an important role in the decision to withdraw. Of the 494 drop-outs from Washington State College who were sent questionnaires, 39 percent rated inadequate finances as either important or very important in their decision to drop out. Finances were more frequently of concern to males. Women reported marriage most frequently.

Slocum also compared the drop-outs to a group of 460 enrolled students. He concluded that parental interest as perceived by the student is of great importance in connection with the decision of many to remain in college or leave. Slocum also found that a higher percentage of drop-outs (51 percent) perceived a barrier between themselves and the faculty than did the enrolled students (34 percent).

Stordahl (1970) reported on the influences of voluntary withdrawal from Northern Michigan University. The groups studied included all full-time undergraduates who were enrolled in the Spring Semester of 1966 and might have been expected to return in the fall but did not do so.

Of the 500 who did not return to Northern Michigan University, 60 percent had transferred to another institution and the remaining

40 percent had at least temporarily discontinued their college work.

The 200 who had dropped out of college indicated a variety of reasons for withdrawing. The factor rated most influential by men was military service and by women, employment. For women, marriage plans closely followed employment as influencing factors. Ratings of the influence of employment and financial problems on the decision to discontinue were consistently high for all groups (i. e. both sexes and all classes of students).

Pearl Max (1969) conducted a study of 7848 entering freshmen at The City University of New York. Those that dropped out were asked to indicate the major cause for withdrawal. Max found that the major reasons were not financial. The primary influences for men were lack of interest and low grades, while women indicated marriage and a lack of interest as being prime reasons for their withdrawal.

Perusal of the literature related to college persistence reveals that while financial problems are certainly related to college persistence, they do not appear to be the only cause nor even the primary one for withdrawal in most cases. Students withdraw from school for a variety of reasons, often a complex of several influences are at work. Still, from studies which have been conducted it seems apparent that adequate financial aid could be effective in reducing talent loss by enabling capable needy students to remain in college.

Financial concerns appear to play a lesser role in the decision to remain in college than they do in the initial decision to attend or not attend college. It would seem that the freshman year is a critical one and that financial aid awarded for this year has the greatest opportunity to affect the educational decisions of potential college students.

The Effects of Financial Aid

Well-designed research related to the effects of financial aid has been scarce. That which has been reported in the literature most frequently deals with highly talented students and is concerned with the effect of scholarships on college-going behavior. Little research has been done on the effects of loans and employment on the educational decisions of students or the effect of awards of aid on the moderately talented student.

One area that has been researched repeatedly is the relationship between student employment and classroom achievement.

Henry (1967) compared 204 full-time students who worked while attending the University of Missouri with 309 non-working students. When he controlled for ability, based on rank in high school class and scores on the School and College Ability Test, he found that there were no significant differences between the mean grade-point averages of workers and non-workers at any ability level. He concluded that

needy students could work up to 15 hours per week without sacrificing academic achievement.

In a small study involving freshmen males from the University of North Dakota and Bismarck Junior College conducted by Bradfield (1967) it was concluded that students enrolled in work-study programs who were from low-income families performed as well or slightly better academically than more affluent students not in a work-study program. Bradfield matched the two groups (36 students each) on the basis of American College Test scores.

Other researchers (Trueblood, 1957; Dickinson and Newbegin, 1959; Bryant, 1961; Kaiser and Bergen, 1968; and Hay and Lindsay, 1969) have conducted similar research on the effect of student employment on academic performance. There is general agreement that employment of up to 15 hours per week is not detrimental to the achievement of full-time college students.

Crawford (1966) conducted a large scale effort to determine the effects of receiving scholarships on the college-going decisions of talented students with limited financial means. From the population of 10,000 finalists in the 1959 National Merit Scholarship Program he selected the 1550 neediest students by reviewing detailed financial information submitted by their parents. Crawford included in his study only those whose families could not be expected to contribute

more than \$550 a year from their resources toward the college expenses of the student.

The purpose of Crawford's study was to determine the number of students with high ability but limited financial means who did not attend college in order to measure the effectiveness of offers of aid in securing their attendance. Crawford found that only 2.2 percent of those offered aid failed to attend college. In contrast, 24 percent of those not offered aid did not enroll in college.

Persistence in college through five semesters was also noted. For those enrolled with aid the loss was 17 percent; among those students enrolled without aid the loss was 33 percent.

Crawford concluded that offers of aid substantially increased the number of qualified students who entered college and improved their chances of persisting once they enrolled.

West (1963) cited an unpublished study conducted by Thistlethwaite under a contract with the U. S. Office of Education. This study also concerned itself with the talent loss among National Merit examinees. Thistlethwaite included the following statement in his conclusions.

When we control aptitude test scores, rank in high school class, amount of mathematics taken in high school, and such instrumental behaviors as applying for scholarships and loans, there still remains a significant positive correlation between exposure to scholarship offer and college attendance. The most plausible explanation of

these results is that scholarship offers cause some students to enroll in college who would not otherwise do so. (p. 88)

In his study Thistlethwaite asked the National Merit examinees who did not attend college when they had made the decision not to attend. Eighty percent of the men and 77 percent of the women reported making the decision during the junior year of high school or later. It appeared that four out of five of the non-attenders were still considering college as late as the junior year of high school and that if these students had had increased opportunity to obtain financial aid at the time they made their decisions the percentage enrolled in college would have been larger (West, 1963).

A previous study conducted by Thistlethwaite (1958) followed up 536 Merit Scholars in 1956. Questionnaires were sent to them at the end of their freshman year in an attempt to ascertain what effect receiving scholarships had had on their educational decisions. Thistlethwaite gave two warnings in interpreting his data. The figures were derived from subjective answers on questionnaires. Furthermore, the awards averaged \$630 with one-third being only \$100. It was not expected that small stipends would materially affect the decision to enter college.

Thistlewaite concluded that at least for the select group of students he studied, it did not appear that scholarship awards appreciably increased the number going to college. He added that "College-going behavior is clearly the result of many decisions extending over

the years; it may not be dramatically responsive to scholarship aid which is in the nature of a windfall in the senior year of high school." (p. 73)

Smith, Mathany and Milfs (1960) described a project in New Mexico designed to determine the extent to which scholarship offers to students who had not previously planned to attend college would affect their educational plans.

A survey of 1742 young people in New Mexico was undertaken in 1952, the year they graduated from high school. Comparisons were made of those who were offered aid and those who were not. Conclusions of the study estimated that the scholarship program brought about the enrollment in college of nearly 200 students who otherwise almost certainly would not have been able to attend. Approximately one-half of these students graduated, an attrition rate less than that in the college population of New Mexico generally.

A review of the research programs of the National Merit Scholarship Program (Holland, Astin and Nichols, 1963) led the authors to the conclusion that the effect of a scholarship depends primarily on the sex, attitudes, motivation and socioeconomic status of the recipient. For students with very high aptitude and socioeconomic status, scholarships seemed primarily to aid the student to attend the college of his first choice. However, "The main effect of such scholarships awarded to students from middle and low-income families is to increase

the students' chances of attending college and to raise their level of educational aspiration." (p. 26)

Schlekat (1968), writing in the College Board Review, also felt that offers of financial aid have varying effects on students from different socioeconomic classes.

For the son of an unemployed coal miner, "no" probably meant forgetting college altogether. For the son of a successful attorney, "no" probably caused merely some mild inconvenience. He might have to attend college at his own expense, perhaps, or he might elect another, less expensive and selective college. But he probably would go to college, while his lower class peers would not. (p. 13)

Smith, Mathany and Milfs (1960) added to the idea that there is more to the college-going decision than financial considerations.

It is reasonable to conclude that, while family income is an excellent index of the probability of college enrollment, it may be much over-rated as a determining factor. A reason suggested often in the forgoing is that more subtle cultural factors, stemming from parental education and occupation, run parallel to family income and augment its apparent influence. The cultural barrier to higher education may indeed be substantially higher than the financial. (p. 83)

At a 1970 colloquium sponsored by the College Entrance Examination Board the topic of college attendance by poor youth was discussed. It was noted that the following are among the reasons why poor youth do not go to college: 1) They have insufficient money. 2) Colleges are not close to their homes. 3) Counselors and psychometrists have steered them away from college preparatory programs. 4) Most

colleges and high schools use outmoded testing methods (College Entrance Examination Board, 1971).

Berdie (1953) studied the post-high school plans of a sample of students from the various high schools in Minnesota. Based on results from a follow-up questionnaire sent to 2700 students a year after they graduated Berdie concluded that, although scholarship programs undoubtedly did allow some students to attend college who otherwise would be unable to, the main effect may have been to lighten the load somewhat for the people who would have attended college regardless of scholarship programs, rather than to increase greatly the number of qualified students who attended college.

A study conducted by Kimball (1968) sought to determine the effects of small scholarships on the educational decisions of 897 applicants in the state of New Hampshire. The students surveyed were successful applicants for support from the Citizens Scholarship Foundation of America. Kimball's findings, based on a 57 percent return of questionnaires, was that relatively small awards did not change the educational plans of the recipients. Rather, such small scholarships relieved the financial burden and made it easier for the student to do what he would do anyway.

Kimball did suggest a psychological effect, in that students who received a scholarship seemed to see it as a vote of academic confidence.

