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**Who benefits: A study of Pell Grant and Stafford Loan awards  
in four-year colleges, 1986–1987 and 1989-1990**

**Fraser, Donald Ross, Ed.D.**

**The University of North Carolina at Greensboro, 1994**

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WHO BENEFITS: A STUDY OF PELL GRANT AND STAFFORD LOAN  
AWARDS IN FOUR-YEAR COLLEGES, 1986-87 AND 1989-90

by

Donald R. Fraser

A Dissertation Submitted to  
the Faculty of the Graduate School at  
The University of North Carolina at Greensboro  
in Partial Fulfillment  
of the Requirements for the Degree  
Doctor of Education

Greensboro  
1994

Approved by

A handwritten signature in cursive script, appearing to read "C. M. Achille". The signature is written in black ink and is positioned above a horizontal line.

Dissertation Advisor

FRASER, DONALD R. Ed.D. *Who Benefits: A Study of Pell Grant and Stafford Loan Awards in Four-year Colleges, 1986-87 and 1989-90.* (1994) Directed by Dr. Charles M. Achilles. 130 pp.

This study investigates who received Pell Grants and Stafford Loans in four year colleges in 1986-87 and 1989-90 to see if there were differences in the likelihood of receiving these types of aid based on the year, gender, race, dependency status, institutional control, level of institution, family income, and home address.

The study analyzed data collected in the National Postsecondary Student Aid Studies conducted by the National Center for Educational Statistics in 1986-87 and 1989-90. The results are based on the responses of a sample of 51,649 students who attended four-year colleges in fall, 1986 and fall, 1989. Data were analyzed using logistic regression procedures. Odds ratios were used to estimate the differences in the likelihood of receiving aid as a function of the independent variables noted above.

The following research questions were addressed in the study: 1) Did the probability of receiving aid differ by year, location, level, gender, race, family income, dependency status, and institutional control for students from four-year colleges. 2) Was the relationship of the independent variables on the probability of students receiving aid different in 1986-87 and 1989-90? 3) Were there joint effects among the dependent variables and their interaction with the different years of the studies? 4) Were there differences in the receipt of aid for students who lived in North Carolina compared to students who lived someplace else?

Findings after control for other variables showed that independent students were more likely to receive aid than dependent students with the difference more pronounced in 1989-90. In 1986-87 males and females had approximately equal chances of receiving aid, but in 1989-90 the odds of females receiving aid were only 88% of the odds of males receiving aid. In both survey years non-white students were less likely to receive aid than white students and the difference was more pronounced in 1989-90. Students in colleges supported by public funds were more likely to receive financial aid than students at privately funded colleges. Students in the

top three levels of family income were much more likely to receive aid in 1990. Students whose home addresses were in North Carolina were less likely to receive aid than those living outside the state.

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APPROVAL PAGE

This dissertation has been approved by the following committee of the Faculty of the Graduate School at the University of North Carolina at Greensboro.

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## CHAPTER I

### INTRODUCTION AND OVERVIEW

In the United States people place a high priority on citizen participation in decision-making through electing public officials, holding public office, or working with organizations in the community. A basic premise of this participatory culture is having an educated population who can become involved in the community around them. Through World War II a high school education was usually sufficient to prepare citizens to participate in making society work. As the world has become a more complex place, more knowledge is needed for people to participate in an informed way and postsecondary education has replaced high school as the standard level of education for most decision-makers within our communities.

As the educational standards have increased there are more educational institutions available for people to acquire a postsecondary education. Financial aid programs have become increasingly significant as a vehicle which allows more people to enroll in postsecondary institutions to acquire the skills and knowledge that are critical to successful participation in our more complex society. The Pell Grant and Stafford Loan programs were initiated to provide access to higher education for those who do not have the financial means to participate based solely on their own resources. They provide opportunities for low-income and other disadvantaged people to learn skills and knowledge that will help them actively participate in our society. These programs are thus a critical means for including all citizens in public decision-making. It is important to learn the extent to which these two programs are serving lower-income and disadvantaged youth to determine whether they are fulfilling their charge of providing access to higher education for those who otherwise would not have such access.

Student financial aid programs in the United States began as early as the 17th century. At Harvard College, founded in 1636, early records indicate bequests that were designated for



students in need of financial assistance. As early as 1643, Lady Anne (Radcliffe) Mowson provided an endowment to aid the neediest of the most academically promising students to attend Harvard. The terms of her bequest named the college as the administrator of the funds and of the annual selection process. These students were eligible for support through the end of their MA degrees. In 1659, Robert Keayne provided financial assistance for students whose parents could not afford the college costs. While he believed that parents had the primary responsibility to fund the education of their children, he also believed that aid should be available for the best of the poorest students pay the costs beyond that which their parents could pay. Restricted bequests also appeared by 1670, when William Pennoyer provided funds for categorical assistance to students. In this case he included students from his own family and his home county stipulating that the assistance would last a maximum of eight years for each recipient.

A fourth example of colonial student assistance was the bequest of Samuel and Hannah Sewall in 1699, specifying that the funds were to be used for either English or Indian students from low-income families from their county (Godzicki,1975). Stipulations included on these bequests were precursors of modern student financial aid programs, providing funds for students from poor families, support for outstanding students, college administration of funds and selection of students, annual review of need, established periods of eligibility, awards that supplement parental contributions, and provision of funds for minority students. Prior to the 1860's, however, financial aid was only provided by individuals for individual students. There were no organized institutional or governmental programs for aid to higher education until that time.

#### Federal Role in Higher Education

The development of higher education has been closely tied to the growth of the United States. In the early days of the country there was a great need to develop indigenous leaders for all aspects of society - religion, politics, business and economics, and military service. As noted

previously, individuals in the 17th and 18th centuries provided a variety of private resources to support and encourage these leaders. Beginning in the 1860's, the federal government and higher education became partners in responding to the nation's needs. In the late 19th century the country grew and assumed more leadership around the world. There was a greater need for citizens to understand the values and tenets of our democracy and to appreciate the values of the diverse international community.

As the country's needs for a diversified workforce became evident the federal government responded by developing new programs to make it easier for more citizens to participate in higher education. In 1944 the Congress passed the Servicemen's Adjustment Act (G.I. Bill) to assist veterans returning from World War II to gain knowledge and develop skills to address the new challenges facing our nation and in 1958 the National Defense Education Act was passed to encourage teaching in science and math to help achieve leadership in technological aspects of the new global society.

This involvement increased during the 1960's as a part of the "Great Society" as the government recognized that higher education could be an effective vehicle to provide equal opportunity for all citizens to participate in the benefits of American society. The Higher Education Facilities Act of 1963 provided federal funds for construction of new facilities on campuses. Combined with the passage of the Higher Education Act of 1965, these two new initiatives greatly expanded the scope of federal funding for higher education. Prior to 1963 federal funding was primarily available for support of research on postsecondary campuses. With these two new laws, federal funding expanded to facility construction, student financial assistance, and various categorical programs such as funding for libraries and developing colleges. By 1966 federal expenditures for higher education had risen to \$3.5 billion for research, construction, student aid, and categorical grants (Gladieux & Wolanin, 1976).

Although the development of higher education is closely tied to growth of the United States, a historical review of the relationship between the federal government and higher

education indicates that the role of the federal government has been to supplement the states in developing and supporting higher education. With the exception of the service academies, the federal government has not been involved in the direct management of institutions of higher education (Gladieux & Wolanin, 1976).

### Equal Opportunity and Higher Education

During the 1960's, as a part of the increasing awareness of the social needs of disadvantaged Americans, there was a recognition that there were inequities in the opportunities to participate in higher education. Census reports indicated that college-age youth from families with incomes over \$15,000 were almost 5 times more likely to be enrolled in a postsecondary institution than youth from a family with an income less than \$3,000. Demographic figures also demonstrated that African Americans and other minorities were underrepresented on campuses across the country. The College Work Study Program of 1964 and the Higher Education Act of 1965 are specific examples of the partnership that was developed between the federal government and higher education in order to address the issues of equal opportunity (Gladieux & Wolanin, 1976).

The federal government initiated the College Work Study Program in 1964 under the auspices of the Office of Equal Opportunity. This program provided campus jobs in order to fund higher education using a ratio of 80% federal funds and 20% institutional matching funds (Gladieux & Wolanin, 1976).

Congress passed the first Higher Education Act in 1965 (Public Law 89-329). This legislation authorized the Congress to fund a number of programs to provide greater opportunities for students to attend institutions of postsecondary education. The underlying premise for implementing federal financial aid programs for college students was to provide opportunities for high school graduates to attend postsecondary institutions regardless of their personal income circumstances. Education was defined as a major vehicle to enable all citizens to improve their personal situations and thereby contribute to the improvement of our overall

society. The financial aid legislation was one component of many federal initiatives to increase opportunities for economically disadvantaged citizens, leading toward equality in employment practices, health care benefits, voting rights, housing, and their overall standard of living.

These financial aid programs included Educational Opportunity Grants which provided funds for institutions to make direct scholarships to low-income students providing opportunities for a postsecondary education. They also included the first program of federal insurance for loans obtained by students from either public or private sources. In this loan program the federal government guaranteed repayment and provided a subsidy to pay the interest on the loan while the student was enrolled in a postsecondary program.

The Higher Education Act represented the first time the government focused its attention on supporting students who were financially disadvantaged. Previously the only student focus had been to support students who were academically gifted in order to insure that the United States could compete with other nations. It was also significant in ending the controversy about providing federal government aid to church-related schools and colleges (Gladieux & Wolanin, 1976).

#### Federal Financial Aid Legislation

Since 1965 the Congress has addressed the issues of student financial aid many times. The Higher Education Act has been reauthorized four times since its original passage: in 1972 (Public Law 92-318), 1980 (Public Law 96-374), 1986 (Public Law 99-498), and 1992 (Public Law 102-325). Specific legislative amendments supplemented these major reauthorizations.

In 1972 Congress initiated the program for Basic Educational Opportunity Grants (BEOG's). This program provided direct awards to students for the first time, rather than sending funds to the institutions for them to distribute to students. These grants provided aid to students based solely on their financial need and were targeted toward low-income students (Gladieux & Wolanin, 1976). Within the BEOG program, Congress established federal guidelines and income formulae for all agencies to use in awarding these funds. This was a major departure

from previous programs in which individual institutions established their own financial formulae for identifying student recipients (Gillespie & Carlson, 1983). These BEOG's were renamed Pell Grants in 1980.

In 1978 the Congress passed the Middle Income Assistance Act (Public Law 95-566) which greatly expanded the opportunity for students from middle-income families to qualify for BEOG's. The focus of federal support shifted from a specialized emphasis on assistance to students from low-income families to a wider range of students and their families. In the same year the Congress increased the income limits used to determine eligibility for the Guaranteed Student Loan (GSL) program enabling many more people to qualify for these loans (Gillespie & Carlson, 1983).

With the advent of the Reagan Administration in 1981, the climate of support changed drastically for student financial aid programs. Based on his platform of cutting government spending, President Reagan proposed in 1981 to cut funding for financial aid programs significantly. Although Congress rejected most of the administration's proposals, there were still numerous changes in the federal financial aid programs. Two significant changes reduced funding. These were the reinstatement of income limits for eligibility in the GSL program and the phase-out of Social Security benefits for surviving children, 18-22 years old. However, a new program authorizing Parent Loans for Undergraduate Students (PLUS) was established (Gillespie & Carlson, 1983).

Despite reductions, Congress continued to stress financial aid programs as an important avenue to provide access to higher education for students who did not have sufficient personal or family resources to pay for postsecondary education. The 1965 Higher Education Act includes the following statement of purpose:

It is the purpose of this part to provide through institutions of higher education, educational opportunity grants to assist in making the benefits of higher education to qualified high school graduates of exceptional financial need, who for lack of financial

means of their own or of their families would be unable to obtain such benefits without such aid. (Public Law 89-329, Title IV, Sec. 401, (a). 11/8/65)

This legislative intent has continued through subsequent reauthorizations of the Higher Education Act. Public Law 99-498, the 1986 reauthorization of the Higher Education Act, includes the following statement of purpose:

**Purpose.-** It is the purpose of this part, to assist in making available the benefits of postsecondary education to eligible students (defined in accordance with section 484) in institutions of higher education by -

- (1) providing basic educational opportunity grants to all eligible students;
- (2) providing supplemental educational opportunity grants to those students who demonstrate financial need;
- (3) providing for payments to the States to assist them in making financial aid available to such students;
- (4) providing for special programs and projects designed (A) to identify and encourage qualified youths with financial or cultural need with a potential for postsecondary education, (B) to prepare students from low-income families for postsecondary education, and (C) to provide remedial (including remedial language study) and other services to students; and
- (5) providing assistance to institutions of higher education. (Public Law 99-498, Sec. 401, 10/17/86)

Although the stated purpose of this legislation is to address the issue of social mobility for groups of students who have not had access to higher education, the record indicates that access for these under-represented groups has varied widely since 1965.

#### Information on College Participation

A general review of research on college student participation indicates that federal financial aid programs may not be achieving their stated purpose of promoting social mobility

through participation in higher education. A recent study from the American College Testing service analyzes the extent to which four groups of Americans have participated in higher education since the passage of the Higher Education Act. The four groups are women, Blacks, Hispanics, and students from low-income families. The study analyzes six dimensions to define equity of participation in postsecondary education: preparation for college, access to college, college choice, college completion, choice of field of study, and attainment of bachelor's degree (Mortenson, 1991).

Women have made some significant gains in achieving educational equity with men during this period. The rate of four-year college completion by women has climbed from 9% in 1965 to 23% in 1989. The completion rates for males during the same time period has increased from 16% to 24% (Mortenson, 1991).

During this same time period, however, members of the three other underrepresented groups have been much less successful in achieving educational equity with white students or students from high-income families. The members of all three groups demonstrated educational gains in the 1960's through the late 1970's, i.e., college access and college completion rates increased and the gaps between these groups and white or high-income students became more narrow. In the 1980's, however, members of all three groups experienced a reversal of the gains made in the 1970's (Mortenson, 1991).

Information from the Bureau of Labor Statistics supports these findings. In the 1960's college attendance by women was about 14% less than attendance by men. Since 1970 the gap between men and women has decreased and in 1976 participation by women was on a parity with participation by men (Mortenson, 1989). The record for nonwhite minority students is, however, quite different. In 1960 the gap was 13% fewer non-whites participating than whites. By the late 1970's this gap was less than 1%, but in the period 1980-86 it increased to 14%. Since 1986, the gap seems to be decreasing (Mortenson, 1989).

### Statement of the Problem

The expressed intent of federal financial aid programs is to provide access to postsecondary education for those who would not otherwise be able to participate. Research on college participation rates, however, indicates that non-white minorities and students from low-income families are not participating in postsecondary education to the same extent that white students from middle and high income families are participating.

The process for awarding financial aid has also become more complex with increases in the number and types of financial aid programs since 1965, increases in the costs of attending postsecondary institutions, and increases in the number of postsecondary institutions whose students are eligible to receive financial aid funds. These changes in institutional costs, the variety of available programs, and the number of eligible institutions make it more difficult to assess the impact that financial aid programs have on the students they are supposed to serve. It is no longer clear who these programs are serving or how well the recipients are being served.

### Study Sample

The sample for this study is from the National Postsecondary Student Aid Study (NPSAS) conducted in 1986-87 and in 1989-90. It includes students who attended four-year colleges and universities during those two years. The National Center for Educational Statistics (NCES) established the NPSAS in 1985 to examine financial aid from the perspective of the individual student. NCES plans to conduct the study every three years to develop a longitudinal profile of how students pay for postsecondary education. The first survey was conducted in 1986-87 and the second survey was conducted in 1989-90. The 1986-87 study is based on a nationally representative sample of 59,886 students at 1,074 postsecondary institutions and the 1989-90 study is based on a sample of approximately 70,000 students at 1,130 postsecondary institutions.

NPSAS is a comprehensive study in that it collects data from all types of postsecondary students, including full-time, part-time, aided, non-aided, undergraduate, and postbaccalaureate,



who are enrolled in any postsecondary institution, ranging from doctoral- granting institutions to institutions with programs that are only three months long, regardless of whether they are public, private for-profit, or not-for-profit. Enrollment data are collected from institutional registration records and financial aid data are collected from financial aid records from the institution. Each student in the sample provides extensive data on enrollment status, financial-aid status, costs to attend school, and demographic and socio-economic characteristics.

This study investigates who received Pell Grants and Stafford Loans (formerly Guaranteed Student loans) in 1986-87 and in 1989-90 and whether gender, race, family income, dependency status, type of institutional control, level of degrees awarded, or living in North Carolina make a difference in the likelihood of receiving federal financial aid through one of these programs.

#### Research Questions

1. Did the probability of receiving federal financial aid differ by year, location, level, gender, race, family income, dependency status, and institutional control for students at four-year colleges?
2. Was the relationship of location, level, gender, race, family income, dependency status, and institutional control to the probability of students at four-year colleges receiving federal financial aid different in 1986-87 and in 1989-90?
3. Are there joint effects among the variables of level, location, gender, race, family income, dependency status, and institutional control in terms of their interaction with the different years of the studies?
4. Are there differences in the odds of receipt of aid for students at four-year colleges from North Carolina and from other locations in the United States and did the impact of North Carolina residence on receipt of aid differ in the 1986-87 and 1989-90 NPSAS studies?

### Definition of Terms

1. Access. In financial aid programs access refers to providing equal opportunity for students from low-income families to participate in postsecondary education.
2. Federal Financial Aid Programs. The study will investigate the funding patterns for the two largest federal financial aid programs only: the Pell Grant program, formerly known as the BEOG program and the Stafford Loan program, formerly known as the GSL program.
3. Institutional Control. The colleges or universities the respondents attend are classified as public or private institutions based on the source of their primary funding - government funds or private funds.
4. Level. The colleges or universities in the study are identified as institutions which award doctoral degrees or do not award doctoral degrees.
5. Location. The respondents in this study are from all over the country and the analysis compares receipt of financial aid for respondents in North Carolina with respondents from all places except North Carolina.
6. Pell Grant Program. This program provides scholarships directly to undergraduate students who qualify for the scholarships based on their personal and family income.
7. Stafford Loan Program. This program provides a federal guarantee for loans made to students within certain income limits. It also provides for a subsidy of the interest for these loans while the student continues in school.
8. Students. In the study, students are undergraduates attending four-year colleges and universities in 1986-87 and 1989-90.
9. Student Characteristics. This study uses on the following student characteristics for analysis: gender, whether the respondent is male or female; race, whether the respondent is white or nonwhite; family income, the reported family income of the respondent as a categorical variable; and dependency status, whether the respondent is

classified as financially dependent on family or financially independent for the purposes of federal financial aid programs.