A study was conducted by the Illinois State Scholarship Commission to determine the effect of aid on a student's choice of public or private college. It was found that many aid recipients who were attending private colleges said that without the aid they would have attended public institutions. From the sample of 1387 who returned questionnaires, it was inferred that over 5000 students in Illinois in 1967-1968 would have attended public institutions had they not received financial aid (Fenske and Boyd, 1971).

Williamson and Feder (1953) attempted to measure the effectiveness of a high school honor scholarship program at the University of Denver. Among other criteria they compared the achievement and persistence rates of scholarship recipients with a control group that was matched in terms of ability and sex. Socioeconomic status was not considered.

Williamson and Feder found that scholarship recipients achieved at a higher level in the classroom and a higher percentage of them remained in college to earn baccalaureate degrees than did the matched group without scholarships.

In the 1954-1955 academic year, Brigham Young University decided to revise its procedures for awarding scholarships. Previously a scholarship award to an incoming freshman was for one quarter only. Under the revised policy, it was determined to make the scholarships

renewable each quarter for one year as a means of motivating the students toward greater academic achievement.

Clark, Wright and Parker (1957) conducted a study to see if the revised policy was effective in motivating students. Scholarship recipients were matched with a control group in terms of high school grades and American Council on Education Psychological Examination scores. Aid recipients performed significantly higher academically than the control group. The study concluded that "sufficient additional extrinsic motivation can be produced in scholarship students through the rewarding effect of a renewable-type scholarship to produce a significant change in effort which results in significantly higher college grades." (p. 305)

Joseph Fromkin (1968) did not go into detail about the source of his data, but stated that estimates from his office are that federal programs of undergraduate financial aid have a tremendous impact on the college-going decisions of recipients. He estimates that 100,000 students were attending college full time in 1968 who would not have attended if federal funds had not been available.

A survey of the literature related to the effects of financial aid exposes a certain degree of controversy. While there appears to be a complex of factors related to college enrollment and attendance, numerous studies have demonstrated the effectiveness of student financial aid in enabling needy students to enroll and persist in college.

Summary

College student financial aid is not an area which has generated a great deal of research over the years. Scholarship programs have been in existence for many years and have received considerably more attention than have the relatively new federal programs of student loans and employment.

In addition to concentrating on scholarship programs, research efforts have tended to study highly talented students and the effect that financial aid has on them. Moderately talented students have been the recipients of increasing amounts of student aid in recent years, yet research regarding these students is surprisingly scarce.

While there is ample evidence that socioeconomic status is a primary factor in college-going and persistence, many studies have not controlled for this variable.

Due to the scarceness of solid research in the field of financial aid and the conflicting results that the limited research efforts have produced, it seems apparent that additional research is needed.

III. RESEARCH DESIGN AND METHODOLOGY

In this chapter the student groups, the sources of the data, the treatment of the data, the development of a GPA prediction formula, and the types of analyses employed in testing the hypotheses are described.

The basic design of the study was twofold. First, three groups of students at Oregon State University (Aid Recipients, Non-Recipients and Non-Applicants) were compared to determine if they differed in terms of 1) matriculation rates, 2) withdrawal rates, 3) suspension rates, 4) freshman year GPA, 5) number of hours completed, 6) return rates for the sophomore year, and 7) use of the Counseling Center.

Second, Aid Recipients were classified by the type and amount of aid awarded and these groups were compared in terms of the first six variables above.

By comparing these student groups while controlling the variables of sex, age, and academic aptitude and achievement, conclusions regarding the effects of student financial aid could be drawn.

Description of Student Groups

Financial Aid Applicants

The financial aid applicants included in this study were those who

applied for freshman financial aid at Oregon State University for the 1969-1970 and 1970-1971 academic years. Each year's group was analyzed separately to permit comparisons between years.

Aid applicants for the 1969-1970 and 1970-1971 academic years were chosen for several reasons. Since financial aid programs and procedures for administering these programs continue to change, it was felt that the most recent applicants should be studied. Conclusions based on less recent data would not be as useful in analyzing the effects of today's programs. Furthermore, records regarding recent applicants would be more readily accessible for research. Studying applicants over a period of two years would give a broader base for drawing conclusions than would studying a group for a single year.

The study was designed to follow students to the point where they either returned or failed to return for their sophomore year. Thus, if the study was to be completed before the beginning of the 1972-1973 year, applicants for 1971-1972 could not be included in the study.

Many of OSU's disadvantaged students were provided for through the Educational Opportunity Program and these EOP students were not included in the study.

Only those students who were high school seniors in the state of Oregon at the time of application for aid were studied. Including

EOP students, older students, or non-resident students would have introduced additional variables which would have been difficult to control.

For the purpose of this study all aid applicants were classified according to whether or not they were awarded aid. Table 1 indicates the number of Aid Recipients and Non-Recipients, by year and sex.

Table 1. Number of Aid Recipients and Non-Recipients at Oregon State University, 1969-1970 and 1970-1971.

Group of Applicants	1969-1970			1970-1971		
	Males	Females	Total	Males	Females	Total
Aid Recipients	296	336	632	340	382	722
Non-Recipients	440	402	842	328	277	605
Total	736	738	1474	668	659	1327

Non-Applicants

Systematic samples of Non-Applicants for aid were selected from the freshman classes of 1969-1970 and 1970-1971 and were compared to Aid Recipients and Non-Recipients. A sample of 500 freshmen for each year was drawn by randomly selecting a starting point between zero and eight and choosing every seventh name from an alphabetized list of approximately 3500 freshman students for each year. Aid applicants were eliminated from these samples, leaving the samples of Non-Applicants reported in Table 2.

Table 2. Number of Students in Samples of Non-Applicants.

Year	Males	Females	Total
1969-1970	208	164	372
1970-1971	201	169	370

Sub-Groups

Sub-groups were compared to determine rates of Counseling Center usage by Aid Recipients, Non-Recipients and Non-Applicants. The sub-groups were drawn by systematically selecting 100 students from each of the larger groups of Aid Recipients, Non-Recipients and Non-Applicants described in Tables 1 and 2. Included in Table 3 is the number of students in each of the sub-groups.

Table 3. Number of Students in Sub-Groups.

Sub-Group	1969-1970			1970-1971		
	Males	Females	Total	Males	Females	Total
Aid Recipients	47	53	100	46	54	100
Non-Recipients	52	48	100	55	45	100
Non-Applicants	56	44	100	55	45	100

Sources of the Data

Records from the Oregon State University Financial Aid Office, Dean of Students Office and Counseling Center provided data which were analyzed in this study.

Basic data for the study were secured from the Financial Aid Office. These data included names and sex of applicants, type of aid awarded and amount of aid awarded. Also available in the Financial Aid Office were records that provided data regarding which students had matriculated, which had withdrawn and which had returned for the sophomore year, as well as the number of credit hours individual students had completed and their freshman year GPA's.

The data regarding applicants' high school GPA and Scholastic Aptitude Test scores, and the data indicating which students had been suspended academically were obtained from the Dean of Students Office.

Lists of students were taken to the OSU Counseling Center where staff members indicated the number of students in each group who had made use of the Counseling Center's facilities during the freshman year. Thus, the Counseling Center was able to provide data regarding various groups without releasing the names of individual students.

Treatment of the Data

Preparation of the Data

A Control Data Corporation 3500 computer system was utilized in the processing and analysis of the data. For all applicants for freshman financial aid the following data were available:

1. name of applicant
2. year of application
3. sex of applicant
4. type of aid awarded to applicant
5. dollar amount of aid awarded
6. whether or not student matriculated at OSU
7. applicant's high school GPA
8. applicant's Scholastic Aptitude Test - Verbal score
9. applicant's Scholastic Aptitude Test - Math score

For each applicant who matriculated at OSU the following additional data were available:

1. whether or not the student withdrew during the freshman year
2. whether or not the student was suspended during the freshman year
3. the number of credit hours the student completed during the freshman year
4. the student's freshman year GPA
5. whether or not the student returned for the sophomore year

In addition to the two groups of aid applicants (1969-1970 and 1970-1971), data were collected for the samples of non-applicants for the same two years. The following information was available:

1. name of freshman student
2. year student was a freshman
3. sex of student
4. student's high school GPA
5. student's Scholastic Aptitude Test - Verbal score
6. student's Scholastic Aptitude Test - Math score
7. whether or not the student withdrew during the freshman year
8. whether or not the student was suspended during the freshman year
9. the number of credit hours the student completed during the freshman year
10. the student's freshman year GPA
11. whether or not the student returned for the sophomore year

The prepared data consisted of four sets of punch cards:

1. 1969-1970 freshman financial aid applicants (1474)
2. 1970-1971 freshman financial aid applicants (1327)
3. Sample of 1969-1970 freshman non-applicants (372)
4. Sample of 1970-1971 freshman non-applicants (370)

Prediction Formula

It was felt that before the data were analyzed some control for students' potential for college success should be built into the research

design. If dependent variables such as freshman year GPA and number of credit hours completed were linearly related to predicted achievement, differences found in these variables might well have been due at least in part to differences in predicted achievement.

A prediction formula was developed to predict grades which could be used as a measure of an individual's potential for college success. In this way the effect of type and amount of aid on the dependent variables could be studied, controlled or adjusted for the variable of predicted achievement.