10. Study Sample. The sample for this study consists of students who were included in a sample of students enrolled in postsecondary institutions in fall, 1986 and in fall, 1989. The sample was developed for the National Postsecondary Student Aid Study (NPSAS) conducted by the National Center for Educational Statistics.

#### Purpose of the Study

In 1990-91 the federal government allocated \$6.7 billion for student financial aid programs. It is not clear whether these programs are serving the populations for whom they are intended. This study investigates who received Pell Grant funds and Stafford Loans in 1986-87 and in 1989-90 to see if there are differences in the award rate for students in four-year colleges and universities based on location, gender, race, family income, dependency status, and institutional type.

The 1986 Reauthorization of the Higher Education Act (Public Law 99-498) occurred between the times that the data were gathered. This study provides information about the impact of those reauthorization changes on beneficiaries of these two federal financial aid programs. Study results will be shared with campus financial aid officials and the National Center for Educational Statistics for their use in working with these two financial aid programs. This information may assist public policy-makers in their decisions about the best ways to allocate public financial aid funds to carry out the legislative intent for these programs and to meet the needs of future college students.

#### Limitations of the Study

1. A financial aid award is only one factor that influences a student's decision to attend a four-year college or university. Many other factors beyond the scope of this study, e.g., parents, other family members, career needs and goals, significantly impact a student's

decision to participate in higher education. The data upon which this study is based do not provide information on the possible effects of these other factors.

2. The survey is only based on participating students (i.e., those attending college). Individuals who did not attend primarily or in part because of failure to receive aid were not included.
3. The sample for these studies was selected using a three step procedure. The first selection was of geographic area, followed by selection of institutions, and completed by selection of a sample of students within the institutions. While this approach may yield reasonable results for the nation as a whole, results for smaller geographic areas, such as states, may be less stable. Therefore, results comparing North Carolina with the national sample should be treated with caution.

#### Organization of the Study

The study is organized as follows:

Chapter One. This chapter contains the introduction, statement of the problem, purpose of the study, research questions, definition of terms, significance, limitations, and organization of the study.

Chapter Two. This chapter examines the federal legislation which authorizes funding for these two financial aid programs and research which is relevant to the study.

Chapter Three. This chapter is a narrative discussion of the research methodology used in this study including a description of the NPSAS, its population, sample, instrumentation, collection procedures and the analysis procedures used in the present study.

Chapter Four. This chapter contains a narrative presentation of the results of the analysis of the data from the NPSAS. It is accompanied by necessary tables, figures, and charts. There is a discussion of the findings in relation to the legislative intent for these programs and previous relevant research.

**Chapter Five.** This chapter contains a summary of the study and the responses to the research questions. It addresses the following areas:

1. **Summary.**
2. **Specific conclusions which can be made.**
3. **Implications of the results for public policy.**
4. **Recommendations for additional research.**

## CHAPTER II

### REVIEW OF RESEARCH AND LITERATURE

#### Federal Role in Higher Education

The Federal Government has played a major leadership role in the development of higher education in the United States. There has not been a comprehensive federal policy for higher education, but rather a network of educational programs and initiatives through various agencies of the federal government in all three branches - executive, legislative, and judicial. The federal government has worked through local governments to provide funding for increasing the number of colleges and universities and expanding educational programs to meet the needs of the developing society. It has also worked directly with institutions increasing and improving their physical facilities and promoting extensive research in all academic fields to improve knowledge and contribute to the social, economic, cultural, and scientific growth of the country and its citizens (Gladieux & Wolanin, 1976).

The federal government and institutions of higher education have also worked together to advance important public policy issues such as equal opportunity for all to participate in postsecondary education, regardless of gender, race, or family income. Since World War II it has allocated significant resources to student financial aid programs which have made it possible for many to participate in higher education who would not otherwise do so.

#### Federal Role in Student Financial Aid

The first federal government programs for aid to higher education were the two Morrill Acts in 1862 and 1890 and the Hatch Act in 1887. The first Morrill Act (1862) provided for the support of at least one college in every state. Each state was given public lands or credit equal to 30,000 acres for each senator and representative based on the apportionment of 1860. As a result of this provision, the new "land grant" colleges received funds from the sale of over 17 million

acres of public lands (Rudolph, 1962). The program's intent was to encourage the development of skilled labor to promote greater economic prosperity as the nation began to move from an agrarian to an industrial economy (Gladieux & Wolanin, 1976). In 1887, Congress passed the Hatch Act authorizing federal funding for creation of agricultural experiment stations which demonstrated to skeptical farmers that higher education could be used to address the specific problems and issues they were facing on their farms (Rudolph, 1962). With the second Morrill Act (1890), the federal government began the practice of making annual appropriations to support the land grant institutions. The 1890 Act also specified that there would be no appropriations to states that denied admission to students based on race unless the state established separate, but equal facilities for non-whites (Rudolph, 1962). These laws are regarded as the first forms of public aid to students as they provided lower cost, accessible higher education, for greater participation in higher education (Godzicki,1975).

In 1935 the federal government started the National Youth Administration which provided funds to colleges to support students in work programs while attending college. From 1935-1945 approximately 600,000 students received assistance through this program. Private institutions also developed their own scholarship, loan, and employment programs to assist students on their campuses. During World War II the Student War Loans program assisted upperclass and graduate students in science and health programs who agreed to accept work in the war effort. About 11,000 students participated in this program in 1943 and 1944 (Godzicki,1975).

At the end of World War II there was a need for a transition period to absorb the people returning from the war into the peace-time economy and society in general. The Servicemen's Readjustment Act of 1944, commonly called the G.I Bill, provided special benefits to those who made sacrifices to serve their country and allowed them to "catch-up" with their contemporaries who were not called away to service (Gladieux & Wolanin, 1976). Under the auspices of the G.I. Bill many veterans attended colleges and universities to learn new skills. This also gave the

country more time to assimilate them into the new peace-time economy. In addition many states provided tuition scholarships for veterans to use at public institutions (Godzicki,1975).

In 1958 the Congress passed the National Defense Education Act (NDEA) after the Soviet launching of the Sputnik, a spacecraft. The NDEA provided for a long-term loan program and was passed in response to the perceived threat that America was falling behind the Soviets in the development of scientists and researchers. In past discussions of federal aid to higher education there had been sharp disagreements about providing funds to institutions that were owned by religious organizations or to historically black colleges and universities. With the Sputnik threat, issues of race and religion, which had influenced all previous discussions of public funding for higher education, became subordinate to the over-riding issue of national security. (Gladieux & Wolanin,1976)

The nation entered the 1960's with a growing awareness of the importance of higher education and a great need for additional facilities to accommodate the large increase in the number of students. In 1963 the Congress passed the Higher Education Facilities Act to provide loan funds to assist colleges and universities in renovating and building new facilities to accommodate the increasing number of students and to support the expansion of academic programs (Gladieux & Wolanin, 1976).

#### Legislative History of Financial Aid Programs

##### Servicemen's Adjustment Act of 1944 (PL 346 - G. I. Bill)

This legislation initiated a program to assist returning World War II to learn new skills. It also provided an opportunity for the nation to adjust to the large numbers of returning servicemen. The legislation was in effect for 12 years, 1944-1956, and provided \$14 billion for approximately seven million veterans of both World War II and the Korean Conflict. The G.I. Bill thus became the first long-term direct federal financial aid program for students in higher education. The program was very successful in getting veterans into postsecondary institutions and was used as a prototype for later financial aid programs (Godzicki,1975).



The G.I. Bill provided funds for veterans who were enrolled in educational programs of 90 days or more up to a maximum of four years. Originally, it paid for tuition, fees, and other expenses up to \$500 annually and also provided a monthly subsistence allowance to the student in addition to the funds for the direct school expenses. The veteran could apply for these benefits within two years of discharge, could choose any approved institution and was only required to make satisfactory progress toward the degree (Public Law 346, Part VIII, 1944).

National Defense Educational Act (NDEA) (PL 85-864)

In 1958 the Congress passed the National Defense Education Act (NDEA) in response to the perceived threat that America was falling behind the Soviets in the development of scientists and researchers. This program provided long-term, low-cost student loans for undergraduates and included a provision to cancel half of the repayment for students who chose to teach. It was administered through colleges and universities who provided a 10% match for the federal loan funds (Gladieux & Wolanin, 1976).

These loans funds were distributed to states based on the ratio of the number of persons enrolled on a full-time basis in the state compared to the number of full-time students enrolled nationally. Institutions then applied to their state for an allocation of loan funds. The institutions were authorized to make low-interest loans to students who would not be able to attend school without such a loan. Special consideration was given to students with "superior academic backgrounds" who were planning to teach at the elementary or secondary school level, or to students with "superior capacity or preparation in science, mathematics, engineering, or a modern language" (Public Law 85-864, Title II, Section 204 (4), 1958). The provisions of the loan program included maximum annual awards of \$1,000 with a total maximum award of \$5,000, an interest rate of 3% with repayment of the loans to begin one year after completion of the program, a 10 year repayment cycle, and up to 50% forgiven for those students who became teachers (Public Law 85-864, Title II, 1958).

### Higher Education Act of 1965 (PL 89-329)

The passage of the Higher Education Act of 1965 (Public Law 89-329) was a landmark event in the history of federal support for students and for postsecondary institutions in the United States. It was the first legislation to incorporate a comprehensive approach to federal support for the issues facing higher education. It included sections on support for University Extension and Continuing Education, College Library Assistance and Library Training and Research, Strengthening Developing Institutions, Student Assistance, and Teacher Programs. The present research effort focuses on Title IV - Student Assistance.

The specific objectives of the section on Student Assistance were to: (1) provide each child the opportunity for full development of both mind and skills, (2) provide an assistance program to include scholarships, loans, and employment, so that assistance can be "packaged" to meet the individual needs of different students, (3) provide a vehicle to bring coherence and coordination to the variety of student aid initiatives so that federal support would complement the support from states, institutions, and other funding sources, and (4) expand overall financial aid to students using the successful G.I Bill as a model (Hearing before the Special Subcommittee on Education, House of Representatives, 2/2/65).

A review of the hearings and testimony about Public Law 89-329 makes it clear that both the Johnson Administration and the Congress intended to write legislation that would provide a comprehensive approach to general issues of higher education and to the specific issues of student financial aid. The legislation was first considered in the House of Representatives where it was assigned to the Committee on Education and Labor, Special Subcommittee on Education. The Subcommittee conducted 13 days of hearings in Washington and 2 additional days of hearings at the University of Chicago. The Committee heard testimony from federal officials, university officials, and experts in the field of financial assistance and received volumes of written materials pertinent to their deliberations. In the Senate the bill was referred to the Committee on Labor and Public Welfare, Subcommittee on Education. There were 12 days of

hearings which involved testimony from federal and university officials and financial experts, many of whom had also testified before the House Subcommittee. In the fall of 1965 Congress passed the Higher Education Act of 1965 with strong bipartisan support. President Johnson signed the bill into law (Public Law 89-329) in November at his alma mater, Southwest Texas State College (Gladieux & Wolarin, 1976).

The Act had five Titles, each of which addressed a different aspect of higher education. Title IV, entitled "Student Assistance" was divided into four parts. Part A - Educational Opportunity Grants addressed the issue of scholarships for undergraduate students. The Educational Opportunity Grants were clearly mandated as grants for students from low-income families. Preference for grants was given to entering freshmen and transfer students. The definition for eligibility for this program included stipulations that the students be of "exceptional financial need" and not be able to pursue higher education without the grant (Public Law 89-329, Section 404(b) (3) (4), 1965).

Grant funds were allocated to states which in turn allocated them to institutions that applied to the states for the funds. The method of allocation for the federal grants was based on the ratio of the number of full-time students in higher education in the state to the number of full-time students in higher education in the United States. To qualify for these federal funds, institutions also had to demonstrate that they were expending their own funds for scholarships for low-income youth (Public Law 89-329, 1965).

The institutions then decided who the recipients would be and the amount of each grant. These grants ranged from \$200 to \$800 per year, depending on the student's need and the overall financial package which the institution was able to offer to the student. The Act recognized the advantage of providing incentives to good students from low-income families by authorizing additional awards of \$200 to eligible students who were in the top 50% of their class. These scholarships were available for a maximum of four years with the exact amount determined by the institution based on family income and the number of dependents in the family, To qualify

for the Educational Opportunity Grants, students had to be in good academic standing with their institution, be full-time, have financial need, and demonstrate that it would not be possible to attend school without the award. The grant provisions were designed to complement or support other private, state, or institutional assistance programs (Public Law 89-329, Section 404, 1965).

The Grant program was also intended to support increased cooperation between personnel in high schools and in postsecondary institutions as they promoted early identification of qualified high school students and intentional encouragement for them to attend college. Higher education institution personnel were encouraged actively to seek academically promising high school students, prior to their junior year, to encourage them to attend college. As a part of this encouragement, the schools were authorized to make grant commitments to these students while they were still in high school as incentives to attract them to enroll in college upon graduation. At the federal level, the Commissioner of Education was authorized to contract with agencies to assist in identifying promising youth from low-income families. The original bill stipulated that students must be under 21 years of age, but those provisions were deleted during Congressional deliberations because they were discriminatory toward students who started undergraduate education later than the average high school graduate, e.g., due to military or Peace Corps service (Public Law 89-329, Sections 401-409, 1965).

Under the provisions of Part B - Federal, State, and Private Programs of Low-Interest Loans to Students in Institutions of Higher Education, students could borrow funds for college expenses and defer repayment of both principal and interest on the loan until after graduation. Students who were accepted or enrolled at an eligible institution would be eligible for one of these loans regardless of their financial situation. This program was intended to provide assistance to students from middle-income families who would not be eligible for scholarships or for the College Work Study program (Public Law 89-329, Section 427, 1965).

This Part of the Act also addressed the issues of providing government or institutional support for private lenders who made loans to students. The Act committed the federal

government to actively encourage state and private agencies and organizations to develop programs to make loans to college students to help them extend payment of their school costs beyond the actual years they were in school. It authorized the Commissioner of Education to establish a federal program to insure loans for students unable to attain loan funds through state and private programs. The Commissioner was also authorized to pay interest on federal, state, and private loans for students still in school whose adjusted family incomes were less than \$15,000 at the time of the loan. In addition the Act established a Student Loan Insurance Fund and authorized the Commissioner to make payments to lenders in the event of the death, disability, or default of the student (Public Law 89-329, Sections 421-435, 1965).

Some termed the loans offered under this part of the Act as “loans of convenience” as they were available to all students regardless of their financial need. The only criteria for eligibility were for students to be enrolled at least half-time and be in good academic standing with the institution. The Act stipulated \$1,000 as the maximum annual loan with a total loan of \$5,000 for undergraduate students. Repayment terms were revised to allow repayment to begin nine months after the student dropped below half-time status or was no longer enrolled. The repayment period was from 5 to 10 years with a maximum of 15 years from the date of the loan. The rate of interest on these loans would generally not exceed 6% per annum, although it could be extended to 7% under special circumstances (Public Law 89-329, Sections 421-435, 1965).

Part C - College Work-Study Program Extension and Amendments authorized the transfer of the College Work-Study program from the Office of Equal Opportunity to the Commissioner of Education which allowed the employment resources of this program to become part of the overall initiative to provide a “package” of financial aid assistance to students from low- and middle-income families. The Work-Study program was specifically targeted toward assisting students from low-income families (Public Law 89-329, Sections 441 and 442, 1965).

Part D - Amendments to National Defense Education Act of 1958, extended an existing program with minor, but significant amendments. In this program institutions received federal

funds to make loans directly to low-income students. Title IV expanded the occupational fields of study in which students were eligible for loans, reduced the time of the first repayment from two years to 10-12 months after the last enrollment as at least a half-time student, and authorized institutions to use a small amount of their allocated funds to support some administrative costs of the program. It also added a provision that allowed teachers to cancel 15% of their loans for each year of teaching in a school identified as a hardship school, so that loans were canceled after seven years for these teachers (Public Law 89-329, Sections 461-467, 1965).

Some themes appear consistently through the discussions of Public Law 89-329. These issues include providing opportunities for students from low-income families to access higher education; providing a variety of programs that allow institutions to develop financial aid packages including grants, loans, and employment rather than concentrating on only one type of aid; acknowledging the difficulty that middle-income families have in financing higher education and finding ways to address their needs; developing systems for assessing the actual financial need of a student and the student's family; and establishing more administrative structure and accountability for collecting repayments of student loans. They provide a framework for identification of issues that will arise in later discussion about student financial assistance. This author will focus on the issues of grants to low-income students, loans for undergraduate students, and the needs analysis procedures that have developed as a part of student financial aid programs.

#### 1972 Amendments to Higher Education Act (PL 92-318)

The Higher Education Act of 1965 (PL 89-329) was the first federal legislation to provide funds for grants specifically targeted to support low-income students in financing a college education. Following the implementation of Public Law 89-329, there was increased discussion about making grant awards directly to students rather than through institutional allocations. In the Congressional deliberations preceding the passage of the 1972 Amendments to Public Law

89-329 this issue of individual grants was a major point of discussion in both the Senate and the House of Representatives.

After considerable discussion the Congress decided to create a new program in which grants would be made to individuals rather than through institutions. These new grants were called Basic Economic Opportunity Grants (BEOG). The maximum grant award was \$1,400, with the actual award determined by the amount of the Estimated Family Contribution, i.e., what the student's family could afford to contribute, and the cost of attending the particular postsecondary institution. These grants were based on the actual costs for tuition and fees at the college, an allowance of \$400 for books and miscellaneous expenses, and a living allowance based on whether the student lived at home, off campus - not at home, or on campus (Mortenson, 1988). The amount a student received could not exceed 50% of the cost of attendance at that institution (Public Law 92-318, Section 411, 1972).

These amendments also revised some of the aspects of the GSL Program. The amount of the maximum annual loan was increased to \$2,500 and the maximum available loan was changed to \$5,000. The criteria for obtaining a loan were financial need to pursue study, good academic standing, and enrollment at least half-time as defined by the institution. This legislation also established the Student Loan Marketing Association (Sallie Mae) which is a secondary market and holding company for insured student loans (Public Law 92-318, Sections 132A and 133, 1972).

#### Middle Income Student Assistance Act (PL 95-566)

The Middle Income Student Assistance Act (MISAA) was passed in 1978 to aid middle income families in paying for postsecondary education, by easing some of the regulations for the BEOG Program and the GSL Program. The most significant change in the BEOG Program was a decrease in the amount of discretionary income parents were expected to contribute to paying for higher education. When the BEOG program was originally enacted families were expected to contribute 20% of the first \$5,000 in discretionary income and 30% of any discretionary income over \$5,000 to the educational expenses of their children. For the purposes of this program,

discretionary income was defined as funds left after taxes, e.g. employee expenses, allowance for other children in college, and tuition payments for secondary school (Mortenson, 1988). Public Law 95-566 mandated that the percentage of parental discretionary income used for calculation of eligibility for a BEOG should not exceed 10.5% (Public Law 95-566, Section 2, 1978).

This law also specified that families could use federal, state, or private low-interest insured loans as part of their Expected Family Contribution in meeting requirements of the programs for educational opportunity grants, College Work/Study programs, or any other Federal student assistance programs. This legislation eliminated the income requirements that had been in effect to determine eligibility for the GSL Program (Public Law 95-566, Section 7, 1978).

The overall effect of this legislation was to open programs that previously had been targeted toward low-income families to a wider range of families. The greater number of eligible students resulted in more demand for federal funding for both grants and guaranteed loans.

#### 1980 Amendments to Higher Education Act (PL 96-374)

The 1980 Amendments reiterated many of the general eligibility criteria for participation in federal financial aid programs including the requirements that students be enrolled at least half-time at eligible institutions and that they maintain satisfactory progress in their courses of study. Students also had to file statements certifying that the funds would be used for educational purposes, that they did not owe a refund for any previous grants, and they had not defaulted on any previous student aid loans (Public Law 96-374, Section 484, 1980).

This legislation also required that a procedure for "Needs Analysis" be developed systematically to determine the extent of each student's need for financial assistance through Title IV programs other than the GSL Program. As a part of the procedure for determining student need the Department of Education was required to publish annually a proposed schedule for Expected Family Contributions (EFC) based on various levels of family income. This schedule was based on a formula established in the legislation which included a stipulation for a 14%



assessment for discretionary income for families with an adjusted gross income under \$25,000. The Secretary of Education was instructed to develop a separate set of regulations for determining the EFC for independent students (Public Law 96-374, Section 482, 1980). The legislation also stipulated that a *Common Federal Financial Aid application be developed and used to determine need for all programs except the GSL Program. Students who used the prescribed form would not have to pay a processing fee for applying on the common form* (Public Law 96-374, Section 483, 1980).

These Amendments continued the BEOG program and renamed them "Pell Grants" in honor of Senator Claiborne Pell who was the primary sponsor of the initiation of these grants in the 1972 Amendments. One change in the program was the elimination of funding for reimbursing institutions for costs associated with distributing information and general administration of this program. In a general provision that recognized the uneasiness that many members of Congress felt about providing funds for direct grants, the legislation stated that all other Title IV programs must receive full funding before there could be any increases in the funding for the Pell Grant Program (Public Law 96-374, Section 411, 1980).

This legislation also extended the GSL Program through 1986. In recognition of the increasing costs of higher education the maximum borrowing limits were increased to \$12,500 for dependent undergraduates, \$15,000 for independent undergraduates, and \$25,000 for graduate and professional students. The maximum interest rate for new loans was increased from 7% to 9% and the date for beginning repayment of loans was shortened to six months following the end of enrollment as a half-time student (Public Law 96-374, Sections 411, 412, 427A, 1980).

This legislation recognized the increasing importance of insured student loans as a part of financial aid packages and included language to clarify the role of the Student Loan Marketing Association (Sallie Mae). It specified that Sallie Mae is not a "government sponsored" agency, but rather an independent corporation that works closely with the government. To augment the role of Sallie Mae, the legislation authorizes state agencies and private non-profit agencies with

whom the Secretary signs working agreements to make loans to students who cannot qualify for loans through Sallie Mae. Under this authorization these state agencies and the private non-profit agencies became the lenders of "last resort" for students in need of additional financing to attend school (Public Law 96-374, Section 421, 1980).

1986 Amendments to Higher Education Act (PL 99-498)

The 1986 Amendments extended Pell Grants through 1992 and set limits for the number of years that students may receive a grant - five years for a four-year program and six years for a program that is established as a five-year degree program. The legislation increased the amounts of the maximum grants to \$2,300 in 1987-88 and to \$2,700 in 1989-90. For the first time a separate family contribution schedule was established for this program. Students were required to contribute a specified amount toward their expenses before they would be eligible for a Pell Grant, and child-care costs could be included as part of eligible expenses. It also required that the Secretary of Education develop a simplified Needs Test to use with applicants from low-income families (Public Law 99-498, Section 411, 1986).

This legislation extended the opportunity to borrow GSL's to first-year college students and directed institutions to monitor loan applications closely from all students and not to certify loans in amounts greater than their demonstrated need. It instituted a needs test for all borrowers, reduced the loan repayment time from 15 to 10 years, and increased the interest rate to 10% in the fifth year of repayment. Public Law 99-498 provided for a 3% Insurance Premium that students pay as an administrative fee when they receive each loan (Public Law 99-498, Sections 484 & 485, 1986).

The legislation included provisions regarding the role of Guarantee Agencies in the student loan process. It reaffirmed the right of Guarantee Agencies to receive federal reimbursement for defaulted loans, granted them permission to provide default information to credit institutions, and required these agencies to provide records of their efforts to collect from these borrowers in default. It also mandated that Guarantee Agencies would pay a fee to the

federal government based on the default record of the agency (Public Law 99-498, Section 428 (6), 1986).

Other provisions of Public Law 99-498 which involved the GSL Program included providing additional information to student borrowers about the responsibilities of borrowing and repaying loans, expanding the types of institutions which can make loans under this program, and clarifying that the role of Sallie Mae is limited to the secondary loan market, and is not a funding source in the primary student loan market, i.e., does not make direct loans to students or directly control institutions which do (Public Law 99-498, Sections 434 & 439, 1986).

This legislation addressed needs analysis by including distinct procedures for determining the EFC for both dependent and independent students. These included separate tables for these two groups of students. In the case of independent students, separate tables for the EFC for students with dependents and those without dependents (Public Law 99-498, Sections 471-477, 1986).

#### The Federal Appropriations Process

The Public Laws outlined above authorize federal financial aid programs and provide the program guidelines. Program regulations are issued by the Office of Education or the Department of Education in the Federal Register or later in the Code of Federal Regulations, which provide detailed rules for the execution of the programs. Although the Public Laws include provisions for recommended funding and the amounts of individual awards, they do not include budget appropriation for these programs. Funding decisions for these programs are made through a separate legislative process involving the Executive branch, the Congressional Budget Office and the Appropriations Committees of both houses of Congress.

The appropriations process includes Congressional receipt of the President's Budget with the administration's requests for funding levels for its priority programs. The Congress also develops its own budget bills for each of the federal departments based on the recommendations of the Congressional Budget Office and the projected costs of any new legislation passed by the

Congress and signed by the President. The appropriations bills for each department proceed through a series of committee hearings in the same way that other bills are considered by the Congress. Appropriations Committees in both the House of Representatives and in the Senate consider the spending bills independently. Each house passes its version of the budget for each department and any differences are referred to a Conference Committee for a final recommendation to both houses for their final action (Widavsky, 1979).

When the appropriations bills are passed by both houses and signed by the President the actual funding for each of these programs is established for the upcoming fiscal year. The funding provided through the appropriations process may or may not equal the funding authorized through the original legislation which may necessitate program changes not envisioned in the original public law. As an example, the original program for the Basic Educational Opportunity Grants (BEOG) which was first passed in the 1972 Amendments to the Higher Education Act (Public Law 92-318) authorized these grants for all college students who met the eligibility requirements. When the program was reviewed in the appropriations process, there was some controversy about initiating the program and only enough funding was appropriated to initiate the program for new students beginning school in 1973-74. The program was thus phased in over three years rather than starting for all students in its first year of authorization (Gladieux & Wolanin, 1976).

#### Needs Analysis

The term Needs Analysis refers to a methodology that is "used to calculate a student's need for financial assistance to attend a postsecondary institution" (Lee et al. 1988, p.9). The basic principles of needs analysis were developed at institutions to identify the student needs in a small financial aid system with a small number of students and a smaller number of aid applicants. The first formal method of needs analysis was developed at institutions that were members of the College Board. In 1954 they introduced common standards that all members would use to determine the amount families should pay for educating their children. The

participating schools agreed to use a common application form, adhere to the same set of operating principles for administering financial aid, and to share information with the College Scholarship Service (CSS). In the late 1950's CSS provided a centralized service to calculate student need for its member schools (Lee et al. 1988).

In 1968 the American College Testing Program (ACT) developed a similar program for analyzing student applications and determining their need for financial aid. This new program started shortly after the expansion of federal financial aid programs authorized under Public Law 89-329 which increased greatly the demand for such analysis. Both the CSS and ACT programs were designed to assist Financial Aid administrators to make the best decisions for awarding aid. The two programs, however, used different forms and approaches to their analyses which necessitated submission of multiple forms and often resulted in differing estimates of the Expected Family Contribution (EFC) the basis for decisions about the amount of aid for which a student is eligible (Lee et al. 1988).

In 1972, Public Law 92-318 initiated the Basic Educational Opportunity (BEOG) program which included a separate formula and procedure for calculating the student's eligibility for one of these grants. The BEOG formula was based on the level of award that was possible given the amount of the annual appropriation for that fiscal year. It did not address needs analysis in the same way as the CSS and ACT procedures. With this additional program the process for identifying student need for financial assistance became even more complicated for all who were involved - parents, students, financial aid administrators, and funding agencies (Lee et al. 1988).

In the mid-1970's the various constituencies involved in financial aid formed the National Task Force on Student Aid Problems to discuss the problems facing the financial aid system. The Task Force was chaired by Francis Keppel, a former United States Commissioner of Education, and included representatives from all postsecondary perspectives and the federal government. The major objective of the Task Force was to develop a single system of needs analysis based on one set of data provided by the applicants on the same or similar application forms. The Task

Force recommended the adoption of the uniform methodology (UM) as a single formula for calculating student financial need and the amount of the aid awarded (Lee et al. 1988).

The uniform methodology (UM) provided an analysis of the ability of the student's family to pay for postsecondary education based on the premise that families should contribute a portion of their discretionary income and assets to pay for postsecondary education for their children. In the UM process the student/family completed an application form and mailed it to CSS or ACT for centralized processing and analysis. The agency determined the estimated family contribution (EFC) for the family and mailed this estimate to the institutions designated by the student. An EFC was also sent to the Pell Grant program for preparation of the student eligibility report (SER) used to determine Pell Grant awards (Lee et al. 1988).

The UM process recognized the differences between dependent and independent students in its calculations. The analysis of dependent students included the income and assets of both the student and parents and identified a portion of total income after basic necessities that should be available for paying college expenses. The items deducted from income included taxes, a standard living allowance, medical and dental expenses in excess of a certain percentage of income, tuition for elementary or secondary schools, and employment expenses such as transportation, meals away from home, and child care costs. It also included a portion of family assets that should be available for paying college costs. Assets were defined as available cash, home equity, real estate or investment equities, and a portion of the net worth of any business or farm property. The analysis for dependent students was based on the prior year's income and financial situation. Dependent students were expected to pay a minimum of \$700 toward college costs as freshmen and a minimum of \$900 after the freshmen year (Lee et al. 1988).

The analysis for independent students was similar to the process for dependent students with two differences. It was based on an estimate of the current year's income because using the prior year's income would not be an accurate depiction of their situation when they actually

enrolled in school and the analysis did not include financial information from parents (Lee et al. 1988)

In the 1986 Amendments to the Higher Education Act (PL 99498) the Congress changed the procedure for needs analysis from the uniform method to a new analytical procedure that was written into these Amendments. The new procedure is the Congressional Method (CM) for needs analysis. The new law included a call to use a common application for all federal financial aid programs, established a common calendar to use in the annual financial aid process, and established an advisory board to advise the Congress and Secretary of Education on issues relating to these financial aid programs. The CM details the procedures to follow to determine the expected contribution from students and their parents and defines the procedures for calculation of need. These procedures can only be changed through changing the legislation (Lee et al. 1988).

The CM was derived from the uniform methodology, but there are significant differences between the two. The differences include changes in the definition of self-supporting or independent students, changes in the procedure for calculation of the EFC, changes in the amounts to be contributed by dependent students, new categories of students with special status, changes in the way the costs of attendance are calculated, and allowances to include the cost of day care as part of the costs of attending college. The Secretary of Education was directed to develop a single financial aid application to use in determining eligibility for federal financial aid programs and to develop a simplified form for low-income students from families with incomes less than \$15,000. Public Law 99-498 also authorized the creation of the Advisory Committee on Student Financial Assistance in the Department of Education. The Committee is to provide advice and counsel to both the Secretary of Education and to the Congress. Recommendations for any changes, however, are made directly to the Congress. Topics which the Committee may consider include effectiveness of the student financial aid delivery system, needs analysis procedures, a review of regulations, and other areas for additional research. The Committee was

also charged with the responsibility for identifying the inflation factors that should be used for annual reviews of the needs analysis procedure (Lee et al. 1988)

Several differences in the definitions of independent and dependent students between the two methodologies may change the availability of financial aid for some students. In the CM the definition of independent students was broadened to include all students 24 years or older, all military veterans, all students who have legal dependents other than a spouse, all married and graduate students who are not claimed on parental tax forms for the first calendar year of the award year, and single students who claim self-sufficiency with an annual income of at least \$4,000 and whose parents did not claim them on their tax forms for the preceding two year period. Financial aid administrators are able to designate students as self-supporting if there are special circumstances not included in the above criteria. Under the CM independent students present a budget that includes only their own expenses and shows prior year income, rather than an estimate of the current year income.

For students with dependents including a spouse, the calculation of need is done similarly to the calculations for parents of dependent students. Independent students without dependents are expected to contribute 70-90% of their base-year income toward the cost of attending college or \$1,200 whichever is greater. The budgets for expenses and the identification of need for independent students with dependents are calculated using formulae different from those used for independent students without dependents. Typically, the expected contribution for students with dependents is less than that expected of students without dependents. With these changes many older students who were classified as dependent students under the uniform methodology are now classified as independent students under the CM (Lee et al. 1988).

The CM included fewer changes for dependent students. The parental contribution was divided among all family members who are enrolled at least half-time, including parents if they are in school. This change adopted the procedure for calculation of EFC that was previously used only for Pell Grants to all federal financial aid programs. Under this method the expected



student contribution was changed to \$700 - \$900 or 70% of the prior year income less taxes, whichever is greater. This change was likely to increase the expected student contribution for most students. These stipulations are part of the actual legislation (PL 99-498) and can only be changed by legislative amendment (Lee et al. 1988).

The changes from UM to CM raised many issues for all constituencies involved in the financial-aid process. These included questions about the extent to which needs analysis will be influenced by the political nature of Congressional activities, the extent it will be more difficult to modify the system in response to needs perceived by financial aid professionals, and the extent to which Congress will respond to special interest groups by including them in the financial aid methodology. There is also apprehension about how the needs analysis system will be coordinated with the federal appropriations process, so that funding for the Pell Grant and GSL programs can be tied to student needs rather than controlled by the amount of the appropriation (Lee et al. 1988).

#### Access and Choice

The laws creating and maintaining federal financial aid programs were implemented to provide greater opportunities for students to attend postsecondary institutions. They were particularly created to equalize the opportunities for students from low-income families to participate in postsecondary education. There are three components to equal educational opportunity. They are "equal access, reasonable choice, . . . (and) continuous funding to promote retention" (Fife, 1975, p.7). In this context access means that students from low-income families have an equal chance of participating in postsecondary education. It does not refer to universal attendance, which would be a mandatory program for all high school graduates. Access includes the conditions that motivate a student to decide to invest time and effort in attending a postsecondary institution. It involves providing assistance for those students who have decided to attend college and encouragement to those who are qualified, but are still thinking about attending college (Fife, 1975).

Reasonable choice refers to the fact that financial considerations should not prevent students from attending the school of their choosing. It includes those conditions which motivate a student to want a particular form of education and assist the student in gaining that type of education, e.g., being able to choose to attend a four-year institution rather than a community college in the home community. The goal is to expand the possibilities for the student to choose where she or he wishes to participate in higher education. Choice of institution is based on a combination of factors including what the student knows about the school such as reputation and cost of attendance and what degree of success a student believes he or she will have at that institution based on personal academic ability and the ability to meet the costs of the institution (Fife, 1975).

Continuous funding refers to the fact that students must be able to plan for available funding throughout their entire academic careers. If the possibility of funding is unpredictable from year to year, students who depend on these programs may be discouraged and decide not to persist in postsecondary education. The availability of financial aid programs is clearly an important factor in providing predictability and stability of financial support for participation in higher education. As they plan for higher education, all students need some assurance that funding is available to meet the costs of their program, but this is particularly true for students from low-income families who do not have alternative means for funding higher education (Fife, 1975).

Financial aid programs thus play a critical role in providing equal educational opportunity for all students seeking postsecondary education. These programs provide both the economic means to afford higher education and the psychological support to encourage people to realize that making a choice to participate in postsecondary education is a realistic possibility.

#### Pell Grant Program

The 1972 Amendments (PL 92-318) included the BEOG as an additional source of financial aid which would be directly available to low-income students. This change in approach

was based on the philosophy that funds ought to be put in the hands of the consumer rather than under the control of the institutions. In 1980 these grants were re-named Pell Grants in honor of Senator Claiborne Pell who was the primary sponsor of initiating these grants in the 1972 debates on the higher education amendments.