In order for predicted achievement to be used as a covariate in the analysis of data, a formula for predicting OSU freshman year GPA's had to be developed. It was felt that this formula should be based on current data, specific to Orange State University, and should distinguish between males and females.

GPA's received by students at OSU have risen during the past few years and it was determined that a formula developed on recent data was necessary. A prediction formula several years old would be less accurate than a current one.

Munday (1965) studied the prediction of college achievement in 21 U. S. colleges. His conclusions included the statement that predictive results vary widely between campuses and between males and females.

No other university has exactly the same type of student population, faculty and curriculum that OSU has. It was believed that a generalized formula based on data from several institutions would be less accurate in predicting achievement at Oregon State University than would a formula developed specifically for OSU students.

Hoyt and Munday (1966) conducted research on freshman students at 85 junior colleges. Using American College test scores and high school grades they made predictions of college freshman grades. One conclusion of the researchers was that separate equations for males and females are desirable since females usually excel in both college and high school grades but not on scholastic aptitude tests.

College achievement is associated with many factors such as high school achievement, scholastic aptitude, motivation, maturity and emotional stability. Many studies have found high school grades to be the best single predictor of college grades. When scholastic aptitude test scores are combined with high school grades, increased predictive validity is attained (Hoyt, 1968; Holland, 1959; Holland and Astin, 1962; and Richards, Holland and Lutz, 1966).

Robert Huff (1969) devised a formula to be used in the prediction of college grades for students who applied for aid through the Oregon State Scholarship Commission. Predicted grades were compared to grades that aid recipients earned in colleges and universities throughout the state of Oregon. The seven factors listed below were used in

the development of Huff's formula:

1. high school GPA
2. Scholastic Aptitude Test - Verbal score (SAT-V)
3. Scholastic Aptitude Test - Math score (SAT-M)
4. family income per member
5. high school class percentile rank
6. high school class size
7. total family income

Huff concluded that his seven-factor formula was very cumbersome and did not greatly increase prediction ability over the formula which used the three factors of high school GPA, SAT-V score and SAT-M score.

For the present study it was decided to generate prediction formulas using the three factors of high school GPA, SAT-V score and SAT-M score. Whereas other factors such as motivation and maturity influence academic achievement, measurements of these traits are not highly reliable and are not generally available.

A systematic sample of 500 1970-1971 freshmen at OSU was chosen as the group from which to develop prediction formulas. This 1970-1971 sample satisfied the requirements of being current and limited to Oregon State University.

Two sets of punch cards (262 males, 238 females) were submitted to the computer, which generated two correlation matrices for

the following four variables:

1. high school GPA
2. Scholastic Aptitude Test - Verbal score
3. Scholastic Aptitude Test - Math score
4. OSU freshman year GPA

Using these correlation matrices (one for males, one for females) two multiple regression equations were developed for the prediction of OSU freshman year GPA. The equations are shown below.

Predicted OSU freshman year GPA for males

$$\begin{aligned}
 &= .71800 \times \text{high school GPA} \\
 &+ .00035129 \times \text{SAT-V score} \\
 &+ .00083000 \times \text{SAT-M score} \\
 &- .46932
 \end{aligned}$$

Predicted OSU freshman year GPA for females

$$\begin{aligned}
 &= .72616 \times \text{high school GPA} \\
 &+ .00062199 \times \text{SAT-V score} \\
 &+ .00034884 \times \text{SAT-M score} \\
 &+ .30279
 \end{aligned}$$

The above prediction formulas were used to predict a freshman year GPA for each student in the study. The resulting predicted GPA was then used as a covariate in certain of the analyses conducted with the data.

Analyses Employed

Four types of statistical analyses were employed to test the hypotheses stated in Chapter I. The type of analysis used was determined by the nature of the data associated with each hypothesis.

Hypotheses One through Seven were related to differences among Aid Recipients, Non-Recipients and Non-Applicants. For the binomial variables of matriculation, withdrawal, suspension, use of the Counseling Center, and return for the sophomore year, chi-square analyses were conducted to test for significant differences. For the continuous variables of freshman year GPA and the number of credit hours completed, analyses of variance were conducted.

Hypotheses Eight through Thirteen were related to differences among Aid Recipients. For the binomial variables, multi-variate discriminant analyses were conducted and for the continuous variables least-squares analyses of covariance were conducted to test for significant differences. In the analyses of covariance, the amount of aid awarded and predicted GPA were treated as covariates. The least-squares method was used because of the unequal numbers in the various data cells.

Before testing for differences in mean freshman year GPA and mean number of credit hours completed, the distributions of these variables for each group were compared to determine if they were

sufficiently similar to permit statistical tests for differences. It was concluded that the distributions were not substantially different and that statistical analyses could be conducted.

Summary

This study compared freshman 1) Aid Recipients, 2) Non-Recipients, and 3) Non-Applicants for financial aid at Oregon State University to determine if they differed in terms of 1) matriculation rates, 2) withdrawal rates, 3) suspension rates, 4) freshman year GPA, 5) number of credit hours completed, 6) return rates for the sophomore year, and 7) use of the Counseling Center.

In addition, the study classified Aid Recipients by the type and amount of aid awarded and compared them in terms of the first six variables above. The comparisons were made to determine the influence of financial aid awards on the variables mentioned.

Aid applicants studied were the 2801 students who applied for freshman financial aid for the 1969-1970 and 1970-1971 years. Samples of non-applicants were selected to be compared with the aid applicant groups.

The data were key-punched and analyzed at OSU's Computer Center. Based on data from a sample of 1970-1971 freshmen, prediction formulas were developed to predict GPA's for males and females. These predicted GPA's were used as controls in the study.

The following analyses were conducted to test the hypotheses stated in Chapter I: chi-square analysis, analysis of variance, multivariate discriminant analysis, and least-squares analysis of covariance. In the statistical analyses the .05 level of confidence was accepted as being significant. Actual levels of confidence between .05 and .001 were reported in order to indicate the degree of significance associated with each test.

IV. RESULTS AND DISCUSSION

Presented in this chapter are the results of the analyses conducted and a discussion of the results.

Data for the freshman financial aid applicants and non-applicants at Oregon State University during 1969-1970 and 1970-1971 were analyzed to test the thirteen hypotheses stated in Chapter I.

Hypotheses One through Seven were related to differences among (A) aid applicants who were awarded aid (Aid Recipients), (B) aid applicants not awarded aid (Non-Recipients), and (C) non-applicants for financial aid (Non Applicants). Hypotheses Eight through Thirteen were related to differences among the Aid Recipients when they were classified according to the type and amount of aid they were awarded.

Results

Hypothesis One

Aid Applicants. In the 1969-1970 and 1970-1971 academic years, 2801 students applied for freshman year financial aid at OSU's Financial Aid Office. These applicants were classified as Aid Recipients and Non-Recipients and were compared to Non-Applicants in terms of matriculation rates.

Included in Table 4 are the number of applicants who were awarded aid and the number not awarded aid. The predicted GPA's

in Table 5 are presented to further describe the two groups.

Table 4. Number of Pre-Freshman Applicants for Financial Aid at Oregon State University, 1969-1970 and 1970-1971.

Group of Applicants	1969-1970			1970-1971		
	Males	Females	Total	Males	Females	Total
Aid Recipients	296	336	632	340	382	722
Non-Recipients	440	402	842	328	277	605
Total	736	738	1474	668	659	1327

Table 5. Mean Predicted GPA of Pre-Freshman Applicants for Financial Aid.

Group of Applicants	1969-1970		1970-1971	
	Males	Females	Males	Females
Aid Recipients	2.56	2.60	2.56	2.66
Non-Recipients	2.51	2.58	2.49	2.58

Matriculation Rates. Hypothesis One stated that there is no significant difference in the freshman year matriculation rates of Aid Recipients (A), Non-Recipients (B), and Non-Applicants (C). Specific hypotheses tested for each of the two years under study were $A=B$, $A=C$, and $B=C$.

Due to the fact that groups A and B were populations and group C was a sample, it was necessary to test the specific hypothesis $A=B$ by the use of the chi-square analysis. For the specific hypotheses $A=C$ and $B=C$, the goodness-of-fit test was used to determine if the observed

distribution of Aid Recipients (A) fit the expected distribution of Non-Applicants (C) and if the observed distribution of Non-Recipients (B) fit this expected distribution (C).

In Table 6 are the matriculation rates of the three groups compared. Table 7 includes the results of the analyses.

Table 6. Matriculation Rates of Aid Recipients, Non-Recipients and Non-Applicants.

Student Groups	Matriculated (percent)	
	1969-1970	1970-1971
A. Aid Recipients	89.9	75.5
B. Non-Recipients	45.2	55.7
C. Non-Applicants	68.4	76.0

Table 7. Comparison of Matriculation Rates: Aid Recipients, Non-Recipients and Non-Applicants.

Groups Compared	1969-1970		1970-1971	
	Chi square Value	p	Chi square Value	p
A. Aid Recipients vs. B. Non-Recipients	313.424	.001	67.615	.001
A. Aid Recipients vs. C. Non-Applicants	135.280	.001	.030	NS
B. Non-Recipients vs. C. Non-Applicants	208.980	.001	137.072	.001

For each of the two years under study, the Non-Recipient group (B) had significantly lower matriculation rates than did either Aid

Recipients (A) or Non-Applicants (C). Thus, specific hypotheses $A=B$ and $B=C$ were rejected.