The Pell Grant program was developed to provide funds to students from low-income families based on their need for financial assistance to be able to attend college. The first year of operation for this program was 1973-74. The grants were available to these students in addition to the educational opportunity grants, loan programs, and college work-study which were established in the 1965 legislation and were intended to provide students equal access to all postsecondary institutions (Lloyd & Rocco, 1989).

Four elements determine eligibility for Pell Grants. The first element is the definition of the eligibility criteria for the applicant. In 1973-74 eligible applicants had to be full-time, first-year students, enrolled at an eligible institution. The entering class for each of the next three years was eligible for the program so that by 1976-77, all undergraduates were eligible. In 1975-76 eligibility was expanded to include half-time students. Between 1976-77 and 1982-83, there were not any additional changes in the enrollment factors which defined eligibility (Mortenson, 1988).

In 1983-84, however, Congress began to mandate additional criteria which restricted eligibility for this program. In that year the criterion of meeting satisfactory academic progress was added. In 1984-85 additional criteria were mandated. Since 1984-85 Pell Grants have not been available to students who have previously defaulted on student loans, who owe a refund on a previous Pell or Supplementary Educational Opportunity Grant, or who have not registered with the Selective Service. With these restrictions the number of eligible applicants has decreased (Mortenson, 1988).

The second element for determining eligibility is the ability of the student and family to pay for college. When Congress initiated the Educational Opportunity Grants in 1965, one

criterion for eligibility was that without the grant the student would not be able to attend college. To evaluate the level of need for each student, the Office of Education developed procedures to determine the ability of the student and family to pay college expenses so the decision on a grant could be made. When the Pell Grant program was initiated the procedures for determining student and family need became even more significant. In order to identify the level of need, the Office of Education developed formulae to assess the ability of the student and family to finance college costs through using their own resources. The Student Eligibility Index (SEI) formula was used to analyze each student request for financial aid to determine what the student and family could provide toward college costs and what would be provided through the Pell Grant program. In 1982-83 the formula was renamed the Student Aid Index (SAI) (Mortenson, 1988).

Separate formulae were used to determine the need of students who were financially dependent on or independent of their families. The three criteria used to determine dependent or independent status since the inception of the Pell Grant program were whether the student was claimed as an exemption on the parent's income tax return, the amount of money the parents have given to the student, and whether the student has lived with the parents (Mortenson, 1988).

These criteria have remained the same through the life of the Pell Grant program. In the beginning of the program in 1973-74, independent students were limited to staying only two consecutive weeks in their parent's home the prior, current, or following year. In 1979-80 the time limit was extended to 6 weeks. In 1973-74 the limit for parental cash or in-kind contributions was set at \$600. This limit was raised in 1979-80 to \$750, raised again in 1981-82 to \$1,000, and reduced to \$750 in 1982-83. The extension of the time limit to six weeks and the increase in the limit on parent's contribution to \$750 were the direct result of the passage of the Middle Income Student Assistance Act (MISAA) in 1978. The MISAA opened the opportunity for Pell Grants to a large number of middle-income students not previously eligible. The 1986 Amendments to the Higher Education Act (Public Law 99-498) added many other factors to help define whether a student was dependent or independent. These included being 24 years old, serving in the

military, being an orphan or ward of the court, having own dependents, having more than \$4000 in annual income, or being married. (Mortenson, 1988)

Students who do not meet the criteria to be classified as an independent are automatically classified as dependent students for the purposes of determining financial aid assistance. In determining the amount of aid to which a student is entitled, the SAI for dependent students analyzes parental income and assets to determine the amount of the parental contribution toward the costs of higher education. In addition the SAI analyzes the assets and income of the student to determine the contribution the student can make toward college expenses. The final SAI is the sum of the contribution from parents, the contribution from student assets, and the contribution from student income. (Mortenson, 1988)

The SAI also includes allowances for both the total number of children in the family at the same time and the number of students in the family through family size offset calculations. The offset for one student began at \$700 in 1973-74 and rose to \$1,100 in 1978-79. With the passage of the MISAA in 1978, the offset for one student rose to \$3,450 in 1979-80. This widened the range of eligibility to allow more middle-income families to qualify for Pell Grants (Mortenson, 1988).

The greatest impact on the dependent SAI formula has been from the changes in the rates for assessing discretionary parental income to determine what amount of college costs a family can pay for a dependent student without grant assistance. Beginning in 1973-74 and continuing through 1978-79, parents were expected to contribute 20% of the first \$5,000 in discretionary income and 30% of all discretionary income above \$5,000 toward the college costs of their children. For the purposes of financial aid calculations, discretionary income is income left after the parent's income from all sources is considered and allowances are made for federal taxes paid, the family size offset, the employee expense offset, and elementary/ secondary tuition payments. In 1979-80, with the implementation of the changes included in MISAA (1978), the rate of assessment for all discretionary income dropped to 10.5%. As with other provisions of the

MISAA these changes in the assessment rates greatly increased the number of students who were eligible for Pell Grants. The assessment rates were revised again in 1982-83 to 11% on the first \$5,000 in discretionary income, 13% on the second \$5,000, 18% on the third, and 25% on all discretionary income over \$15,000 (Mortenson, 1988).

A separate SAI formula was used to determine whether independent students qualified for Pell Grants. This formula was similar to the approach of the SAI for dependent students in that it considered both income and assets for the student, but did not include any consideration of parental income. It accounted for income from all sources and provided allowances for federal income taxes, family size offset, and unusual medical expenses to determine the contribution from the student's income. It also used a multiple student adjustment for situations in which there was more than one student in the family. As with the SAI formula for dependent students, the family size offset for one person was substantially increased in 1979-80 to bring it up to the official poverty level. The effect of this change was to increase the number of independent students eligible for Pell Grants. In addition, the assessment for discretionary independent family income was 50% for the first 7 years of the Pell Grant program. In 1980-81 the assessment rate was dropped to 25% which greatly increased the number of eligible applicants. In 1988-89 the rate was raised to 75% so some independent students who had previously been eligible for Pell Grants lost their eligibility. During this same period the assessment rate for independent students who have dependents other than a spouse has been steadily decreasing. The rate was 40% for the first 7 years of the program, lowered to 25% for 1980-81 through 1987-88, and lowered again to a progressive formula beginning at 11% in 1988-89. The lowering of these rates expanded the number of independent students, with dependents other than a spouse, who were eligible to receive Pell Grants (Mortenson, 1988).

The third element for determining eligibility for Pell Grants is the standard of allowable college costs for the student. The Pell Grant program allows for consideration of certain direct and indirect college costs as it calculates the budget for eligible students. Costs included in the

allowable costs category are tuition and fees, room and board or an alternative living arrangement, books, supplies, and miscellaneous expenses. Table 2.1 indicates the changes in these allowances between 1974-75 and 1988-89. Comparing these allowable costs to the Consumer Price Index indicates that while these allowances did not increase, costs for goods and services in the economy increased 166%. The 1986 Amendments included a change in the calculation of allowable cost in that the allowances for living and for books and miscellaneous were combined into a single "maintenance" allowance. The new allowance became \$2,200 for all students who lived on or off campus and \$1,600 for students who lived at home. (Mortenson, 1988)

The fourth element for determining eligibility for Pell Grants is the payment schedule determined annually from anticipated revenues and expenditures. This is based on the annual appropriation for Pell Grants and the projected numbers of students who will qualify for the program that year (Mortenson, 1988).

A review of the changes in the Pell Grant program since 1973-74 indicates that eligibility criteria have not had a significant effect on changing the numbers of eligible Pell applicants. There was an expansion of the number of eligible applicants early in the program through the extension of eligibility to students enrolled at least half-time, but there have also been restrictions in the numbers as Congress has tried to eliminate grants to students who are not making satisfactory academic progress, who have not paid debts or refunds, or who have not registered with the Selective Service (Mortenson, 1988).

The passage of the MISAA (PL 95-566) increased the numbers of independent students eligible for aid and lowered the overall rates at which discretionary income was assessed. This also increased the numbers of students eligible for Pell Grants, especially for the years 1979-80 through 1981-82 (Mortenson, 1988).

Mortenson (1988) has traced the effects of these changes on eight sample student cases, four dependent students and four independent students, to illustrate the impact of the changes in

Table 2.1

Allowable Costs for Pell Grants, 1974-1988

Category	1974-75	1984-85	1987-88	1988-89
<u>Tuition &amp; fees</u>	Actual costs	Actual costs	Actual costs	Actual costs
<u>Living Expenses</u>				
On campus	Actual costs	Actual costs	Actual costs	
At home	\$1,100	\$1,100	\$1,100	--
Off campus	1,100	1,600	1,600	--
<u>Books, misc.</u>	400	400	400	--
<u>Maintenance Allowance</u>				
On/off campus	--	--	--	\$2,200
At home	--	--	--	1,600

(Mortenson, 1988)



the Pell Grant Program on the use of these funds to pay for the increasing costs of higher education. Table 2.2 shows the percentage of costs which Pell Grants have paid between 1975-76 and 1988-89, the first year the 1986 Amendments were in effect. All dependent students are from families of four people with varying levels of income as noted in Table 2.2.

These examples clearly demonstrate that in the years since its inception, Pell Grant appropriations and allocations have not kept pace with the increase in the costs of attending postsecondary institutions; the purchasing power of the Pell Grants has decreased since 1975-76. This shortfall has particularly affected students with incomes above the federal poverty level.

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#### Guaranteed Student Loans

The National Defense Education Act of 1958 (NDEA) was the first federal program to offer educational loans to students. These loans from federal funds were allocated to educational institutions which in turn made loan awards to students. The Higher Education Act of 1965 included the first federal program that provided support for loans made directly to students. This section reviews how the program operates, its development since 1965, the major actors in the program, and the relevant issues today.

Under the provisions of PL 89-329, federal support for student loans was in the form of guarantees to lenders to insure loans for students who unable to obtain them without such

Table 2.2

Percentage of College Costs Paid by Pell Grants (Four Year Colleges and Universities)

	<u>Public Colleges (%)</u>			<u>Private Colleges (%)</u>		
	<u>75-76</u>	<u>80-81</u>	<u>88-89</u>	<u>75-76</u>	<u>80-81</u>	<u>88-89</u>
<u>Dependent Students</u>						
Student # 1						
Poverty level inc.	36	33	31	30	25	17
Student #2						
Low level inc.	27	30	22	17	18	12
Student #3						
Intermediate inc.						
1 student	N/E	16%	N/E	N/E	10	N/E
Student #4						
Intermediate inc.						
2 students	N/E	25	15	N/E	13	7.5
<u>Independent Students</u>						
Student #5						
Single, 50% pov.	36	33	31	25	26	17
Student #6						
Single, 100% pov.	8	33	31	4	26	17
Student # 7						
Unmarried w/ child						
100% poverty	37	33	31	28	26	17
Student #8						
Married, 150% pov.	25	26	0	7	16	0

(Mortenson, 1988)

insurance. These guarantees meant that the federal government would pay the lender if the student failed to repay the loan due to default, death, disability, or bankruptcy. The federal government also agreed to pay the interest on these loans while students were still in school and until the re-payment period started (PL 89-329, Section 421, 1965).

Demand for these loans grew quickly after PL 89-329 was passed. Reliance on local lenders meant that loan decisions were vulnerable to local or regional financial conditions because loan availability depended on the strength and liquidity of local money markets. Some banks did not participate and some lenders concentrated on making loans to established customers so new customers and freshmen students, unable to obtain loans, were therefore unable to have access to higher education. By the late 1960's, demand had increased so much that lenders could not keep up with the demand. As a result, many families began to complain to federal officials and to members of Congress about the efficacy of the loan program.

In 1969, Congress passed the Emergency Insured Loan Amendments designed to support the GSL Program in situations of high interest rates and tight money markets. At this time student borrowers were paying a maximum of 7% interest for these loans, a rate well below the market interest rate. With this discrepancy, many lenders were reluctant to make student loans so some eligible students were still unable to attend school because funds were not available. The new legislation authorized the federal government to pay an additional 3% in interest to lenders in areas with high interest rates to help them remain in the program (Gladieux & Wolanin, 1976).

The GSL Program grew from 1965 to be the largest single component of the federal financial aid system. Concerns about the cost of the interest subsidies to the federal government and the overall effect of this program on the federal budget led Congress and the Office of Education to develop plans to create a secondary money market for student loans, similar to the Federal National Mortgage Association (Gladieux & Wolanin, 1976).

In concept, the idea of taking out a loan to pay for college seems like a fairly straightforward process. In reality, it involves a number of people and organizations. The first

people involved are the student and family who make the initial decision to apply for a loan. The local lender, a bank, savings and loan, credit union, or other financial institution, makes the loan, based on the postsecondary institution's verification of enrollment, continued registration and academic progress. The guarantee agency is either a state-sponsored or private non-profit organization which serves as intermediate loan insurer, collector of defaulted loans, and the administrative agent of the federal government. "Sallie Mae" is a government-sponsored corporation that sells guaranteed government obligations and then purchases student loan "paper" from local lenders, thus providing the lenders greater security and improved cash flow in their student loan programs (Gladieux & Wolanin, 1976 and Chandler & Boggs, 1987).

In its earliest days the student initiated contact with a local lender to apply for a loan under this program. The lender asked the student's institution to verify enrollment, processed the necessary forms, and working with a guarantee agency, issued the student's loan check directly to the student. At the present time the student completes an application to determine need and sends it to one of the national organizations to which institutions subscribe, e.g., CSS or ACT where personnel evaluate the overall eligibility of the student for various types of financial aid. The evaluation is sent to the college(s) specified by the student. The college develops an overall financial aid package for the student, which includes grants, work-study, and loans for which the student is eligible. The college informs the student of the financial aid offer and asks the student to indicate acceptance or rejection in writing. If a GSL is part of the package and the student accepts the loan, the student completes an application and sends it to the school. The school certifies the student's eligibility and sends the application to the guarantee agency who guaranteed the loan for the lender. The lender issues the check to the school which then disburses it to the student.

Under the provisions of PL 89-329, GSL's were available to students from families with income less than \$15,000. The Amendments of 1972, extended eligibility to include students from families with income over \$15,000 based on a demonstration of financial need. This change

increased the numbers of eligible students, particularly those planning to attend private colleges with higher tuition costs. In 1978 the Congress passed the Middle Income Student Assistance Act (MISAA) which eliminated the income requirements for eligibility for the GSL Program. The effect of this change was to expand greatly the numbers of students who borrowed money to finance their college education. In 1975-76 there were 922,000 GSL's processed for a total amount of \$1,267,000. In 1980-81 these numbers had increased to 2,899,000 loans for total debt of \$6,187,000 (Gillespie & Carlson, 1983). In 1981 income restrictions were re-implemented, but the trend of increased borrowing has continued. In 1985-86 there were 3,640,000 loans for a total amount of \$8,288,000. (Hansen, 1987)

As the numbers of participants and the amount of money involved in the GSL Program grew, observers worried that borrowing had become too easy and that students were borrowing beyond what they could repay. There was also increasing concern that loan repayments would decrease and the number of loan defaults would increase as students agreed to more debt than they could manage. However, when the amount of the average loan is adjusted to 1986 dollars to account for inflation, the average size of loans has steadily decreased since 1970-71 (Hansen, 1987).

The numbers of borrowers have increased absolutely, a somewhat surprising fact since the numbers of students enrolled in postsecondary institutions has remained relatively constant since the mid-1970's. One interpretation is that borrowing as a mechanism for financing higher education has become much more popular than in previous decades. Another factor contributing to the increased number of borrowers is that more students from low-income families are taking on loans. In 1983, 40% of all borrowers in the GSL Program were from families with annual incomes less than \$15,000. This increase in borrowing by students from low-income families is of concern to many as they raise questions about the ability of these students to repay loans when their employment prospects may make it difficult for them to do so (Hansen, 1987).

### Research on the GSL Program

In 1985 the National Association of Student Financial Aid Administrators published a report A Report on the Characteristics of GSL Borrowers and the Impact of Educational Debt. The information in this report is based on the responses of 628 former students who were in the process of repaying their loan debts in 1985. The survey was mailed in the spring of 1985 to a random probability sample of 3,000 borrowers from a total population of 2.7 million borrowers who were in repayment. The survey responses which follow are based on a return rate of 21% of the sample. The responses indicated that 52% of the borrowers in repayment were females and 48% were males. These figures were similar to overall enrollment rates and indicated that males and females were borrowing in proportion to their overall enrollment by gender. Ninety-one percent of the respondents were white, which is greater than the percentage of whites enrolled in postsecondary education at that time (82-85%), thus minority students were under-represented among GSL borrowers. In this survey 79.6% of the respondents indicated that they used the GSL for undergraduate study only. In the respondent group, 41.0% (247) had first used a GSL at a public college or university and 37.5% (226) had first used a GSL at a private college or university (Boyd & Martin, 1985).

In addition to providing specific information about amounts borrowed, etc., the respondents answered several questions about their opinion of the importance of the GSL program. The responses for these attitudinal questions were on a scale of 1-9 on which responses of 8 or 9 indicated strong agreement. The respondents agreed that the loan program was essential to them in allowing their enrollment in a postsecondary institution. They also agreed that the loan programs allowed students a degree of choice in determining which postsecondary institution to attend. Respondents strongly disagreed with questions asking whether the GSL loans were used in place of financial contributions from other available sources, e.g., parents, and disagreed that the loans were used mostly as "a "back-up" rather than as the primary source for funding their education (Boyd & Martin, 1985).

Other survey questions focused on the impact of debt on the lives of the respondents, i.e., on decisions about marriage, jobs, living arrangements, or children. In general, respondents indicated that their educational debt had little impact on these personal decisions. Among respondents, however, were sub-sets of borrowers whose decisions on these questions were greatly impacted by the amount of debt they had to repay. The people who felt the impact most keenly tended to be borrowers whose repayment was over 10% of their gross income, borrowers whose repayment was \$100 or more per month, women borrowers, and borrowers who were single (Boyd & Martin, 1986).

The survey also found that GSL loans served students from both low- and middle-income families - 17.6% of the loans were used by students with parental incomes under \$15,000 during the years they were in school, 41.1% of the loans were used by students with family incomes from \$15,000 to 30,000, 32.3% of the borrowers were from families with incomes of \$30,000 to 50,000, and 9.0% were from families with incomes above \$50,000. The average income for respondents was higher for men, those over 26, and those who attended private colleges than it was for women, those under 25, or those who attended public colleges (Boyd & Martin, 1985).

There have been lengthy discussions about ways to modify the GSL Program to make it more successful. There has been no call for elimination of the program as loans for college students seem to be accepted as a means of financing attendance at postsecondary institutions in the late twentieth century. Discussion of issues has revolved around the topics of how much the program costs, the amount and size of loan defaults, and ways for the program to run more efficiently.

One paradox is that it is a public program using federal funds, based on a model of private enterprise. The federal government functions similarly to a bank holding company that establishes policies and then works through and supports local lenders in their task of making loans to students. A complex constellation of actors is involved in making the student loan program function - lenders, guarantee agencies, educational institutions, the Department of

Education, and the Congress. A recurring issue is to find ways to simplify the program and yet retain accountability for the funds so that eligible students are served and loans are repaid.

The original Congressional hearings on PL 89-329 included some discussion of establishing a Federal Student Loan Bank as the mechanism for implementing a student loan program. Congress has never supported this idea as it appears to be more expensive than the guarantee program because the loans would be direct governmental expenditures rather than guarantees for someone else's expenditures. Proponents argued that the bank would be a more direct way to provide loans to eligible students and to collect loans from the borrowers. In 1965 the Congress believed that the program of guaranteed loans would not be very expensive for them as it did not involve actual expenditure of funds and decided to implement the program indirectly through local lenders.

In 1979 the Carnegie Council on Public Studies in Higher Education reviewed the federal financial aid system and made numerous recommendations for improvements in these programs. The Council noted the default rate and increase in the federal government's operational costs as major problems for the GSL Program. For each loans in default, the federal government has guaranteed lenders that it would pay the loan if the borrower does not pay due to death, disability, or default (Carnegie Council, 1979).

One contributing element in the default rate is the success of the federal guarantee program in reducing the element of risk in making loans to high-risk students. With the government guarantee in place, many lenders lost any incentive to collect loans from the students. The government tried to address this issue by requiring that lenders demonstrate their collection efforts, but this has resulted in increases in costs of servicing loans. When lenders' costs increased as they tried to locate and collect from students who did not pay, it became less profitable to make these student loans and some lenders decided not to participate. The reduction in the number of lenders limited opportunities for low-income students to borrow funds to attend college (Carnegie Council, 1979).



A second factor contributing to the default rate was the relatively short loan repayment period of ten years. The Council noted that the benefits of a college education last a life time and that it was difficult for many low-income graduates to make the repayment schedule when they first left school and entered the work force (Carnegie Council, 1979).

The Council noted that the government had to implement a system of interest subsidies for lenders to cover the cost of lending money until the students finished college and began repayment. This program successfully eliminated the issue of students having to pay compound interest for these school loans, but the cost of paying the interest subsidies has become an additional burden to the federal government. As the program has expanded to allow borrowers regardless of financial need, the number of student borrowers increased greatly and the costs of the interest subsidies have also increased. An unintentional result of the interest subsidy program is that the lender has no reason to contact the borrower regularly making it difficult to know when the repayment period starts or how to contact the student to begin repayment. Laxity and lateness in collecting the loans promptly have contributed to the overall problem of defaults (Carnegie Council, 1979).

The underlying problem is that the GSL is designed to make loans to a population that is very mobile, often poor, and unfamiliar with the importance of establishing a good credit rating. The program relieves borrowers of having to risk personal collateral. It is designed to be a lender of last resort, providing loans to students who could not borrow from other places and who cannot attend school without receiving a loan. The Council also noted with irony the complex regulatory system to manage GSL, but that regardless of its sophistication, the system does not provide critical, timely information. The Council maintains that the lack of timely information contributes to the default problem and the greater operational costs to the federal government (Carnegie Council, 1979).

McPherson and Shapiro (1991) studying the student loan system from an economic perspective, noted an inherent conflict in the GSL program in that it relies on private market

principles to run a loan program, designed like an entitlement program, to provide access to postsecondary education by guaranteeing loans to low-income students. In a purely private market arrangement borrowers and lenders negotiate agreements to their mutual satisfaction using a "buffet" of loan arrangements to choose the best instrument for the situation. In private arrangements lenders have an incentive to provide favorable terms to attract the borrower's business and work directly with the borrower which means that the lender will not lose contact with the borrower at repayment time (McPherson & Shapiro, 1991).

McPherson and Shapiro have identified criteria for judging how well the GSL Program has used private markets even though it is a public program. The four criteria are:

1. Make credit widely available without regard to family background and personal characteristics.
2. Use competitive forces to shape loan contracts and to establish cost to borrowers and rates of return to lenders.
3. Encourage experimentation and financial innovation.
4. Create incentives for discouraging defaults and for pursuing the collection of defaulted loans. (McPherson & Shapiro, p.162)

The GSL Program meets the first criterion with great success. Family background and personal characteristics are not considered in decisions about loan eligibility.

In regard to criteria two, three, and four, however, the GSL does not meet the terms of the private market model. The terms of the loan agreement are determined by federal legislation rather than by competitive market forces. One example is the setting of the repayment schedule at ten years for all loans. Limiting the schedule to a ten-year repayment does not reflect the use of the benefits of the education over the life of the recipient and thus may be too short for some borrowers. On the other hand, a repayment schedule greater than ten years may seem too long for some applicants to consider being in debt and therefore discourage them from using the program. In a private market these terms could be established to suit the circumstances of the

individual borrower. Meeting the third criterion of encouraging innovation is also difficult when the program's operational guidelines are established through legislation and government regulation rather than in individual negotiation. The structure of the GSL Program does not provide incentives to encourage aggressive collection of loans and prevention of default so it is difficult for GSL to meet the fourth criterion. In summary, the GSL is a public program using private financial markets to accomplish public policy goals. The use of private lenders makes it appear that the program is more oriented toward private sector operations, but the public determination of the rules and regulations effectively neutralizes the benefits that the private markets could bring to accomplishing these goals. (McPherson & Shapiro, 1991)

#### Financial Aid Research

PL 89-329 stated that federal financial aid programs were intended to assist students from low-income families to access higher education. In 1978 the MISAA (PL 95-566) expanded the scope of some of the financial aid programs to include students from middle-income families. This section examines the impact that gender, race, and family income may have on various groups' access to or use of financial aid programs.

In the present study the researcher analyzed data from the National Postsecondary Aid Study (NPSAS), 1986-87 and NPSAS 1989-90, to study the impact of gender, race, family income, the type of institution attended (public or private), level of institution (either awards or does not award doctorates), dependency status, and the location of the institution within or outside North Carolina (NC) to determine their individual and joint effects on individuals' receipt of Pell Grants or Stafford Loans (formerly called Guaranteed Student Loans).

#### Research on Gender Issues and Financial Aid

A 1986 ASHE-ERIC Report investigated the participation of females in financial aid programs through academic year 1981-82. The overall finding was that females benefitted less from federal financial aid programs than did men during this period. Freshmen female students were twice as likely to be classified as independent students as were freshmen males. Female

students also had greater unmet financial need, higher drop-out rates, and paid a larger proportion of their own college expenses than did male students (Moran, 1986). In 1983, the U.S. Department of Labor reported that within the total group of low-income undergraduates, for each dollar received by a male student, female students received \$.68 in earnings, \$.73 in grants, and \$.84 in loans. The report also indicated that females received fewer funds in self-help programs, grants, work opportunities, and scholarships than male students (Moran, 1986).

Many factors impacted the extent to which females participated in the financial aid system. These included the reluctance that many female students had about borrowing money to attend college because they expected to earn less than their male counterparts and the greater likelihood that females would be single parents through either death or divorce and were therefore more directly affected by the policies and regulations of governmental social service agencies. For those who participated in Public Assistance programs, such as Aid to Families with Dependent Children (AFDC) or Unemployment Compensation, the amount of money received from financial aid was often counted as part of the overall family income rather than as separate funds for a distinct purpose outside the family. The 1981 change in the Social Security law to eliminate the educational allowance for children who were surviving after the death of a parent also had a greater impact on females than on males as more females were single parents raising the surviving children (Moran, 1986).

The system for calculation of financial need during these years did not consider some financial issues that affected females differently than males. For example, the cost of child care was not included as a deductible expense in the calculation of the EFC. In calculating expected earnings, the same formulae were used for both genders although research indicated that the average hourly wage for females was less than the wages paid to males (Moran, 1986).

This study reviewed the participation of females in both the Pell Grant and the GSL programs. In the Pell Grant program low-income females participated at a higher rate than low-income males. In 1982 the average award for female students was \$880 and the average award

for male students was \$913. In that year Pell grants were estimated to address about 16% of the costs for either gender, suggesting that females were attending institutions that cost less than the institutions males were attending (Moran, 1986).

In the GSL program, the participation rates for low-income females were disproportionately low in compared to their overall enrollment and in comparison with high-income females. In 1981-82 9% of the low-income females and 15.6% of the low-income males received a GSL. This was much different from the participation rates for high-income women and men. Within that group, i.e., family income greater than \$20,000, 18% of the females and 16.9% of the males participated in the GSL program. It appeared that this significant change in the rates of participation was the result of the different expectations low- and high- income females have about their future incomes and their general life circumstances (Moran, 1986).

Since 1981-82 changes in these two programs have improved the situation for females. In the 1986 Amendments to PL 89-329, the procedures for determining eligibility for Pell Grants were changed to allow child care costs as an expense in determining financial need and the provisions were extended to allow students taking less than a 50% academic load to qualify for Pell Grants in some situations. The need analysis procedures were also modified to differentiate between the needs of independent students with dependents and independent students without dependents (Public Law 99-498, Sections 471-477, 1986).

These changes in procedures and regulations did help to address some of the issues noted by Moran in the 1986 ASHE-ERIC study. They were, however, offset by changes in the mix of funding available for federal financial aid programs. In the period 1980-81 through 1984-85 the value of the funding for the GSL program increased in constant dollars by 10.8% while the value of the funding for the Pell Grant program (again in constant dollars) decreased by 5.7% (Andrew & Russo, 1989). This shift in the proportion of funds available may have had a greater impact on low-income female students who traditionally relied more on Pell Grants than on student loans. During this same period the costs of higher education were rising at a faster rate than inflation

and the eligibility for Pell Grants had been extended to include more students from middle-income families.

Mortenson (1991) investigated the question of equity of access to undergraduate education. The five groups studied were Women, Blacks, Hispanics, and Low-income persons. Mortenson used six dimensions for analyzing equity - preparation for college, access to college, college choice, college completion, field of study, and attainment of bachelor's degree. For each group studied Mortenson developed an equity "score" by comparing the proportion of the target group who accomplished an objective with the proportion of the more advantaged group who accomplished the objective. For women the comparison group was men (Mortenson, 1991).

In regard to women, a comparison of the high school graduation rates between men and women for the period 1967-1989 indicates that the percentage of male graduates increased from 1967 to 1973 and has fluctuated since then. The graduation rate for women for this same period has steadily increased from 79% in 1967 to 85% in 1989. On the dimension of access to college, defined as immediate transition from high school to college, the proportion of women going on to college has increased greatly while the proportion of men has increased slightly. From 1959-60 to 1989-90 the proportion of women going on to college increased from 38% to 62% while the proportion of men going on grew only from 54% to 58%. In college completions, defined as completion in four or more years, the percentage of men completing remained about constant (55% in 1964 and 54% in 1989), but the percentage of women completing grew from 45% in 1964 to 53% in 1989. Women first achieved parity on graduation rates in 1974 and have remained within two percent of the graduation rate for men since that time (Mortenson, 1991).

#### Research on Racial Issues and Financial Aid

Mortenson (1991) investigated the question of equity of access to undergraduate education for both Blacks and Hispanics. He used six dimensions for analyzing equity - preparation for college, access to college, college choice, college completion, field of study, and attainment of bachelors degree. Mortenson compared the proportion of Blacks and Hispanics

who completed each objective with the proportion of Whites who completed each objective. He found that Blacks were less likely than Whites to graduate from high school regardless of age, but that the difference has decreased substantially. From 1967-1989, the difference in the overall high school graduation rate between White and Black students dropped from 20% to 2%. Black students may take longer to graduate than white students - at age 18 or 19 the difference in graduation rates was 14%, while at age 20 or 21, the difference was only 2%. In 1967, 60% of Black students graduated from high school and in 1989, 82% graduated (Mortenson, 1991).

Mortenson has designated the college access gap between non-whites and Whites as the "measure of equity of higher education access". Table 2.3 shows the fluctuations in the gap for the period 1960 through 1989 in five-year increments. As these figures indicate, during the late 1960's and early 1970's, the gap in access to higher education closed until the access was nearly identical for non-white and White high school graduates. In the years 1980 - 1986 the gap increased substantially, but decreased in the period 1986 - 1989. This fluctuating pattern of access was consistent regardless of the place of residence of the students, i.e., central city, suburbs, or non-metropolitan areas (Mortenson, 1991).

The dimension of "college completion" was defined as the proportion of persons 25 to 29 years old who attended college and completed four or more years of college. Table 2.4 shows the college completion rates for blacks and whites who meet the above definition. The data are based on information collected in the Current Population Survey conducted by the U.S Census Bureau.

Thus, although the intent of the federal programs on student assistance was to increase the access to higher education for groups under-represented in higher education, these figures demonstrate that the rate of completion for Black students has fallen since 1965, while the completion rate for white students has remained constant (Mortenson, 1991).

When the completion rates were separated by both gender and race, male and female black students have much lower completion rates than their white counterparts. In 1965 the gap in college completion rates for white and black men was zero - both had a completion rate of

Table 2.3

College Access Gap, Non-White and White, 1960 - 1989

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Year	College Access Gap
1960	13%
1965	13%
1970	9%
1975	1%
1980	3%
1985	14%
1989	7%

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(Mortenson, 1991)



Table 2.4

College Completion Rates, 1965 - 1989

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Year	STUDENT RACE	
	<u>White %</u>	<u>Black %</u>
1965	52	46
1970	53	41
1975	53	42
1980	52	35
1985	53	33
1989	54	36

---

(Mortenson, 1991)

about 55%. In 1987 the gap in the completion rate was 22%, with more whites completing college than blacks. The figures for women students follow a similar pattern with an 8% gap between whites and blacks in 1965 and an 18% gap in 1987 (Mortenson, 1991).

In the investigating educational opportunities for Hispanic students researchers have differentiated between Mexican-Americans and other Hispanic students. As with the study of women and Blacks, the findings were based on data from the Current Population Survey of the Census Bureau. The identification of Hispanics as a separate category began in 1972. The high school graduation rates for Whites, Mexican-Americans, and other Hispanics are listed in Table 2.5 (Mortenson, 1991).

Table 2.5 data indicate that the graduation rate for White students has remained constant since 1965 and the graduation rate for Hispanic students in general has fluctuated somewhat, but for Mexican-Americans it has suffered significantly during this period. Similarly, from 1975-1989 the enrollment rate for white students has increased from 45% to 59%, the enrollment rate for Hispanics other than Mexican-Americans has increased from 54% to 58%, but the enrollment rate for Mexican-American students has fallen from 45% to 39%. Thus the enrollment of White students rose during this period while the enrollment of Hispanic or Mexican-American students remained constant or decreased. During 1975-1989 the college completion rate for White students remained at a constant level, ranged from 51% to 54%, and the completion rate for Hispanics students fluctuated from 35% (1975) to 32% (1980) to 40% (1985) to 37% in 1989.

These figures for completion are based on the experience of persons 25 to 29 years of age indicating that those who completed college in the mid 1980's, the time of the highest Hispanic completion rate, graduated from high school and enrolled in college about nine years earlier when the high school graduation rate for Hispanics was at its highest level. These figures are similar to those for Black students and indicate that access to higher education for students of color improved in the decade of the 70's, but decreased in the next decade of the 80's (Mortenson, 1991).

Table 2.5

High School Graduation Rates, 1974 -1989

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Year	<u>White</u>	<u>STUDENT RACE (%)</u>	
		<u>Mex.-Am.</u>	<u>Other Hispanics</u>
1974	85	62	69
1975	85	60	70
1980	85	55	66
1985	86	58	76
1989	85	51	69

---

(Mortenson, 1991)

### College Participation and Family Income

One primary objective of federal legislation has been to make higher education available to all students regardless of their race, gender, location, or family income status. Researchers have investigated the relationship between family income and participation in higher education and have tried to identify the impact of federal student assistance programs. In 1976 Bruno published a study of the rates at which students from different family income levels enrolled in college during the period 1967-76. She reported on the percentage of enrollment of dependent family members ages 18 to 24 from the population of all persons in this age range, not just high school graduates. She found that enrollment rates for students from families with incomes over \$5,000 (in constant 1967 dollars) declined during this period and the enrollment rates for those with family incomes less than \$5,000 were flat with no appreciable growth or decline. There was, however, a reduction in the gap between the enrollment of higher income students and lower income students, especially in the period 1967-1972. In the remaining four years of the study the gap was fairly constant. The gap reduction resulted from decrease in the enrollment of students from higher income families rather than increases in enrollment of students from lower income families (Bruno, 1976, as reported in Mortenson & Wu, 1990).

In 1982 Hansen reported the results of a study of college enrollment rates of dependents who were high school graduates from families with dependents 18 to 24 years old. The study compared the enrollment rates for this population in 1971 and 1978 for dependents above and below the median family income in those two years. The findings in this study were that students from families above the median income had consistently higher rates of enrollment in both 1971 and 1978 across all categories, i.e., Whites, Blacks, men, and women. These findings indicated that the increases in financial aid programs had little or no effect on the enrollment patterns of low-income high school graduates. These results were a surprise to those who were confident that federal, state, and institutional initiatives in financial aid would result in more students from low-income families enrolling in college (Mortenson & Wu, 1990).