As seen in Table 7, the Aid Recipient group (A) had significantly higher matriculation rates than the Non-Applciant group (C) for the 1969-1970 academic year; however, there was no difference between the two groups for the 1970-1971 year. Thus, specific hypothesis $A=C$ was accepted and it was concluded that the groups did not differ in matriculation rates.

Hypotheses Two Through Seven

Matriculated Aid Applicants. The aid applicants who matriculated at OSU were compared to samples of non-applicants to determine what influence the awarded aid had on 1) withdrawal rates, 2) suspension rates, 3) use of the Counseling Center, 4) freshman year GPA, 5) number of credit hours completed, and 6) return rates for the sophomore year.

Tables 8 and 9 indicate the number of aid applicants who matriculated and the size of the samples of non-applicants.

Table 10 includes data which describe matriculated applicants and non-applicants in terms of mean predicted GPA.

Table 8. Number of Matriculated Aid Applicants, 1969-1970 and 1970-1971.

Group	1969-1970			1970-1971		
	Males	Females	Total	Males	Females	Total
Aid-Recipients	266	302	568	257	288	545
Non-Recipients	200	181	381	178	159	337
Total	466	483	949	435	447	882

Table 9. Number of Students in Samples of Non-Applicants.

Year of Sample	Males	Females	Total
1969-1970	208	164	372
1970-1971	201	169	370

Table 10. Mean Predicted GPA of Matriculated Aid Applicants and Non-Applicants.

Group	1969-1970		1970-1971	
	Males	Females	Males	Females
Aid-Recipients	2.57	2.62	2.54	2.65
Non-Recipients	2.50	2.65	2.55	2.65
Non-Applicants	2.35	2.48	2.34	2.52

Withdrawal Rates. Hypothesis Two stated that there is no significant difference in the freshman year withdrawal rates of Aid Recipients (A), Non-Recipients (B), and Non-Applicants (C). Specific hypotheses tested were $A=B$, $A=C$ and $B=C$.

Included in Table 11 are the withdrawal rates of the three groups which were compared. Table 12 reports the results of the analyses.

Table 11. Withdrawal Rates of Aid Recipients, Non-Recipients and Non-Applicants.

Student Group	Withdrew (percent)	
	1969-1970	1970-1971
A. Aid Recipients	9.7	9.2
B. Non-Recipients	7.1	12.7
C. Non-Applicants	11.6	9.8

Table 12. Comparison of Withdrawal Rates: Aid Recipients, Non-Recipients and Non-Applicants.

Groups Compared	1969-1970		1970-1971	
	Chi square Value	p	Chi square Value	p
A. Aid Recipients vs. B. Non-Recipients	1.999	NS	3.131	NS
A. Aid Recipients vs. C. Non-Applicants	2.075	NS	.717	NS
B. Non-Recipients vs. C. Non-Applicants	7.420	.01	3.365	NS

For each of the two years studied, the withdrawal rates of the Aid Recipients (A) did not differ significantly from the withdrawal rates of either the Non-Recipients (B) or the Non-Applicants (C). Thus specific hypotheses A=B and A=C were accepted.

The Non-Recipient group (B) had significantly lower withdrawal rates than the Non-Applicant group (C) in 1969-1970 but there was no difference between the two groups in 1970-1971. Specific hypothesis

B=C was accepted and it was concluded that the groups did not differ in withdrawal rates.

Suspension Rates. Hypothesis Three stated that there is no significant difference in the freshman year academic suspension rates of Aid Recipients (A), Non-Recipients (B), and Non-Applicants (C).

Specific hypotheses tested for each of the two years under study were A=B, A=C and B=C.

Included in Table 13 are the suspension rates of the three groups. Table 14 reports the results of the analyses.

Table 13. Suspension Rates of Aid Recipients, Non-Recipients and Non-Applicants.

Student Groups	Suspended (percent)	
	1969-1970	1970-1971
A. Aid Recipients	2.8	3.1
B. Non-Recipients	7.1	5.6
C. Non-Applicants	8.9	7.3

Table 14. Comparison of Suspension Rates: Aid Recipients, Non-Recipients and Non-Applicants.

Groups Compared	1969-1970		1970-1971	
	Chi square Value	p	Chi square Value	p
A. Aid Recipients vs. B. Non-Recipients	10.286	.005	3.047	NS
A. Aid Recipients vs. C. Non-Applicants	26.392	.001	14.262	.001
B. Non-Recipients vs. C. Non-Applicants	1.582	NS	1.373	NS

For each year under study the Aid Recipient group (A) had significantly lower suspension rates than the Non-Applicant group (C). The Non-Recipient group (B) did not differ significantly from the Non-Applicant group (C) either of the two years. Thus, the specific hypothesis $A=C$ was rejected and the specific hypothesis $B=C$ was accepted.

The Aid Recipient group (A) had significantly lower suspension rates in 1969-1970 than did the Non-Recipient group (B); however, the groups did not differ significantly in 1970-1971. Specific hypothesis $A=B$ was accepted and it was concluded that the two groups did not differ in terms of suspension rates.

Use of the Counseling Center. Hypothesis Four stated that Aid Recipients, Non-Recipients and Non-Applicants do not differ significantly in their use of the OSU Counseling Center during the freshman year.

Samples of each of the three groups were drawn by selecting 100 students from each group for both years, totaling 600 students. Included in Table 15 is the number of each group who visited the Counseling Center at least one time during the freshman year.

Table 15. Counseling Center Usage by Aid Recipients, Non-Recipients and Non-Applicants.

Student Group	Number Who Used Counseling Center		
	1969-1970	1970-1971	Total
A. Aid Recipients	1	1	2
B. Non-Recipients	7	8	15
C. Non-Applicants	5	1	6

No chi-square analysis was conducted because of the small numbers in the data cells. According to Paul G. Hoel (1947), experience and theoretical investigations indicate that where the number of pairs of observed and expected frequencies is small, the expected value in the chi-square analysis should exceed five. Because the data in this study violate Hoel's guidelines no analysis was conducted.

Freshman Year GPA. Hypothesis Five stated that there is no significant difference in the mean freshman year GPA's of Aid Recipients, Non-Recipients and Non-Applicants. Included in Table 16 are the mean GPA's for the three groups and the results of the analysis of variance employed to test for differences.

Table 16. Comparison of Mean Freshman Year GPA: Aid Recipients, Non-Recipients and Non-Applicants.

Student Group	1969-1970			1970-1971		
	Freshman Year GPA (mean)	F Value	p	Freshman Year GPA (mean)	F Value	p
A. Aid Recipients	2.591			2.676		
B. Non-Recipients	2.586	18.293	.001	2.584	19.358	.001
C. Non-Applicants	2.388			2.428		

For each of the years under study, there was a highly significant difference between mean GPA's. Thus, Hypothesis Five was rejected and it was concluded that Aid Recipients, Non-Recipients and Non-Applicants differed in terms of freshman year GPA.

Number of Hours Completed. Hypothesis Six stated that there is no significant difference in the mean number of credit hours completed during the freshman year by Aid Recipients, Non-Recipients and Non-Applicants. In Table 17 are the mean number of credit hours completed by each group and the results of the analysis of variance used to test Hypothesis Six.

Table 17. Comparison of Mean Number of Credit Hours Completed: Aid Recipients, Non-Recipients and Non-Applicants.

Student Group	1969-1970			1970-1971		
	Number of Hours (mean)	F Value	p	Number of Hours (mean)	F Value	p
A. Aid Recipients	44.23			40.97		
B. Non-Recipients	44.75	2.631	NS	41.79	7.949	.001
C. Non-Applicants	43.96			40.32		

There was no significant difference among the three groups in mean number of credit hours completed in 1969-1970; however, the difference was significant in 1970-1971. Hypothesis Six was accepted and it was concluded that Aid Recipients, Non-Recipients and Non-Applicants did not differ in terms of the number of credit hours completed during the freshman year.

Return Rates. Hypothesis Seven stated that Aid Recipients (A), Non-Recipients (B), and Non-Applicants (C) do not differ significantly in terms of their return rates to OSU for the sophomore year. Specific hypotheses tested for each of the two years under study were $A=B$, $A=C$ and $B=C$.

Included in Table 18 are the return rates of the three groups studied. Table 19 indicates the results of the chi-square analyses and goodness-of-fit tests conducted to test the specific hypotheses.

Table 18. Return Rates of Aid Recipients, Non-Recipients and Non-Applicants.

Student Group	Returned (percent)	
	1969-1970	1970-1971
A. Aid Recipients	86.0	77.6
B. Non-Recipients	82.5	83.8
C. Non-Applicants	79.6	80.1

Table 19. Comparison of Return Rates: Aid Recipients, Non-Recipients and Non-Applicants.