In a review of the Hansen study, Breneman (1982) raised several questions about the research methodology, including whether dividing the population into just two income groups was too gross a measure to discern real changes in enrollment behavior based on income. He noted that limiting the study to just two years did not allow for complete consideration of other factors such as the impact of the Vietnam War on enrollments, the impact of changes in the concept of packaging financial aid, i.e., using a combination of grants, loans, and work; and the impact of federal funding for financial aid programs (Mortenson & Wu, 1990).

In 1988 Davis and Johns published another study of college enrollment rates based on family income. They addressed the concerns about the Hansen study by reporting family income data using quartile measurements and by expanding the number of years used for analysis. They calculated college enrollment rates for 1966, 1971, 1976, 1981, and 1986, using data beginning five years before Hansen and extending eight years beyond his study. The study relied on information from enrolled college freshmen reported in the National College Freshmen Norms report series as well as the Current Population Survey data from the Census Bureau. This study showed that the rates of enrollment for dependents in both the first (bottom) and second quartiles improved during this period, although there was some fluctuation.

These results were different from the results reported by Hansen in that the enrollment rate of dependents in the bottom quartile of family income had definitely improved since the passage of PL 89-329 and subsequent amendments (Mortenson & Wu, 1990).

In 1989 Mortenson extended and refined the Davis and Johns study by analyzing the enrollment rates for the bottom income decile as well as the next 15% of the lowest quartile. He also calculated the data for the years 1966-1988, which provided information beginning the first year PL 89-329 was in effect. His results of this study differed from Hansen's in that there were sharp increases in the enrollment of low-income students in the period 1966-71, prior to the time series in the Hansen study. It also showed that the gains in the enrollment rates made by the students from the first-quartile income families in the 1970's were reversed after 1980. Mortenson

noted that there were problems in conducting this analysis because it was based on using two different sources of data, i.e., the Freshmen Norms Report and Census Bureau data (Mortenson & Wu, 1990).

Mortenson and Wu replicated the 1990 research design and focused on an examination of high school graduation rates and college participation rates for students of different income levels. They used data from the Current Population Survey, p-20 Series, and did not use data from other sources. The sample was composed of all high school graduates who were not in the military or in institutions. These people were eligible to enroll in higher education because they had already graduated from high school (Mortenson & Wu, 1990).

The researchers divided the group into married and unmarried high school graduates because this status definitely affected the definition of their income. After the population was defined in this way, the authors calculated income quartiles for both the married and unmarried samples for each year of the study, 1970 - 1989. The study also included a breakdown of sub-populations - males, females, Whites, Blacks, and Hispanics by marital status and income quartile. The authors analyzed the college participation rates for all unmarried high school graduates, ages 18-24, and then analyzed the rates within each sub-group. The information on college participation was correlated with the family income data to determine the relationships between college participation, marriage status, family income, and gender/racial sub-groups (Mortenson & Wu, 1990).

Researchers found that family income was clearly, strongly, persistently, and persuasively related to the chances that 18-24 year olds have for high school graduation. This was true for the whole population, for all the specific demographic sub-groups, and for the entire time of the study, 1970 - 1989. During the years of this study, there was an increase in the high school graduation rate of unmarried students from the bottom quartile. Overall, there was a decrease in the college participation rate of 18-24 year old high school graduates in the 1970's, followed by an increase in the 1980's. In 1970 the participation rate was 61%; in 1979, 56%; and in

1989, 62%. The participation rate by income level demonstrates that the participation rates are directly correlated with income level. Table 2.6 illustrates this relationship for 1989.

The overall increase in the college participation rates in the 1980's was the result of increases in the participation rates for students whose family income was in the top three quartiles. The rate of participation for high school graduates from the lowest quartile did not, however, follow the same path as the participation rates for the other three quartiles. The participation rate for unmarried high school graduates in this quartile was fairly constant from 1970-1979. The rate decreased in the early part of the 1980's, and did not increase after 1985 as the participation rates did in the top three quartiles. The 1989 participation rate for this quartile was 46% in 1970 and 45% in 1989. This pattern holds true for all of the demographic sub-groups in the study - males, females, whites, Blacks, and Hispanics (Mortenson & Wu, 1990).

The federal goal of providing equity of opportunity in higher education was not met in the 1980's, using the Mortenson and Wu measure of equity by analyzing the difference in college participation rates of unmarried high school graduates from the lowest and top family income quartiles. When the difference in participation rates between these two groups decreased, it was an indication of greater equity and when it increased, it was an indication of less equity. The consistent pattern of an increasing gap in college participation between the lowest income quartile and the other three income groups shows a decrease in equity. The authors contend that the influence of governmental policies decreased as the level of family income increased, i.e., governmental policies have less impact on families from the top income quartile than they do on families from the lowest quartile which indicates that government policies should be able to improve equity of access to higher education (Mortenson & Wu, 1990).

#### 1986-87 NPSAS

The 1986-87 NPSAS was conducted in Fall, 1986. It provided a description of the postsecondary student population at that time, the expenses they incurred as students, and the ways they met those expenses. It did not include students who enrolled after October, 1986. The

Table 2.6

1989 Income Quartiles and College Participation Rates

Quartile	Income Range	Participation Rate (%)
Bottom	0 - \$20,017	45
Second	\$20,018 - 35,447	56
Third	\$35,448 - 58,125	67
Fourth	Over \$58,125	78

(Mortenson & Wu, 1990)



report showed that the costs of attending a postsecondary institution in 1986 ranged from \$2,100 to over \$12,000, depending on the type of school attended. The average cost of attendance was about \$6,000 (Korb, 1988).

In 1986-87 46% of the students reported receiving some type of financial aid, with 35% of those enrolled reporting receipt of federal financial aid. Students in the fall of 1986 were more likely to receive grant aid, i.e., aid that does not have to be paid back, than loan or work/study aid. More students received grant aid from non-federal sources than from federal programs (Korb, 1988).

Approximately 25% of the students took out a loan to help finance their college education. Most combined the loan with other forms of financial aid. The federal government was the largest provider of loans with a ratio of 10:1 for federal funds compared to non-federal sources (Korb, 1988). Table 2.7 shows the percentage of students receiving aid and Table 2.8 shows the amounts of aid.

Korb (1988) found an inverse relationship between the award of Pell Grants and family income. The heaviest concentration of Pell Grant recipients in 1986 was in the lowest levels of family income. Students with the lowest family incomes received the largest Pell Grants while those with higher family incomes received smaller grants or no grants at all.

Korb (1988) found a pattern between receipt of financial aid, amount of aid received, and the type of institution attended. The percentages of enrolled undergraduates who received federal aid at the various types of institutions were 28.5% at public schools, 48.4% at private non-profit schools, and 80.6% at private for-profit schools. Similarly the amounts of the awards were greatest at the private for-profit schools, followed by the private non-profit, and then the public schools.

#### 1989-90 NPSAS

The second NPSAS was conducted in Fall, 1989 and updated throughout the academic year to include students who were not enrolled in October, 1989. A sample of 70,200 was

Table 2.7

Percentage of Students Receiving Federal Aid, 1986-87 NPSAS

	<u>Students</u> %	<u>Rec. Fed. Aid</u> %	<u>Pell</u> %	<u>GSL</u> %
<u>Gender</u>				
Male	44.9	34.1	15.2	20.3
Female	55.1	35.6	19.4	20.6
<u>Race/Ethnicity</u>				
Black, Non Hsp.	9.3	50.2	39.7	29.1
Hispanic	6.8	40.9	26.1	20.4
White, Non Hsp.	77.8	32.0	13.7	19.9
<u>Dependency Status</u>				
Dependent	62.2	33.9	14.2	21.1
Independent	37.8	37.1	23.2	19.7

(Korb, 1988, pp. 42 &amp; 57)

Table 2.8

Average Amount of Federal Awards, 1986-87 NPSAS

	<u>Fed. Aid</u>	<u>Pell</u>	<u>GSL</u>
<u>Gender</u>			
Male	\$ 3127	\$ 1488	\$ 2320
Female	2849	1483	2258
<u>Race/Ethnicity</u>			
Black, Non Hsp.	\$ 3132	\$ 1655	\$ 2236
Hispanic	2741	1444	2287
White, Non Hsp.	2970	1437	2290
<u>Dependency Status</u>			
Dependent	\$ 2828	\$ 1374	\$2232
Independent	3277	1628	2412

(Korb, 1988, p.58)

surveyed out of a total undergraduate student enrollment of 16.3 million. In 1989-90 43% of the students reported receiving some type of financial aid with an average award of approximately \$3,600. About 30% of the respondents received some type of federal aid with about 20% receiving some type of federal grant funds. Table 2.9 shows the percentage of students who received various types of federal aid. The percentages of student receiving financial aid varied widely depending on the type of institution attended with 28% receiving aid at two year public institutions and approximately 82% receiving aid at proprietary schools (Shepard & Malizio, 1992).

The 1989-90 study also found an inverse relationship between the award of Pell Grants and family income. The heaviest concentration of Pell Grant recipients in 1989 were in the lowest levels of family income, for both dependent and independent students. Those with the lowest family incomes received the largest Pell Grants while those with higher family incomes received smaller grants or no grants at all.

Summarizing the research on equity of access to higher education and college completion rates for males and females, racial groups, and family income groups, there were different patterns for gender issues than there were for racial and family income groups. The numbers and percentage of females attending college steadily increased between 1959-60 and 1988-89. In 1974 the number of females completing college achieved parity with the number of males completing college and has remained within 2% of the male completion rates since then. Research through 1981-82 indicated that females did not benefit from financial aid programs to the same extent that males benefitted. Females had greater unmet financial need and paid a larger proportion of their educational expenses than did males.

Access to higher education increased for non-whites in the period 1960-75, but decreased from 1976-85. The gap in access was beginning to decrease again by 1989. The college completion rates for non-whites fell from 46% in 1965 to 33% in 1985. By 1989 the gap in completion rates of whites and non-whites was beginning to close.

Table 2.9

Percentage of Students Receiving Federal Aid, 1989-90 NPSAS

	<u>Fed Aid</u> %	<u>Pell</u> %	<u>Stafford</u> %
<u>GENDER</u>			
Male	73.2	50.7	42.8
Female	79.1	59.0	41.4
<u>RACE/ETHNICITY</u>			
Black, Non Hsp.	86.6	72.9	43.6
Hispanic	85.8	73.9	31.2
White, Non Hsp.	74.0	50.5	43.8
<u>DEPENDENCY STATUS</u>			
Dependent	70.8	45.2	39.0
Independent	83.4	67.2	45.7

(Shepard &amp; Malizio, 1992, p.3)

Research on college participation by family income indicated that the federal goal of providing equity of opportunity in higher education was not met in the 1980's. There was an increasing gap between the college participation rates of students in the lowest quartile of family incomes compared with students in the top three income quartiles indicating that the lowest income students had less chance to participate in higher education than students from the other three income quartiles. The Pell Grant and Stafford Loan programs did not address this inequity through 1989.

### CHAPTER III

#### METHODOLOGY

The purpose of this study is to investigate who is served by federal financial aid programs and whether gender, race, family income, dependency status, or type of institution make a difference in the likelihood of receiving federal financial aid. The study is based on data collected by the National Center for Educational Statistics in the 1986-87 and 1989-90 editions of the National Postsecondary Student Aid Study (NPSAS).

#### 1986-87, NPSAS

The 1987 NPSAS is based on a nationally representative sample of 59,886 students at 1,074 postsecondary institutions across the United States. The included institutions met all of the following conditions in the fall of 1986:

Offer an education program designed for persons who have completed secondary education; offer an academically, occupationally, or vocationally oriented course of study; offer access to persons other than those employed by the institution; offer more than just correspondence courses; and offer at least one program lasting 3 months or longer; and be located in the 50 states or the District of Columbia. (Korb, 1988, p.4)

Students included in the study met the following conditions:

had to be enrolled in a course for credit or in an occupational or vocational program or course of studies; or had to be enrolled in a degree or formal award program; and could not be enrolled in a high school program. (Korb, 1988, p.4)

In the fall of 1986 institutional data were collected from both registration records and student financial aid records for all students in the sample. The registration records supplied information on student performance, field of study, and attendance status. The financial aid records were used to determine whether or not a student received financial aid and the types of

aid received. The data first collected in the fall of 1986 were updated in the summer and fall of 1987. In March, 1987, questionnaires were mailed to all the students in the sample. There was telephone follow-up to those students who did not return the original questionnaire (Korb, 1988).

#### Selection of Sample, 1986-87

The NPSAS sample was identified through a three-stage approach with identification of large geographic areas in stage one, selection of representative institutions in stage two, and selection of the student sample in stage three.

Geographic areas were selected on the basis of three digit zip codes. An area was considered to be a cluster if it contained at least 7 institutions and a total enrollment of at least 1,000 students. In some areas where there were not sufficient numbers of institutions and/or students to qualify as a cluster, adjacent areas within the state were combined to create a cluster. These clusters were called Primary Sampling Units (PSU's). Three hundred sixty-one PSU's were formed by this process. Of this number, 120 PSU's were selected for the NPSAS sample, based on stratification by region, with the probability of selection within strata proportional to the size of the PSU (Korb, 1988).

Once the 120 PSU's were selected, all the postsecondary institutions located in the sample were identified - a total of 7,814 institutions. These institutions were separated into 11 strata, 10 of which were based on governance (public, private not-for-profit, and private for-profit) and type according to the highest degree conferred. The last stratum included institutions whose students were not eligible to receive Pell Grants. The initial sample included 1,310 institutions with the probability of selection within the strata proportional to the size of the institution. This number was later changed to 1,353 due to rejection of some institutions because of faulty initial information and the addition of a special sample of institutions from New York State (Korb, 1988).

The third stage of the sampling process was the selection of the student sample from the institutions selected to participate in the NPSAS. Students were stratified by classification



(undergraduate, graduate, and first-professional) and systematically sampled from lists provided by the institutions using a random start and a pre-specified sampling rate that varied by classification, e.g., sampling rates for graduate and first-professional students were 3 to 7 times greater than the rate used for sampling undergraduates. The total number in the student sample actually used in the NPSAS was 59,886 (Korb, 1988).

#### Collection of Data, 1986-87

After the institutions and students in the sample groups were identified, trained NPSAS investigators visited each institution to collect student information systematically from administrative records at the institutions. To facilitate this process, the investigators developed institutional check-lists to identify the sources for all student registration and financial aid information at the institution. The check-lists were used to abstract information from registration records for each sampled student. After collecting the registration information the investigators collected data to determine which sampled students received financial aid. For those students who were financial aid recipients the investigators collected additional information about aid status, type of aid, source and amount of aid awarded in fall, 1986, length of award, and if applicable, the family financial status. At the end of summer, 1987, the fall, 1986 records were updated to include all awards made for the fall semester.

In March 1987, each of the 59,886 students in the sample was mailed a questionnaire to collect data for the NPSAS. Two mailgram reminders and eventually a second questionnaire were sent to students who did not respond to the first questionnaire. In addition, all non-respondents were targeted for telephone interviews. The final overall student response rate for all types and controls of postsecondary institutions was 67%.

The items on the student questionnaire were edited to assure internal consistency of the data and to determine the reasonableness of the data reported by the students. Reported expenses that were outside a predefined range were recorded at the maximum or minimum extent of the range. Similarly, reports of financial aid awards which were outside the maximum

or minimum levels for that type of award were assigned to the maximum or minimum award levels (Korb, 1988).

#### 1989-90 NPSAS

The 1989-90 NPSAS is based on a nationally representative sample of approximately 70,000 students at 1,130 postsecondary institutions across the United States. To be included in this version of the study, students and institutions had to meet the same definitions of academic status as the students and institutions did in the 1987 NPSAS.

Two components of the 1990 research design were different from the 1987 NPSAS design. The sample included students who enrolled at any time during the 1989-90 academic year, July 1, 1989 - June 30, 1990, i.e., students who enrolled in the fall and also students who enrolled in the non-fall terms. The second difference is that the 1990 sample included institutions and a small number of students from Puerto Rico, who were not included in the 1987 study.

#### Selection of Sample and Data Collection, 1990

The 1990 NPSAS sample was also developed in a three-stage approach similar to that used in 1986-87, with identification of large geographic areas in stage one, selection of representative institutions in stage two, and selection of the student sample in stage three. In stage one, 121 PSU's were selected, the same PSU's used in the 1986-87 study plus Puerto Rico.

In stage two, NCES sampled the institutions which existed within the sample PSU's. Originally a sample of 1,533 institutions was chosen from the PSU's. After a process to verify the academic status of the schools, the number of institutions in the sample dropped to 1,130.

In stage three, a sample of students was selected from these institutions. This sample was drawn from enrollment lists provided by all institutions for Fall, 1989 and from a sample of the institutions in August, 1989; February, 1990, and June, 1990, to include the students who enroll at times other than the fall semester. The students from the enrollment lists were stratified by the level of education, i.e., graduate, undergraduate, first-professional, and then by the level and control of the institution. The sampling rate used to select the fall sample was the ratio of the

desired sample size divided by the estimated number of students in the population per stratum. After the student sample was established, NCES used trained investigators to contact each institution to collect information systematically from student records. NCES used 479 interviewers to complete over 51,000 computer assisted telephone surveys to individual students in the sample to collect their individual information about how they paid for school for the 1989-90 academic year.

#### Sampling Estimates

The estimates in the NPSAS are subject to both sampling and nonsampling error. Sampling error occurs because a sample of individuals was selected from a population and was used to make inferences about the population. Estimates taken from one sample may differ from estimates taken from a separate sample drawn from the same population in the same way. These differences result from sampling variability. There are a variety of methods for computing estimates of the sampling variability of the statistics drawn from a complex design such as the NPSAS. A “stratified, jackknife replicate approach” was used to estimate the sampling variability of the NPSAS (Korb, 1988).

#### Research Design

The research focus of this study is the awarding of federal financial aid to students who attend four-year colleges in the United States. It uses the information gathered in the 1987 and 1990 NPSAS to examine whether there are characteristics which predict the likelihood of receiving either Pell Grants or Stafford Loans.

The sample for this study is undergraduate students enrolled in four-year colleges and universities in Fall, 1986 and Fall, 1989 in the 50 states and the District of Columbia who applied for financial aid. It does not include students who were not enrolled in Fall, 1986 or Fall, 1989 and it does not include students from Puerto Rico, so that the data from the two NPSAS studies will be comparable. This study analyzes the following variables:

1. Receipt of a Pell Grant

2. Receipt of a Stafford Loan
3. Type of institutional control, i.e., public or private
4. Student dependency status
5. Gender
6. Race/Ethnicity
7. Family income
8. Level of school, i.e., whether it awards doctoral degrees
9. Location, i.e., whether attending school in North Carolina or one of the other states/the District of Columbia.

The information about these variables was drawn from NPSAS using the responses to the institutional survey, Financial Aid Office records, and the responses to the 1986 student questionnaire and the 1989 telephone surveys. Specifically, information on receipt of financial aid, family income, and dependency status came from Financial Aid records; information on institutional control, level of school, and location came from the institutional survey; and the information on gender and race/ethnicity as well as verification of family income came from the student questionnaires and telephone surveys.

The purpose of this study is to examine if some variables help to predict the likelihood that a student will receive federal financial aid. Various multivariate statistical techniques are available for analyzing the effects of more than one variable. In choosing a technique for this study, one of the guiding considerations is the fact that the dependent variable, whether or not a student receives financial aid, is dichotomous. Accordingly, this study employed logistic regression for analyzing the data. Logistic regression is a standard statistical approach for dealing with variables with two possible outcomes. The specific type of logistic regression was the "Logit Model" which allows for the analysis of a single dependent variable as a function of one or more independent variables.

The estimate of association between the dependent variable and the independent variable obtained from the logistic regression approach is the odds ratio. The odds ratio in this study can be interpreted as the probability of receiving financial aid at a given level of the independent variable(s) divided by the probability of receiving aid at some other level of the independent variable(s).

One example of the odds ratio would be the probability of receiving financial aid if the student is non-white with a family income of \$10,000 divided by the probability of receiving aid if the student is non-white with a family income of \$40,000. The odds ratio will be 1.0 if the probability of receiving aid is the same for both students. The ratio will be greater than 1.0 if the probability of receiving aid is greater for the student with a family income of \$10,000 and it will be less than 1.0 if the probability of receiving aid is greater for the student with a family income of \$40,000. Thus using the logit model with appropriate mathematical calculations allows for translating the odds ratio to statements about the probabilities of students receiving financial aid given their specific characteristics as represented by the independent variables in the study.

#### Decision Oriented Educational Research

The concept of "Decision Oriented Educational Research" (DOER) has been developed to assist educational administrators and policy analysts in designing research to lead to "developing effective strategies for improving current policies, programs, and practices" (Cooley and Bickel, 1986, p.3). This approach is meant to help educators consider the issues involved in educational policies, identify priorities for addressing the issues, and manage educational programs on a daily basis. It emphasizes the importance of doing research to increase the effectiveness of current programs, processes, and personnel, i.e., ways to reform the existing situation rather than focusing only on changes and new things to be done (Cooley and Bickel, 1986).

The purpose of this study is to identify whether there are variables which influence the likelihood that a student will receive financial aid. This research will provide information about

the probabilities of students with certain characteristics receiving financial aid based on financial aid awards made in 1986-87 and 1989-1990. This type of information could help educators in assessing current financial aid policies, programs, and practices to determine whether they are achieving their intended purpose .

## CHAPTER IV

### RESULTS

The present federal financial aid system was originally established in 1965 with the passage of the Higher Education Act of 1965 (PL 89-329). This legislation has been amended several times since then. The original purpose of providing federal financial aid programs was to “. . . assist in making the benefits of higher education to qualified high school graduates of exceptional financial need, who for lack of financial means. . . would be unable to obtain such benefits without such aid.” [Public Law 89-329, Title IV, Sec. 401(a). 11/8/65]. The federal financial aid system has expanded greatly since its inception and today it is unclear who is being served by it's network of programs.

The purpose of this research is to study the 1986 amendments to PL 89-329 and the characteristics of students who received Pell Grants and Stafford Loans in 1986-87 and 1989-90 to see who received aid in each of those years and whether there were significant differences in the recipients between the two survey years. The independent variables in the study are dependency, whether the student was classified for financial purposes as dependent on family or independent of their support; gender; institutional control, whether the college was a public or private institution; level of the institution, whether the college does or does not grant doctoral degrees; location, whether the home address was in or outside of North Carolina; race, white or non-white; and family income, by categories as defined in the 1986-87 National Postsecondary Student Aid Study (NPSAS) reports.

The results of this study are based on the responses of a sample of students who attended four-year colleges in fall, 1986 and fall, 1989. There were 21,313 respondents in the 1986 sample and 30,336 respondents in the 1989 sample for a total sample of 51,649 students. Table 4.1

Table 4.1

Aid Recipients, 1987 and 1990

Variables	Respondents (n)
Survey Year	
1986-87	21,313
1989-90	30,336
Control	
Private	26,562
Public	25,077
Dependency Status*	
Dependent	36,824
Independent	14,724
Gender**	
Female	26,993
Male	24,142
Level	
4 yr. w/Ph.D.	27,030
4 yr. w/o Ph.D.	24,619
Race***	
Non-white	9,446
White	42,046
Location****	
North Carolina	945
Not North Carolina	43,948
Family Income	
< \$11,000	10,624
> \$11,000	4,205
> \$17,000	4,243
> \$23,000	5,065
> \$30,000	13,248
> \$50,000	14,264

\*Responses Missing: \* = 101; \*\* = 514; \*\*\* = 6,756; \*\*\*\* = 157



indicates the number of respondents in each of the categories who were used for analysis in this study.

#### Question #1

*Did the probability of receiving financial aid differ by year, location, level, gender, race, family income, dependency status, and institutional control for students at four-year colleges?*

The approach to answering this question was to analyze separately the association of the dependent variable, (either receipt of Federal aid, receipt of a Pell grant, or receipt of a Stafford Loan), with each independent variable - control, dependency status, family income, gender, level, location, and race for the entire sample of 51,649 respondents. All of these variables except family income are dichotomous, i.e., there are two possible responses for each variable. Family income is divided into six levels ranging from less than \$11,000 to over \$50,000, the same categories as used in the 1986-87 survey.

The analysis for this question included three steps. The first step used a two-by-two contingency table to assess the differences in the proportions of students receiving aid as a function of each of the dichotomous independent variables. An example of one of these tables is shown in Table 4.2. These tables present the frequency and proportion of students receiving aid for both responses for each variable. In the case of family income a 2 X 6 table was used to display the percentage of students who received and who did not receive financial aid in each income level. Table 4.3 is an example of one of the 2 X 6 tables.

The second step of the analysis was the calculation of a Chi Square statistic from the contingency table frequencies to assess the association between the dependent variable and each of the independent variables. This statistic was compared to a Chi Square table based on one degree of freedom (df) for all independent variables except family income (5df) to evaluate the statistical significance of each association. The measure of statistical significance was based on a probability of .05. Those statistics which have a probability of  $p \leq .05$  indicate that there was less than one chance in 20 of finding a difference as large or larger than that observed by due to

Table 4.2

Sample 2x2 Contingency Table


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Frequency Percent Row Pct Col Pct		Male 1	Female 2	Total	
Pell Or Stafford	Y	1	3639	4150	7789
			17.12	19.53	36.65
	N		46.72	53.28	
		2	36.05	37.20	
Total		10094	11157	21251	
		47.50	52.50	100.00	

---

Frequency Missing = 62

Table 4.3

Sample 2x6 Contingency Table for Family Income

Frequency Percent Row Pct Col Pct	Family Income Category						Total	
	1	2	3	4	5	6		
Pell or Stafford	1	2433 11.42 31.12 66.97	1004 4.71 12.84 59.62	935 4.39 11.96 51.66	901 4.23 11.52 39.28	1780 8.35 22.77 28.91	765 3.59 9.79 13.34	7818 36.68
	2	1200 5.63 8.89 33.03	680 3.19 5.04 40.38	875 4.11 6.48 48.34	1393 6.54 10.32 60.72	4377 20.54 32.43 71.09	4970 23.32 36.83 86.66	13495 63.32
Total	3633 17.05	1684 7.90	1810 8.49	2294 10.76	6157 28.89	5735 26.91	21313 100.00	

chance alone, i.e., the difference is unlikely to represent a random occurrence. Those statistics which have a probability of  $p \geq .05$  are more likely to occur at random under the null hypothesis of independence, and the differences between the two measures of the variable are not considered statistically significant in this study, although all results are reported.

The third step of the analysis was the calculation of an odds ratio for each association. The odds ratio expresses the strength of the association between dependent and independent variables as a single number greater than zero. Using the odds ratio the researcher is able to compare the odds of receiving a Pell Grant or Stafford Loan between the options for each variable. Odds ratios close to 1.0 indicate little difference in the odds of receiving aid between categories of the independent variable and indicate weak association. In contrast, the extent to which odds ratios depart from 1.0 indicate progressively greater differences between independent variable categories and stronger associations.

The first analysis was to identify the respondents in the two surveys who received either a Pell Grant, a Stafford Loan, or both and to identify the numbers of respondents by each variable. The second analysis was to identify whether there was a difference in the receipt of Pell Grants and/or Stafford Loans by the different options of the dichotomous variables. The results of this analysis are shown in Table 4.4.

#### Pell Grants and/or Stafford Loans

Period of the Studies. The first calculation was an identification of the differences in the receipt of Pell or Stafford aid in the two years of the survey. The similarity in the percentages of respondents who received aid, the Chi Square statistic with a probability of  $p \geq .05$  and the odds ratio of 1.0 indicated that there is not much difference in the combined receipt of Pell Grants and/or Stafford Loans between the two survey years.

Institutional Control. The analysis of the variable Control with its high Chi Square value and probability of  $p \leq 0.001$  indicated that proportionally more students at private schools

Table 4.4

Comparison of Aid Recipients, 1989-90 to 1986-87

Variable	Rec'd Pell/Staff	Odds Ratio	Chi Square	Probability
Period		1.00	3.33	0.068
1986-87	37%			
1989-90	36%			
Control		0.65	541.37	0.001
Public	31%			
Private	41%			
Dependency		1.16	56.92	0.001
Dependent	35%			
Independent	39%			
Gender		1.09	22.02	0.001
Female	37%			
Male	35%			
School Level		1.19	94.25	0.001
4 yr. w/Ph.D.	34%			
4 yr. w/o Ph.D.	38%			
Race		2.18	1,178.25	0.001
Non-white	52%			
White	33%			
Location		2.00	81.37	0.001
North Carolina	23%			
Not North Carolina	37%			
Family Income				
Level 1	64%		787.86	0.001
Level 2	55%	0.68	108.42	0.001
Level 3	47%	0.50	345.81	0.001
Level 4	39%	0.37	813.74	0.001
Level 5	29%	0.23	2,749.24	0.001
Level 6	13%	0.08	5,999.91	0.001

received aid than students at public schools. The odds of a student at a private school receiving aid were only 65% of the odds of a student at a public school receiving aid.

Dependency. There is a statistically significant difference between dependent and independent students receiving aid. Dependent students' families provide support for them while they are in school; independent students receive little or no financial support from family. The difference for these two categories of students is confirmed by the odds ratio which indicated that the odds of receiving either Pell Grants or Stafford Loans were 16% greater for independent students than for dependent students.

Gender. There is a statistically significant difference between males and females in receipt of aid. The odds that females would receive aid are 9% larger than the odds that males would receive aid.

Level. There was also a statistically significant difference in receipt of financial aid between students in four-year schools which also award the Ph.D degree and those students who attend schools that do not award doctorates. The odds of receiving a Pell Grant or Stafford Loan were nearly 20% higher for students attending a school which does not award doctorates.

Location. The variable of location in this study describes whether a person is from North Carolina or from somewhere else. The analysis for all students in the database indicated that there is a statistically significant difference in receipt of aid between students from North Carolina and students from other places. The odds of students from other places receiving aid are twice as large as the odds of North Carolina students receiving aid.

Race. For this study the variable of race was defined as white and non-white. The analysis indicated that there was also a statistically significant difference between white and non-white students in receiving Pell Grants and Stafford loans. The odds ratio of 2.18 indicated that the odds of receiving these types of aid were more than twice as large for non-white as for white students.

Income. The analysis of the receipt of aid by level of family income indicated that there was an inverse relationship between family income and receipt of aid. The percentage of students receiving aid steadily decreased as the level of family income increased. The odds ratios compared the likelihood of receiving aid at each income level with the likelihood of receiving aid in the lowest income level. The odds ratios consistently decreased with each higher income level thus indicating that the odds of receiving aid decreased as the family income increased. The Chi Square for each income level indicated that there was a statistically significant difference in receipt of aid for each income level. The odds ratios and Chi Square statistics for income are included in Table 4.11, page 111.

#### Pell Grants or Stafford Loans Separately

After investigating the patterns of receipt of Pell Grants and/or Stafford Loans, the researcher studied the patterns for receipt of Pell Grants and for Stafford Loans separately to determine if there were differences between receiving a grant or a loan in terms of the variables selected for this study. The results of these separate analyses are found in Table 4.5 - Pell Grants and Table 4.6 - Stafford Loans.

In general, the results of analyzing the probability of a student's receipt of Pell and/or Stafford aid provided a picture of financial aid receipt that was influenced by both programs. The separate analyses show distinct differences in receipt of aid from the Pell Grant program and from the Stafford Loan program for some variables. In the two years of the study, there were statistically significant differences in the likelihood of receiving aid from the two programs. The odds ratio for the Pell program indicated that the odds of receiving aid were 37% greater in 1989-90 than in 1986-87. Conversely, the odds of receiving a Stafford in 1989-90 were less than the odds of receiving one in 1986-87.

Institutional Control. The investigation of receipt of aid at public and private schools (institutional control) indicated that students at private schools were slightly more likely to

Table 4.5

Comparison of Pell Grant Recipients, 1989-90 to 1986-87

Variable	Rec'd Pell	Odds Ratio	Chi Square	Probability
Period		1.37	199.39	0.001
1986-87	19%			
1989-90	24%			
Control		1.07	9.41	0.002
Public	22%			
Private	21%			
Dependency		1.96	926.24	0.001
Dependent	18%			
Independent	31%			
Gender		1.18	61.75	0.001
Female	23%			
Male	20%			
School Level		1.31	162.14	0.001
4 yr. w/Ph.D.	20%			
4 yr w/o Ph.D.	24%			
Race		3.29	2,516.28	0.001
Non-white	41%			
White	17%			
Location		1.73	34.97	0.001
North Carolina	14%			
Not North Carolina	22%			
Family Income				
Level 1	55%		280.47	0.001
Level 2	16%	0.55	268.68	0.001
Level 3	13%	0.36	724.13	0.001
Level 4	9%	0.17	1,858.95	0.001
Level 5	7%	0.04	5,485.78	0.001
Level 6	1%	0.01	2,803.06	0.001



Table 4.6

Comparison of Stafford Loan Recipients, 1989-90 to 1986-87

Variable	Rec'd Staff	Odds Ratio	Chi Square	Probability
Period		0.84	71.76	0.001
1986-87	28%			
1989-90	25%			
Control		2	1,150.99	0.001
Public	19%			
Private	32%			
Dependency		0.91	17.73	0.001
Dependent	27%			
Independent	25%			
Gender		1.00	0.02	0.897
Female	26%			
Male	26%			
School Level		1.05	4.77	0.029
4 yr. w/Ph.D.	26%			
4 yr w/o Ph.D.	27%			
Race		1.11	15.48	0.001
Non-white	28%			
White	26%			
Location		2.79	110.34	0.001
North Carolina	12%			
Not North Carolina	27%			
Family Income				
Level 1	36%		853.83	0.001
Level 2	34%	0.94	2.23	0.135
Level 3	32%	0.85	18.16	0.001
Level 4	31%	0.81	28.19	0.001
Level 5	27%	0.67	208.77	0.001
Level 6	12%	0.25	1773.18	0.001

receive Pell Grants than students at public schools, but were only half as likely to receive Stafford Loans.

Dependency. Independent students were almost twice as likely to receive Pell Grants as were dependent students. The odds of receiving Stafford Loans were only 91% as great for independent students as they were for dependent students.

Gender. The investigation of differences between males and females indicated that females were 18% more likely to receive Pell Grants than were males, but that there was no significant gender difference in the likelihood of receiving Stafford Loan funds.

Level. The respondents who attended schools that did not offer doctoral programs had odds of receiving Pell Grants 30% larger than students at schools that did offer doctoral degrees. The odds of receiving Stafford Loans were 5% larger for students at schools that did not offer doctoral degrees than for students at schools that did offer doctoral degrees.

Race. The analysis of the differences in receipt of Pell and/or Stafford funds for whites and non-whites indicated that non-white students were more than twice as likely as white students to receive aid from one or both of these programs. The separate analyses for the two programs indicated that non-white students were 229% more likely to receive Pell Grants than were white students. The comparison of receipt of loans by race indicated that race did not make as strong an impact for this type of aid as it did for grants. Non-whites had odds of receiving Stafford Loans only 11% larger than those of their white counterparts.

Location. These separate analyses indicated that students whose home addresses were not in North Carolina were more likely to receive aid from either of these programs than were students from North Carolina. The odds of students whose homes were outside North Carolina receiving Pell Grants were 73% larger than the odds of North Carolina residents receiving Pell Grants. In the Stafford Loan program students outside the state had odds of receiving loan funds 179% larger than those of North Carolina residents.

Income. The separate analyses of family income and receipt of Pell and Stafford funds indicated that for both financial aid programs the probability of receiving aid decreased as family income increased. The decrease was much sharper for the Pell Grant program in which 55% of the respondents in income level 1 received a grant while only 1% of the respondents in income level 6 received a grant. The percent of respondents receiving Stafford loans ranged from 36% for income level 1 to 12% for income level 6.

In summary, independent, non-white students were more likely to receive Pell Grants than were other students. Students who were attending private school and were from outside of North Carolina were more likely to receive Stafford Loans than were students attending private schools whose home address was North Carolina. In regard to gender differences, females were more likely to receive Pell Grants, but the likelihood of receiving a Stafford Loan was the same for both males and females. Students attending schools that did not offer doctoral degrees were more likely to receive Pell Grants and Stafford Loans than were students attending schools that did offer doctoral degrees.