Groups Compared	1969-1970		1970-1971	
	Chi square Value	p	Chi-square Value	p
A. Aid Recipients vs. B. Non-Recipients	1.847	NS	4.593	.05
A. Aid Recipients vs. C. Non-Applicants	12.601	.001	1.828	NS
B. Non-Recipients vs. C. Non-Applicants	1.797	NS	2.306	NS

The Aid Recipient group (A) and the Non-Recipient group (B) did not have significantly different return rates in 1969-1970; however, the Aid Recipient group (A) had a significantly lower return rate in 1970-1971. In 1969-1970 the Aid Recipient group (A) had a significantly higher return rate than the Non-Applicant group (C), but the groups did not differ in 1970-1971. For each year under study, Non-Recipients (B) and Non-Applicants did not differ significantly in terms of return rates. Thus, the three specific hypotheses $A=B$, $A=C$ and $B=C$ were accepted and it was concluded that the three groups did not differ in return rates.

Hypothesis Eight

Aid Recipients. For the 1969-1970 academic year 632 pre-freshmen were awarded aid at OSU. For the 1970-1971 year this figure was 722. In Table 20 is indicated the number of Aid Recipients who were awarded various types of aid. Table 21 includes the mean dollar amount of aid awarded to the various groups of Aid Recipients, while Table 22 further describes these groups by displaying their mean predicted GPA's.

Aid Recipients were compared to determine what influence the type of aid and amount of aid awarded had on matriculation rates. Multi-variate discriminate analyses were conducted to determine if

Table 20. Number of Pre-Freshman Aid Recipients Awarded Various Types of Aid, 1969-1970 and 1970-1971.

Type of Aid	1969-1970			1970-1971		
	Males	Females	Total	Males	Females	Total
Grant	67	63	130	60	72	132
Loan	78	84	162	66	69	135
Work	40	47	87	5	11	16
Grant & Loan	53	51	104	72	54	126
Grant & Work	27	33	60	46	60	106
Loan & Work	19	40	59	26	35	61
Grant, Loan and Work	12	18	30	65	81	146
Total	296	336	632	340	382	722

Table 21. Mean Amount of Aid Awarded to Aid Recipients (Dollars).

Type of Aid	1969-1970		1970-1971	
	Males	Females	Males	Females
Grant	322.63	412.98	515.23	363.33
Loan	674.99	724.15	694.86	772.36
Work	651.85	745.34	586.40	898.82
Grant & Loan	1007.17	1060.24	1234.83	1308.28
Grant & Work	1135.81	1218.12	1232.37	1230.13
Loan & Work	1112.21	1173.92	1124.42	1221.60
Grant, Loan and Work	1363.75	1325.72	1588.74	1564.31

Table 22. Mean Predicted GPA of Aid Recipients.

Type of Aid	1969-1970		1970-1971	
	Males	Females	Males	Females
Grant	2.99	2.94	2.86	2.92
Loan	2.32	2.46	2.31	2.47
Work	2.35	2.41	2.30	2.32
Grant & Loan	2.63	2.70	2.45	2.53
Grant & Work	2.66	2.76	2.85	2.89
Loan & Work	2.33	2.40	2.28	2.33
Grant, Loan and Work	2.33	2.51	2.60	2.71

these factors discriminated between Aid Recipients who matriculated and those who did not.

For the discriminant analyses, males were assigned a value of negative one and females a value of positive one. This enabled the computation of means for the sex of the matriculating and non-matriculating groups. A comparison of these means indicated whether sex of applicant discriminated between Aid Recipients who matriculated and those who did not.

The types of aid awarded were coded as indicated below:

2 Grant only

3 Loan only

4 Work only

5 Grant and loan

6 Grant and work

7 Loan and work

8 Grant, loan and work

Using these codes, means for the type of aid could be computed and compared in the discriminant analyses.

Matriculation Rates. Hypothesis Eight stated that there is no significant difference between Aid Recipients who matriculated and those who did not in terms of 1) type of aid awarded and 2) amount of aid awarded. Tables 23 and 24 include the results of the discriminant analyses conducted to test Hypothesis Eight.

Table 23. Comparison of 1969-1970 Aid Recipients: Students Who Matriculated Versus Those Who Did Not.

Variable	Matriculated (mean)	Did Not Matriculate (mean)	F Value	p
Sex	.0634	.0794	.015	NS
Type of Aid	4.1620	4.0476	.233	NS
Sex X Type	.4472	.2063	.162	NS
Amount of Aid (\$)	812.4208	725.3175	1.079	NS
Predicted GPA	2.5968	2.4844	5.277	.025

For each year under study, it was found that neither type of aid nor amount of aid discriminated between Aid Recipients who matriculated and those who did not. Hypothesis Eight was accepted and it was concluded that type of aid and amount of aid did not affect matriculation rates.

Table 24. Comparison of 1970-1971 Aid Recipients: Students Who Matriculated Versus Those Who Did Not.

Variable	Matriculated (mean)	Did Not Matriculate (mean)	F Value	p
Sex	.0549	.0621	.007	NS
Type of Aid	4.9890	4.9605	.023	NS
Sex X Type	.3297	.3051	.003	NS
Amount of Aid (\$)	1076.3791	986.0508	3.661	NS
Predicted GPA	2.5983	2.6761	6.217	.025

Sex of applicant did not discriminate between Aid Recipients who matriculated and those who did not and there was no significant interaction between the variables of sex and type of aid awarded.

For the 1969-1970 year, the mean predicted GPA of those who matriculated was significantly higher than for those who did not; however, in 1970-1971 those who matriculated had a significantly lower mean predicted GPA than the group which did not matriculate. It was concluded that predicted GPA did not discriminate between Aid Recipients who matriculated and those who did not.

Hypotheses Nine Through Thirteen

Matriculated Aid Recipients. Of the 1354 pre-freshman aid applicants who were awarded aid for the 1969-1970 and 1970-1971 years, 1113 matriculated at OSU. These matriculated Aid Recipients were analyzed to determine the influence of type and amount of aid

awarded on 1) withdrawal rates, 2) suspension rates, 3) freshman year GPA, 4) number of credit hours completed, and 5) return rates for the sophomore year.

Included in Tables 25 and 26 are the number of matriculated Aid Recipients who were awarded various types of aid and the mean dollar amount of aid awarded to the various groups. Table 27 further describes the students by displaying the mean predicted GPA's of students who were classified by the type of aid awarded.

Table 25. Number of Matriculated Aid Recipients Awarded Various Types of Aid, 1969-1970 and 1970-1971.

Type of Aid	1969-1970			1970-1971		
	Males	Females	Total	Males	Females	Total
Grant	61	56	117	41	46	87
Loan	73	76	149	58	57	115
Work	33	37	70	4	10	14
Grant & Loan	50	47	97	53	44	97
Grant & Work	21	32	53	31	47	78
Loan & Work	18	38	56	19	25	44
Grant, Loan & Work	10	16	26	51	59	110
Total	266	302	568	257	288	545

Table 26. Mean Amount of Aid Awarded to Matriculated Aid Recipients (Dollars).

Type of Aid	1969-1970		1970-1971	
	Males	Females	Males	Females
Grant	325.44	427.86	545.02	387.17
Loan	686.15	729.72	696.74	784.26
Work	652.42	754.46	607.00	952.70
Grant & Loan	1000.12	1062.06	1195.68	1321.61
Grant & Work	1115.29	1220.56	1254.81	1262.57
Loan & Work	1107.33	1172.45	1139.63	1297.60
Grant, Loan & Work	1468.50	1317.38	1617.73	1575.68

Table 27. Mean Predicted GPA of Matriculated Aid Recipients.

Type of Aid	1969-1970		1970-1971	
	Males	Females	Males	Females
Grant	3.00	2.95	2.87	2.92
Loan	2.32	2.46	2.29	2.49
Work	2.37	2.45	2.28	2.34
Grant & Loan	2.65	2.71	2.49	2.56
Grant & Work	2.67	2.77	2.82	2.86
Loan & Work	2.28	2.41	2.29	2.31
Grant, Loan & Work	2.38	2.55	2.57	2.68

Withdrawal Rates. Hypothesis Nine stated that there is no significant difference between Aid Recipients who withdrew and those who did not in terms of 1) type of aid awarded and 2) amount of aid awarded. Tables 28 and 29 include the results of the discriminant analyses employed to test this hypothesis.

Table 28. Comparison of 1969-1970 Aid Recipients: Students Who Withdrew Versus Those Who Did Not.

Variable	Withdrew (mean)	Did Not Withdraw (mean)	F Value	p
Sex	.0545	.0625	.003	NS
Type of Aid	4.0545	4.1660	.192	NS
Sex X Type	.1273	.4668	.281	NS
Amount of Aid (\$)	748.2909	818.1934	1.307	NS
Predicted GPA	2.4906	2.6080	5.113	.025

Table 29. Comparison of 1970-1971 Aid Recipients: Students Who Withdrew Versus Those Who Did Not.

Variable	Withdrew (mean)	Did Not Withdraw (mean)	F Value	p
Sex	-.2800	.0887	6.242	.025
Type of Aid	4.5800	5.0383	2.069	NS
Sex X Type	-1.1000	.4819	3.871	.05
Amount of Aid (\$)	948.9400	1090.8488	3.098	NS
Predicted GPA	2.3603	2.6232	25.366	.001

For each year under study, it was found that neither type of aid nor amount of aid discriminated between Aid Recipients who withdrew and those who persisted. Thus, Hypothesis Nine was accepted and it was concluded that type and amount of aid awarded did not affect withdrawal rates.

In 1969-1970 sex did not discriminate between Aid Recipients who withdrew and those who did not; however, in 1970-1971 there were

significantly more males in the group that withdrew. There was no interaction between the variables of sex and type of aid awarded in 1969-1970, but the interaction was significant in 1970-1971. It was concluded that sex of Aid Recipients did not affect withdrawal rates and that there is no interaction between the variables of sex and type of aid awarded.

For each year, the group of students who withdrew had significantly lower predicted GPA's than the group which did not withdraw. It was concluded that withdrawal rates of Aid Recipients are influenced by predicted GPA.

Suspension Rates. Hypothesis Ten stated that Aid Recipients who were suspended do not differ significantly from those who were not suspended in terms of 1) type of aid awarded and 2) amount of aid awarded. In Tables 30 and 31 are the results of the analyses conducted to test Hypothesis Ten.

Table 30. Comparison of 1969-1970 Aid Recipients: Students Who Were Suspended Versus Those Who Were Not.

Variable	Suspended (mean)	Not Suspended (mean)	F Value	p
Sex	-.2800	.0792	3.102	NS
Type of Aid	3.6400	4.1860	2.211	NS
Sex X Type	-1.4000	.5322	4.404	.05
Amount of Aid (\$)	733.5600	816.0516	.874	NS
Predicted GPA	2.2600	2.6123	22.885	.001

Table 31. Comparison of 1970-1971 Aid Recipients: Students Who Were Suspended Versus Those Who Were Not.

Variable	Suspended (mean)	Not Suspended (mean)	F Value	p
Sex	-.7647	.0813	12.041	.001
Type of Aid	4.3529	5.0095	1.543	NS
Sex X Type	-3.1765	.4423	7.415	.01
Amount of Aid (\$)	919.8824	1081.4083	1.450	NS
Predicted GPA	2.0206	2.6168	49.210	.001

For each year studied, neither type of aid nor amount of aid awarded discriminated between Aid Recipients who were suspended and those who were not. Hypothesis Ten was accepted and it was concluded that type and amount of aid awarded did not affect suspension rates.

In 1969-1970, the group of Aid Recipients that was suspended did not differ significantly from the group that was not suspended in terms of sex; however, in 1970-1971 there were significantly more males in the suspended group. It was concluded that the sex of Aid Recipients did not affect suspension rates. There was significant interaction each year between the variables of sex and type of aid awarded.

For each year under study, suspended Aid Recipients had significantly lower predicted GPA's than those not suspended. It was concluded that suspension rates are influenced by the predicted GPA's of Aid Recipients.

Freshman Year GPA. Hypothesis Eleven stated that there is no significant relationship between the type and amount of aid awarded to Aid Recipients and freshman year GPA. Included in Table 32 are the mean freshman year GPA's of Aid Recipients who were classified by sex and type of aid awarded.

Table 32. Mean Freshman Year GPA of Aid Recipients Awarded Various Types of Aid.

Types of Aid	1969-1970		1970-1971	
	Males	Females	Males	Females
Grant	2.91	2.98	2.92	2.97
Loan	2.26	2.43	2.18	2.54
Work	2.30	2.35	2.06	2.16
Grant & Loan	2.54	2.68	2.60	2.78
Grant & Work	2.84	2.86	2.89	2.95
Loan & Work	2.31	2.47	2.28	2.42
Grant, Loan & Work	2.40	2.56	2.86	2.76

The results of the analysis of covariance conducted to test Hypothesis Eleven are included in Tables 33 and 34.

Table 33. Relationship of Variables to Freshman Year GPA, 1969-1970.

		F Value	p
Variable	Sex	.397	NS
	Type of Aid	1.705	NS
	Sex X Type	.189	NS
Covariate	Amount of Aid (\$)	2.997	NS
	Predicted GPA	83.190	.001

Table 34. Relationship of Variables to Freshman Year GPA, 1970-1971.

		F Value	p
Variable	Sex	.166	NS
	Type of Aid	1.100	NS
	Sex X Type	1.246	NS
Covariate	Amount of Aid (\$)	8.514	.005
	Predicted GPA	153.984	.001

For each of the years studied, there was no significant relationship between type of aid awarded and freshman year GPA. In 1969-1970, there was no relationship between amount of aid awarded and freshman year GPA; however, there was a significant positive relationship in 1970-1971. Thus, Hypothesis Eleven was accepted and it was concluded that type and amount of aid awarded did not affect freshman year GPA's for Aid Recipients.

There was no relationship between sex of Aid Recipients and freshman year GPA nor was there interaction between the variables of sex and type of aid for either year studied.

For each year, there was a significant positive relationship between predicted GPA and freshman year GPA. It was concluded that the freshman year GPA's of Aid Recipients were influenced by their predicted GPA's.

Number of Credit Hours Completed. Hypothesis Twelve stated that there is no significant relationship between the type and amount of

aid awarded to Aid Recipients and the number of credit hours completed during the freshman year. Table 35 includes the mean number of credit hours completed during the freshman year by Aid Recipients classified by sex and type of aid awarded.

Table 35. Mean Number of Credit Hours Completed by Aid Recipients Awarded Various Types of Aid.

Type of Aid	1969-1970		1970-1971	
	Males	Females	Males	Females
Grant	46.34	44.96	43.41	39.73
Loan	44.82	42.43	41.18	39.72
Work	44.00	43.37	40.67	40.22
Grant & Loan	45.47	44.16	40.66	40.90
Grant & Work	46.21	42.74	43.27	40.81
Loan & Work	43.29	42.29	41.19	40.36
Grant, Loan & Work	44.90	43.85	41.76	40.16

The results of the analysis of covariance conducted to test

Hypothesis Twelve are reported in Tables 36 and 37.

Table 36. Relationships of Variables to Number of Credit Hours Completed, 1969-1970.

		F Value	p
Variable	Sex	11.587	.001
	Type of Aid	1.130	NS
	Sex X Type	.655	NS
Covariate	Amount of Aid (\$)	1.000	NS
	Predicted GPA	2.000	NS

Table 37. Relationship of Variables to Number of Credit Hours Completed, 1970-1971.

		F Value	p
Variable	Sex	7.857	.01
	Type of Aid	.374	NS
	Sex X Type	1.305	NS
Covariate	Amount of Aid (\$)	1.273	NS
	Predicted GPA	29.071	.001

For each year under study, there was no significant relationship between either type of aid or amount of aid and the number of credit hours completed. Hypothesis Twelve was accepted and it was concluded that type and amount of aid did not affect the number of credit hours completed by Aid Recipients during the freshman year.

During each year, males completed significantly more hours than did females. The analyses indicate no interaction between the variables of sex and type of aid for either year.

In 1969-1970, there was no relationship between predicted GPA and number of hours completed; however, in 1970-1971 there was a significant positive relationship between these two variables. It was concluded that the number of credit hours completed by Aid Recipients is not influenced by predicted GPA.

Return Rates. Hypothesis Thirteen stated that there is no significant difference between freshman year Aid Recipients who return for the sophomore year and those who do not in terms of 1) type of aid

awarded and 2) amount of aid awarded. Tables 38 and 39 include the results of the discriminant analyses employed to test Hypothesis Thirteen.

Table 38. Comparison of 1969-1970 Aid Recipients: Students Who Returned Versus Those Who Did Not.

Variable	Returned (mean)	Did Not Return (mean)	F Value	p
Sex	.0394	.3043	4.217	.05
Type of Aid	4.2042	4.0725	.318	NS
Sex X Type	.3527	1.5797	4.392	.05
Amount of Aid (\$)	824.8492	802.9275	.150	NS
Predicted GPA	2.6225	2.5466	2.651	NS

Table 39. Comparison of 1970-1971 Aid Recipients: Students Who Returned Versus Those Who Did Not.

Variable	Returned (mean)	Did Not Return (mean)	F Value	p
Sex	.0210	.3636	10.310	.005
Type of Aid	4.9685	5.1455	.562	NS
Sex X Type	.1916	1.6545	6.234	.025
Amount of Aid (\$)	1076.0262	1112.4273	.382	NS
Predicted GPA	2.6465	2.5435	6.891	.01

For each of the years under study, it was found that neither type of aid nor amount of aid awarded during the freshman year discriminated between Aid Recipients who returned and those who did not.

Hypothesis Thirteen was accepted and it was concluded that the type and amount of aid awarded to freshman Aid Recipients did not influence their return rates to OSU for the sophomore year.

For each year, the group that returned had significantly more males than the group that did not return. The analysis also indicated that there was significant interaction between the variables of sex and type of aid awarded.

In 1969-1970, there was no significant difference between the group that returned and the group that did not in terms of predicted GPA; however, in 1970-1971 it was found that the returning group had significantly higher predicted GPA's. It was concluded that predicted GPA's of freshman Aid Recipients did not affect return rates for the sophomore year.

Discussion

Before the data relating to the specific hypothesis are discussed, several peripheral findings of general interest probably should be discussed.

Of the students who applied for freshman year financial aid at Oregon State University for the 1969-1970 and 1970-1971 academic year, a higher percentage of the females than males were awarded aid. The cause of this discrepancy may well be the fact that for those years, high school GPA was a factor in awarding aid. The female students

in this study generally had higher predicted GPA's, and thus had a slight advantage in receiving aid. Financial need was also a factor in awarding aid and because females have lower expected summer earnings, they tend to have higher need figures and therefore are more likely to receive aid.

Each group of aid applicants (Aid Recipients and Non-Recipients) had a higher mean predicted GPA than did the group of Non-Applicants. This may reflect the belief on the part of the general public and high school counselors that college financial aid awards are based strictly on scholastic achievement. At the present time, financial aid is awarded primarily on the basis of financial need. Yet the belief persists that aid is only for students with outstanding academic records.

It is of interest to note the changes in financial aid packaging procedures which occurred during the two year period under study (Table 20). A higher percentage of Aid Recipients in 1970-1971 received aid packages which included a combination of different types of aid than did those who received aid in 1969-1970. This trend continues to the present time.

The average amount of aid awarded to individuals was higher in 1970-1971 than in the previous year (Table 21), a fact which might be a reflection of changes in Oregon's economic conditions. With the depressed economic situation and increased unemployment in Oregon in 1970-1971, many aid applicants were able to demonstrate greater

financial need than were aid applicants for the previous year.

It is apparent when viewing the data in Table 22 that students in the aid categories which included grants had higher predicted grades than did students in the other aid categories. For certain types of grant aid such as state scholarships, high school GPA was one of the criteria in the awarding of aid. Thus, students receiving grants tended to have higher predicted GPA's.

Matriculation

This study shows that, while the awarding of financial aid effectively increases the matriculation rates of those students who have applied for financial assistance, the actual type or amount of aid awarded is not important. What is important appears to be whether or not the need of the individual is met by the Financial Aid Office.

The finding of relatively low matriculation rates for Non-Recipients supports previous research efforts (Sanders and Palmer, 1965; Hester, 1970) which have demonstrated the positive relationship between family income and college attendance.

Studies conducted by Crawford (1966) and Smith, Mathany and Milfs (1960) concluded that offers of aid increased the number of qualified students who attend college. Their findings are supported by the relatively high matriculation rates of Aid Recipients in the present study.

Not within the scope of this study was the question of what happens to aid applicants who do not matriculate at Oregon State University. They may attend other four year institutions, attend community colleges in their home towns, delay college and work to save money, or drop their college plans. A follow-up investigation of non-matriculating aid applicants would be of value in determining the effects of financial aid on students' educational decisions.

Achievement and Number of Hours Completed

The Aid Recipients, Non-Recipients and Non-Applicants differed significantly in terms of freshman year GPA. However, since each group achieved at approximately its predicted level, it becomes apparent that the observed differences in college achievement was influenced by differences in aptitude rather than by the awards of aid.

It is noteworthy that aid applicants (both Aid Recipients and Non-Recipients) had higher predicted GPA's and higher freshman year GPA's than did the Non-Applicants. This fact tends to dispel the belief held by some that students from low-income families who receive financial assistance have difficulty competing academically with other students.

For Aid Recipients, neither the type nor the amount of aid awarded was closely related to freshman year GPA. This means that students who were awarded aid packages which included work were

not hindered in terms of academic achievement. This finding supports previous studies (Hay and Lindsay, 1960; Kaiser and Bergen, 1968; Henry, 1967; Bryant, 1961) which concluded that working up to 15 hours per week does not affect college GPA.

The results of this study also indicate that awards of aid, as well as the type and amount of aid awarded, do not influence the number of credit hours completed by students during the freshman year. It is of interest to note, however, that female students completed significantly fewer hours than did males, a fact which may partially account for the higher freshman year GPA's of females.

Also noteworthy is the substantial decrease from 1969-1970 to 1970-1971 in the number of credit hours completed by all student groups. A possible reason for this decrease may be the fact that OSU had later dates to drop classes during the 1970-1971 year than in the previous year. Another possible influence is that in 1970-1971 there was decreased pressure from draft boards and male students may have felt it less necessary to take full loads each quarter.

Use of the Counseling Center

There appears to be greater Counseling Center usage by Non-Recipients than by Aid Recipients or Non-Applicants; however, the number of students in the study who used the Counseling Center was not sufficiently large to permit statistical tests. Only one percent

each year of the Aid Recipient group was known to the Counseling Center, as were slightly over seven percent of the Non-Recipient group and three percent of the Non-Applicant group.

If, as it has been assumed, the use of the Counseling Center is an indication of personal problems, then it appears that Non-Recipients are more likely to have problems than are Aid Recipients or Non-Applicants. It would be of interest to know if investigations with larger samples would support the contention that aid awards reduce personal problems of applicants, as measured by Counseling Center usage.

Persistence

This study shows that awards of aid, the type of aid, and the amount of aid, do not affect students' persistence in college as evidenced by withdrawal, suspension, and return rates. Obviously, factors other than financial need are related to the attrition rates of freshman students. These findings support studies conducted by Waller (1964), Summerskill (1962), and Faunce (1968a and 1968b), who described the variety of reasons other than financial ones which students have for not completing college.

It should be pointed out that sex of applicant is the most effective discriminator between freshmen who return to OSU for the sophomore year and those who do not. That males are more likely to

return may be at least partially explained by the fact that females are generally less vocationally oriented, are more likely to discontinue college when they marry, and often receive less parental encouragement to complete college.

There is a degree of uncertainty about what happens to students who do not persist at OSU. Studies of aid applicants who withdraw, are suspended, or do not return would be useful in assessing the effects of student financial aid.

Summary

The primary finding of this study was that aid awards enable students to attend Oregon State University. These are students who, without such aid, would be less likely to enroll. The actual type or amount of aid awarded does not affect matriculation rates. The fact that aid applicants have their financial needs met with one type of aid or another enables them to enroll and compete favorably with other students in terms of academic achievement and persistence through the freshman year.

It appears that programs of student financial aid administered by the Financial Aid Office at OSU are effective in promoting equity of educational opportunity.

V. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

Programs of student financial aid at colleges and universities have grown and changed rapidly in recent years. With these changes has come the need to evaluate the effectiveness of programs and to determine the extent to which they are meeting stated goals of creating equal educational opportunities by removing financial barriers to higher education.

This study investigated the effects of financial aid awards, as well as the type and amount of aid awarded, on the educational decisions and academic achievement of 2801 applicants for freshman year aid at Oregon State University during the 1969-1970 and 1970-1971 years.

The design of the study was twofold. First, aid applicants were classified according to whether or not they were awarded aid and these two groups (Aid Recipients and Non-Recipients) were compared with a sample of Non-Applicants for each of the two years. Comparisons were made in terms of the following variables:

1. Matriculation rates
2. Withdrawal rates
3. Suspension rates
4. Freshman year GPA

5. Number of credit hours completed
6. Return rates for the sophomore year
7. Use of the Counseling Center during the freshman year

For the second part of the study, Aid Recipients were classified according to the type and amount of aid they were awarded. Analyses were conducted to determine the relationships which existed between these factors and the first six variables listed above.

By controlling the variables of sex, age and scholastic aptitude and achievement, conclusions regarding the effects of aid awards on aid applicants were drawn.

Scholastic aptitude and achievement were controlled in the study by using multiple regression equations which were generated to predict freshman year GPA's for each student. The resulting predicted GPA's were used as a covariate in testing the hypotheses concerned with academic achievement.

Several statistical models were employed to test the hypotheses regarding differences among the groups studied. Aid Recipients, Non-Recipients and Non-Applicants were compared using chi-square analysis and analysis of variance. Multi-variate discriminant analysis and least-squares analysis of covariance were conducted to compare Aid Recipients who were classified by the type and amount of aid awarded.

Conclusions

When the students who applied for financial aid were grouped into the categories of Aid Recipients and Non-Recipients and compared to a sample of Non-Applicants, the following conclusions were drawn:

1. Awards of aid are effective in increasing the matriculation rates of applicants for freshman year financial aid at Oregon State University.
2. Aid applicants have higher predicted GPA's and have higher levels of academic achievement at OSU during the freshman year than do Non-Applicants.
3. Awards of aid do not affect the withdrawal rates, suspension rates, freshman year GPA, number of credit hours completed, or return rates for the sophomore year of applicants for freshman year financial aid.

The students in the Aid Recipient category were sub-grouped according to the type of aid and the amount of aid awarded. When these sub-groups were compared, the following conclusions were drawn:

4. The type of aid awarded to Aid Recipients does not affect their matriculation rates, withdrawal rates, suspension rates, freshman year GPA, number of credit hours completed, or return rates for the sophomore year.

5. The amount of aid awarded to Aid Recipients does not affect their matriculation rates, withdrawal rates, suspension rates, freshman year GPA, number of credit hours completed, or return rates for the sophomore year.

Recommendations for Further Research

The findings of this study suggest the following recommendations for further research:

1. This study should be replicated at other institutions because of differences among institutions in terms of student populations and financial aid programs.
2. Research should be conducted to determine what happens to aid applicants who are denied aid and do not matriculate. Do they attend other less expensive colleges such as local community colleges? Do they work to save money so they can attend college at a later date? Do they drop their college plans?
3. Research is needed on students who do not receive aid yet attend the college where they were denied. How do they finance their educational expenses?
4. The relationship between awards of aid and Counseling Center usage should be studied in detail. Do awards of aid reduce personal problems which are linked to financial worries? Is

Counseling Center usage a valid measure of students' personal problems?

5. Longitudinal studies should be conducted to determine the effects of financial aid beyond the freshman year. What influence do various types of aid have on recipients' persistence through graduation?
6. Studies should investigate the attitude of aid applicants and their parents toward various types of financial aid awards. Do attitudes change as the aid recipients approach graduation?
7. Research is needed to determine the specific effects of financial aid awards on the educational decisions of students from minority ethnic groups.
8. Studies should be conducted to investigate the effects of offers of aid early in the high school years to capable low-income students who have the interest and desire to pursue higher education.

BIBLIOGRAPHY

- Berdie, Ralph F. 1953. Why don't they go to college? *Personnel and Guidance Journal* 30:352-356.
- Bowman, James L. 1967. Introduction. In: *The economics of higher education*, New York, College Entrance Examination Board. 88 p.
- Bradfield, Eugene L. 1967. College adjustment and performance of low-income freshman males. *Personnel and Guidance Journal* 46:123-129.
- Bryant, Girard T. 1961. Here's how they work. *Junior College Journal* 32:205-206.
- Cartter, Allan M. 1971. Scientific manpower for 1970-1985. *Science* 172:132-140.
- Chambers, Merritt M. 1968. Higher education: who pays? who gains? Danville, Illinois, Interstate Printers and Publishers, Inc. 292 p.
- Chase, Clinton I. 1968. The non-persisting university freshman. *Journal of College Student Personnel* 9:165-170.
- Clark, Selby G., E. Wayne Wright, and Clyde A. Parker. 1957. Do renewable scholarships promote higher grades? *Personnel and Guidance Journal* 35:302-305.
- College Entrance Examination Board. 1971. Barriers to higher education. New York. 148 p.
- Crawford, Norman C., Jr. 1966. Effects of offers of financial assistance on the college-going decisions of talented students with limited financial means. Doctoral dissertation. Evanston, Illinois, Northwestern University. 212 numb. leaves.
- Critchfield, Jack B. 1967. Long term credit: implications for colleges and universities. In: *The Economics of Higher Education*, New York, College Entrance Examination Board. p. 65-70.

- Dickinson, Carl and Betty Newbegin. 1959. Can work and college mix? *Personnel and Guidance Journal* 38:314-317.
- Dickson, Douglas R. 1969. Do you believe any of these 10 myths about financial aid? *College Board Review* 73:14-18.
- Faunce, Patricia S. 1968a. Withdrawal of academically gifted women. *Journal of College Student Personnel* 9:171-176.
- Faunce, Patricia S. 1968b. Personality characteristics and vocational interests related to the college persistence of academically gifted women. *Journal of Counseling Psychology* 15:31-40.
- Fenske, Robert H. and Joseph D. Boyd. 1971. The impact of state financial aid to students on choice of public or private college. *College and University* 46:98-107.
- Froomkin, Joseph. 1968. Is conventional financial aid obsolete? *College Board Review* 68:5-7.
- Froomkin, Joseph. 1970. Aspirations, enrollments, and resources: the challenge to higher education in the seventies. Washington, D. C., U. S. Government Printing Office. 151 p.
- Gallant, Jonathan A. and John W. Prothero. 1972. Weight-watching at the university: the consequences of growth. *Science* 175: 381-38.
- Green, Edith. 1971. Federal student aid: past, present and future. *Journal of Student Financial Aid* 1:14-21. May, 1971.
- Greenshields, Myrel J. 1957. The college-going decision: high school seniors give their reasons. *College and University* 32: 208-217.
- Hay, John E. and Carl A. Lindsay. 1969. The working student: how does he achieve? *Journal of College Student Personnel* 10:99-144.
- Henry, Joe B. 1967. Part-time employment and academic performance of freshmen. *Journal of College Student Personnel* 8:57-260.
- Hester James M. 1970. In: Priorities in higher education, the report of the president's task force in higher education. Washington, D. C., U. S. Government Printing Office. 31 p.

- Hoel, Paul G. 1947. Introduction to mathematical statistics. New York, John Wiley and Sons. 258 p.
- Holland, John L. 1959. The prediction of college grades from the California Psychological Inventory and the Scholastic Aptitude Test. *Journal of Educational Psychology* 50:135-142.
- Holland, John L. and Alexander W. Astin. 1962. The prediction of the academic, artistic, scientific, and social achievement of undergraduates of superior scholastic aptitude. *Journal of Educational Psychology* 53:132-143.
- Holland, John L., Alexander W. Astin, and Robert C. Nichols. 1963. The research program of NMSC - part one. *Merit Scholar* 5:21-27.
- Hoppock, Robert. 1957. Occupational information. New York, McGraw-Hill. 534 p.
- Hoyt, Donald P. 1968. Forecasting academic success in specific colleges. Research Report No. 27. Iowa City, Iowa, American College Testing Program. 55 p.
- Hoyt, Donald P. and Leo Munday. 1966. Academic description and prediction in junior colleges. Iowa City, Iowa, American College Testing Program. 22 p.
- Huff, Robert A. 1969. Analysis of variable factors related to selection of Oregon State scholarship recipients and application of certain factor relationships for predicting recipient selection. Doctoral dissertation. Eugene, University of Oregon. 201 numb. leaves.
- Iffert, Robert E. 1957. Retention and withdrawal of college students. Washington, D. C., U. S. Government Printing Office. Series 1958 (No. 1). 214 p.
- Kaiser, Herbert E. and Gerald Bergen. 1968. Shall college freshmen work? *Journal of College Student Personnel* 9:384-385.
- Kimball, Roland B. 1968. Do scholarships help? *Personnel and Guidance Journal* 46:782-785.
- Max, Pearl. 1969. How many graduate? *College and University* 45:63-76.

- Munday, Leo. 1965. Comparative predictive validities of the American College Tests and two other scholastic aptitude tests. Research Report No. 6. Iowa City, Iowa. American College Testing Program. 14 p.
- Nash, George. 1969. A review of financial aid research. Journal of the Association of College Admissions Counselors 14:20-28.
- National Science Foundation. 1962. The duration of formal education for high ability youth. Washington, D. C., U. S. Government Printing Office. 41 p.
- Newsletter. 1971. New bills before congress. New York State Financial Aid Administrators Association. p. 1, col. 1. Sept., 1971.
- Newsweek. 1971. Stop and Go. 78:72. Oct. 18, 1971.
- Nichols, Robert C. 1965. The financial status of able students. Evanston, Illinois, National Merit Scholarship Corporation. 31 p.
- Oregonian. 1972. College class dropoff seen. (Portland, Oregon) p. 36, col. 5. March 12, 1972.
- Pell, Claiborne. 1971. Education amendments of 1971. Journal of Student Financial Aid 1:18-21. Nov., 1971.
- Richards, James M., Jr., John L. Holland and Sandra W. Lutz. 1966. The assessment of student accomplishment in college. Iowa City, Iowa, American College Testing Program. 28 p.
- Sanders, Edward and Hans Palmer. 1965. The financial barrier to higher education in California. Claremont, Pomona College. 211 p.
- Schlekat, George A. 1968. Do financial aid programs have a social conscience? College Board Review 69:15-20.
- Sewell, William H. and Vernal P. Shaw. 1969. Parents' education and children's educational aspirations and achievements. American Sociological Review 33:191-209.

- Slocum, Walter L. 1956. Social factors involved in academic mortality. *College and University* 32:53-64.
- Smith, Sherman E., Howard V. Mathany, and Merle M. Milfs. 1960. Are scholarships the answer? A report on a scholarship program for students of limited means. Albuquerque, University of New Mexico Press. 89 p.
- Stordahl, Kalmer. 1970. Influences on voluntary withdrawal from college. *College and University* 45:163-171.
- Summerskill, John. 1962. Dropouts from college. In: Nevitt Sanford (ed.) *The American college*. New York, Wiley. p. 627-657.
- Super, Donald E. 1953. A theory of vocational development. *American Psychologist* 8:185-190.
- Thistlethwaite, Donald L. 1958. Scholarships and the college-going behavior of talented students. *College and University* 34:65-73.
- Tickton, Sidney. 1969. The magnitude of American higher education in 1980. In: Alvin C. Eurich (ed.) *Campus 1980*. New York, Delacorte Press. 326 p.
- Trueblood, Dennis L. 1957. Effects of employment on academic achievement. *Personnel and Guidance Journal* 36:112-115.
- United States Department of Health, Education and Welfare. 1969. *Toward a long-range plan for federal financial support for higher education: a report to the president*. Washington, D. C., U. S. Government Printing Office. 73 p.
- United States News and World Report. 1971a. Now it's colleges seeking students. 71:42. Sept. 9, 1971.
- United States News and World Report. 1971b. Record year on American campuses. 71:38. Sept. 20, 1971.
- Waller, Constance. 1964. Research related to college persistence. *College and University* 39:281-294.
- West, Elmer D. 1963. Financial aid to the undergraduate. Washington, D. C., American Council on Education. 78 p.