#### Question # 2

*Was the relationship of location, level, gender, race, family income, dependency status, and institutional control to the probability of students at four-year colleges receiving federal financial aid different in 1986-87 than in 1989-90?*

This question essentially asks whether the odds ratios assessing the impact of each independent variable on the odds of receiving aid were similar for the two survey periods, 1986-87 and 1989-90. Statistically, this amounts to a test of the interaction between the independent variable under consideration and the survey period. The statistical significance of this interaction can be assessed using Chi Square statistics obtained by fitting logistic regression models to the data.

Table 4.7 shows the comparison of the Chi Squares, probabilities, and odds ratios for each of the independent variables for both 1986-87 and 1989-90. The researcher calculated the ratios in

Table 4.7

Comparisons of Odds Ratios, 1989-90 to 1986-87

Variable	1986-87			1989-90		
	Pell/Staff	Pell	Stafford	Pell/Staff	Pell	Stafford
<b>Dependency</b>						
Dependent	35%	15%	28%	35%	21%	25%
Independent	42%	32%	27%	38%	30%	24%
Odds R	1.3	2.63	0.93	1.11	1.61	0.93
Chi Sq	14.3777	103.0827	0.0449			
Prob	0.001	0.001	0.8323			
<b>Gender</b>						
Male	36%	17%	28%	34%	22%	25%
Female	37%	20%	28%	37%	25%	25%
Odds R	1.05	1.16	0.97	1.12	1.19	1.02
Chi Sq	2.9731	0.2195	1.7718			
Prob	0.085	0.6394	0.1832			
<b>Inst. Control</b>						
Public	32%	20%	21%	31%	24%	18%
Private	42%	17%	36%	40%	24%	30%
Odds R	1.59	1.22	.46	1.52	1.02	.52
Chi Sq	2.1131	15.6037	9.2624			
Prob	0.146	0.001	0.0023			
<b>Level</b>						
Grant Ph.D.	34%	16%	27%	34%	22%	25%
Not Ph.D.	40%	21%	29%	38%	26%	25%
Odds R	1.25	1.39	0.9	1.15	1.27	1.00
Chi Sq	5.2	3.9705	7.2154			
Prob	0.023	0.0463	0.007			
<b>Location</b>						
North Carolina	23%	11%	14%	23%	18%	9%
Not N. Carolina	38%	19%	29%	37%	25%	26%
Odds R	2.08	1.85	2.44	1.92	1.52	3.57
Chi Sq	0.2779	1.0798	3.1692			
Prob	0.5981	0.2987	0.075			
<b>Race</b>						
White	34%	15%	28%	32%	19%	24%
Non-White	51%	38%	30%	52%	43%	29%
Odds R	2.02	3.45	1.15	2.3	3.13	1.11
Chi Sq	7.443	2.2	0.4253			
Prob	0.0064	0.138	0.5143			

three categories for separate discussion of the results: 1) receipt of Pell and/or Stafford aid, 2) receipt of only a Pell Grant, and 3) receipt of only a Stafford Loan.

#### Pell Grants and/or Stafford Loans

When receipt of Pell and/or Stafford aid was taken as the dependent variable, there was no statistically significant interaction between period and institutional control, gender, or location. The data indicated that the impacts of institutional control, gender, and location on the odds of receiving Pell and/or Stafford aid were similar in 1986-87 and 1989-90.

Level. The proportion of students receiving Pell and/or Stafford at schools not granting Ph.D's decreased from 40% in 1986-87 to 38% in 1989-90, while the proportion receiving aid at Ph.D granting institutions was 34% in both survey years.

The analysis of the variable institutional level, whether the school does or does not grant Ph.D degrees, indicated that the odds ratio for the two survey years was statistically different. The data indicated that the effect of institutional level was that the odds for receiving Pell and/or Stafford were 25% greater at schools not offering Ph.D's in 1986-87 than at schools that did offer doctoral degrees. In 1989-90 the odds of receiving Pell and/or Stafford aid had decreased to be only 15% greater at schools not offering doctoral degrees compared to schools that did offer doctoral degrees.

Institutional Control. The analysis indicated that there was no significant interaction between institutional control and receipt of Pell and/or Stafford aid. Taken separately, however, there were statistically significant differences in the odds of receiving a Pell or Stafford as a function of attending a public or private school.

Race. The proportion of white respondents receiving aid decreased from 34% in 1986-87 to 32% in 1989-90 and the proportion of non-whites receiving aid actually increased from 51% to 52%. The Chi Square of 7.44 (1 df) with its probability  $p \leq .006$  for the variable race indicated that the difference in the odds ratios for the two survey years was statistically significant. The data indicated that the effect of race was that the odds for receiving Pell and/or Stafford were 102%

greater for non-whites in 1986-89 and 130% greater for them in 1989-90. When Pell and Stafford were analyzed separately there was no statistically significant interaction between the two survey years.

Dependency. The analysis of the variable of dependency status resulted in a Chi Square of 14.38 (1 df) with a probability  $p \leq .001$  which indicated that the difference in the odds ratios for the two survey years was statistically significant. The data indicated that the effect of dependency status was that in 1986-87 the odds of an independent student receiving Pell and/or Stafford aid were 30% greater than the odds of a dependent student receiving these types of aid. In 1989-90 the odds of an independent student receiving Pell and/or Stafford aid were only 11% greater than the odds of a dependent student receiving aid. Therefore, the odds of an independent student receiving Pell and/or Stafford aid were greater in 1986-87 than in 1989-90.

Family Income. The analysis of the likelihood of receiving Pell and/or Stafford aid based on level of family income was determined in a two step process. The results of the analysis of the family income variable are summarized in Table 4.8.

The first step was the calculation of a Chi Square statistic and its probability to test whether the impact of the family income variable was the same or different in the two survey years for Pell and/or Stafford recipients. This statistic was 43.90 (5 df) with a probability  $p \leq .05$  indicating that the effect of family income was statistically significant between the two survey years.

The second step was the calculation of an odds ratio for each income level using information from both 1986-87 and 1989-90. These ratios indicated that the odds of receiving a Pell Grant and/or Stafford Loan were generally greater in 1986-87 than they were in 1989-90. Specifically, the odds of receiving Pell and/or Stafford aid were 23% greater in 1986-87 for respondents whose income was less than \$11,000 (Level 1); 41% greater in 1986-87 for respondents whose family income was in the range \$11,001- 17,000 (Level 2); 38% greater in 1986-87 for respondents whose family income was in the range \$17,001 - 23,000 (Level 3); and were

Table 4.8

Comparison of Odds Ratios for Family Income Levels, 1989-90 to 1986-87

Income Levels	Odds Ratio Pell/Stafford	Odds Ratio Pell	Odds Ratio Stafford
Level 1 < \$11,000	0.81	0.88	0.83
Level 2 \$11,000-17,000	0.71	0.73	0.79
Level 3 \$17,000-23,000	0.72	0.99	0.70
Level 4 \$23,000-30,000	1.00	2.38	0.76
Level 5 \$30,000-50,000	1.01	7.14	0.87
Level 6 > \$50,000	0.89	2.86	0.88
Chi Square (5 df)	43.897	590.44	11.00
Probability	< .05	< .05	> .05

12% greater odds for respondents whose family income was over \$50,000 (Level 6). The odds of receiving Pell and/or Stafford aid at Level 4 family income \$23,001 - 30,000 and Level 5 family income \$30,001 - 50,000 were nearly equal in the two survey years.

### Pell Grants

When receipt of a Pell Grant was the dependent variable, there was no statistically significant interaction between period and gender, race, and location; i.e., the impacts of these three independent variables on the odds of receiving a Pell Grant were similar in 1986-87 and 1989-90. These results are shown in Table 4.7.

Level. The analysis of respondents who received only Pell Grants indicated that the odds of receiving a Pell Grant were 39% greater at schools not offering a Ph.D in 1986-87 than at schools that did offer a doctoral degree. In 1989-90 the odds of receiving aid had fallen to be 27% greater at schools that do not offer doctoral degrees than at schools that do offer doctoral degrees..

Institutional Control. The odds of a student receiving a Pell Grant were 22% greater at a private school in 1986-87 as the odds of receiving a Pell grant at a public school. In 1989-90 the situation changed so that the odds of receiving a Pell Grant at a private school were only 2% greater than the odds of getting a Pell Grant at a public school.

Dependency. The odds of an independent student receiving a Pell Grant in 1986-87 were 163% greater than the odds of a dependent student receiving Pell aid. These odds for receiving a Pell Grant fell to 61% in 1989-90 which indicated there was less difference between receipt of Pell Grants for independent and dependent students in 1989-90.

Family Income. The analysis of receipt of Pell grants alone showed a Chi Square of 590.44 (5 df) with a probability  $p \leq .05$  which indicated a statistically significant interaction between the two survey years. The odds of receiving aid were greater for family income levels one and two in 1986-87 than they were in 1989-90. The odds of receiving a Pell Grant were about equal in the two survey years for respondents in income level three. The odds of receiving a Pell



Grant were much greater in 1989-90 for respondents from family income levels four, five, and six than they were in 1986-87.

### Stafford Loans

When receipt of a Stafford Loan was analyzed as the dependent variable, there was no statistically significant interaction between period and gender, race, dependency status, and location, i.e., the impact of these four variables on the odds of receiving a Stafford Loan was similar in the two survey years.

Level. Respondents who received Stafford Loans only were only 90% as likely to receive loans at schools not offering Ph.D degrees in 1986-87 than at schools which did offer doctoral programs. In 1989-90 the odds for students receiving Stafford Loans only were the same at both levels of schools.

Institutional Control. In 1986-87 the odds of receiving a Stafford Loan were only 46% as great at a private school than the odds of receiving a loan at a public school. In the 1989-90 survey the odds of receiving a Stafford Loan at a private school were only 52% as great as the odds of receiving a loan at a public school.

Family Income. The analysis of receipt of Stafford Loans with it's Chi Square of 11.00 (5 df) and a probability  $p \geq .05$  indicated that there was not a statistically significant difference between the two survey years for receipt of these loans. The odds of receiving a Stafford Loan were greater for all income levels in 1986-87 than in 1989-90.

### Summary

These findings indicated that there was some difference in the odds of receiving aid in the two survey years and that those odds differed depending on whether the dependent variable was a combination of Pell Grant and/or Stafford Loan or Pell and Stafford considered separately. There was a significant difference in the variable of level across all three analyses, institutional control was different when Pell and Stafford were considered separately, race was significantly different only when Pell and Stafford were analyzed together, and dependency status was

significant for Pell and Stafford together and Pell alone, but not for Stafford alone. The analyses did not indicate any statistical interaction for gender or location with any of the three dependent variables.

### Question #3

*Are there joint effects among the variables of level, location, gender, race, family income, dependency status, and institutional control in terms of their interaction with the different years of the studies?*

The analysis of the previous question examines whether the impact of each independent variable on receipt of financial aid differed in the two survey years. Question #3 is a direct follow-up to that comparison as it addresses whether differences in the impact of each variable on receipt of aid in the two survey years were independent of the impact of the other variables and their interaction with survey year. The analysis for this question used a multiple logistic regression model in which the differential effect of each variable in the two survey years could be studied after controlling for the other independent variables. It tried to ascertain the extent to which the differential impact of each variable on the probabilities of receiving aid in the two survey years was independent of the other variables (dependency, gender, institutional control, level, location, race, and family income); e.g., was the differential effect of race independent of the differences in dependency, gender, institutional control, level, location, and income and could the apparent effect of race be explained by the effect of another variable?

The statistical technique used for analysis involved fitting a multiple logistic regression model containing as predictor variables the year (representing the two survey years) and a set of seven independent variables and all their interactions with year. Statistically, this amounted to a test of the interaction between the independent variable under consideration and the survey year while controlling for the effects of all the other independent variables. Results obtained on this model were confirmed using a backward stepwise selection procedure which began with all independent variables in the model, analyzed the effect of each variable while controlling for the

effects of the other independent variables, eliminated those variables that did not impact the receipt of aid when the impact of the other variables was set aside, and re-calculated the statistics for each of the remaining variables. Because the set of significant interactions obtained from the backward selection procedure was equivalent to that from the full model for all three dependent variables ( Pell and/or Stafford, Pell, or Stafford) only results from the full model are discussed here.

For dichotomous independent variables, the statistical significance of these interactions can be assessed using Wald Chi Squares which assess the statistical significance in the differences in the impact of the variable on receipt of aid in the two survey years after control for the other variables examined. The information also allows for the calculation of odds ratios which identify the odds of receiving aid in each survey year for students represented by each variable holding the other variables constant.

The analysis of income information was based on calculation of a Chi Square statistic to determine whether there was a statistically significant difference in the effect of income on receipt of financial aid in the two survey years after controlling for dependency, gender, institutional control, level, location, and race. The analysis included calculation of an odds ratio for each income level to identify the difference in likelihood of receiving aid in the two survey years. The estimated odds ratio for each income level depends, in part, on the type of student considered (white or black, dependent or independent, etc.). Because of the modeling approach used here, however, the relative ordering of odds ratios for different income categories should be considered for all types of students, essentially representing a weighted average of relative orders over all students in the sample. For descriptive purposes the odds ratios for income categories are presented here for dependent white male students attending North Carolina public institutions granting Ph.D's.

Table 4.9 shows the comparison of the Chi Squares, probabilities, and odds ratios for each of the independent variables, except income, for both 1986-87 and 1989-90. Table 4.10 shows the

Table 4.9

Comparison of Odds Ratios, Variables Constant, 1989-90 to 1986-87

Variable	1986-87			1989-90		
	Pell/Staff	Pell	Stafford	Pell/Staff	Pell	Stafford
Level (1 df)						
Odds Ratio	*	*	*	*	*	*
Chi Square	2.21	1.07	3.75			
Probability	0.1369	0.3001	0.053			
Control (1 df)						
Odds Ratio	2.23	1.05	2.67	2.03	1.2	2.22
Chi Square	4.13	4.41	15.17			
Probability	0.0421	0.0358	0.0001			
Gender (1 df)						
Odds Ratio	1.01	*	*	0.88	*	*
Chi Square	6.39	3.39	2.17			
Probability	0.0115	0.0657	0.142			
Race (1 df)						
Odds Ratio	0.85	0.61	*	0.58	0.45	*
Chi Square	37.45	16.36	0.1286			
Probability	0.0001	0.0001	0.7199			
Dependency (1 df)						
Odds Ratio	2.04	1.75	1.59	2.7	2.38	1.82
Chi Square	20.52	1.25	5.66			
Probability	0.0001	0.0001	0.0174			
Location (1 df)						
Odds Ratio	*	*	*	*	*	*
Chi Square	2.98	1.23	0.43			
Probability	0.0844	0.2668	0.5104			

\*These variables had no effect on the odds of receiving aid.

Table 4.10

Comparison of Odds Ratios, Holding Variables Constant, 1989-90 to 1986-87

Income Levels	Odds Ratio Pell/Stafford	Odds Ratio Pell	Odds Ratio Stafford
Level 1 <\$11,000	1.21	1.27	0.79
Level 2 \$11,000-17,000	1.09	0.98	0.57
Level 3 \$17,000-23,000	1.09	1.33	0.61
Level 4 \$23,000-30,000	1.46	2.91	0.78
Level 5 \$30,000-50,000	1.34	8.04	0.82
Level 6 >\$50,000	1.16	2.948	0.83
Chi Square	17.14	340.27	2.73
Probability (5 df)	<.05	<.05	>.05

comparison of the Chi Squares, probabilities, and odds ratios for the variable of income. The researcher calculated the ratios for receipt of funds in three categories: 1) receipt of Pell Grants and/or Stafford Loans, 2) receipt of a Pell Grant only, and 3) receipt of a Stafford Loan only.

#### Pell Grants and/or Stafford Loans

When receipt of a Pell Grant and/or Stafford Loan was taken as the dependent variable, there was no statistically significant interaction between receipt of Pell and/or Stafford aid and level of institution or home location of the student. The data indicated that the impacts of level and location on the odds of receiving aid when controlling for the impact of the other independent variables were similar in 1986-87 and 1989-90.

Dependency. The Wald Chi Square statistic for dependency, whether the student is classified as relying on family support or is financially independent, was 20.52 (1 df) with a probability  $p \leq .0001$  which indicated that the difference in the effects of this variable in the two survey years was statistically significant after control for other variables. In 1986-87 the odds of dependent students receiving Pell and/or Stafford aid were 104% greater than the odds of independent students receiving aid when controlling for gender, institutional control, level, location, race, and income. By 1989-90 the odds of independent students receiving aid had increased to 170% of the odds of independent students receiving aid, controlling for the same independent variables. Thus, the impact of dependency was more pronounced in the second survey year than it was in the first survey, controlling for the same set of variables.

Gender. The Wald Chi Square statistic for gender was 6.39 (1 df) with a probability  $p \leq .01$  which indicated that the difference in the odds ratios between the two survey years was statistically significant after controlling for the other independent variables. In 1986-87 the odds ratio for gender was 1.01 indicating that the odds of receiving Pell and/or Stafford aid were approximately equal for males and females, controlling for dependency, institutional control, level, location, race, and income. In 1989-90 the odds ratio was .88 which indicated that the odds of females receiving aid were only 88% as great as the odds of males receiving aid, controlling for

dependency, institutional control, level, location, race, and income. The effect of gender was more pronounced in 1989-90 than it was in 1986-87 controlling for dependency, institutional control, level, location, race, and income.

Institutional Control. The Wald Chi Square statistic for the variable institutional control, whether the institution is a public or private school, was 4.13 (1 df) with a probability  $p \leq .04$ . The difference in the effect of control on receipt of Pell and/or Stafford aid was statistically significant in the two survey years after controlling for the other independent variables. The odds ratio in 1986-87 was 2.23, indicating that the odds of receiving Pell and/or Stafford aid at a private school were 123% greater than the odds of receiving aid at a public school when controlling for dependency, gender, level, location, race, and income. In 1989-90 the odds of receiving aid at a private school had decreased to being only 103% greater than the odds of receiving aid at a public school, controlling for the other variables. The impact of institutional control was less pronounced in 1989-90 than it was in 1986-87 holding other effects constant.

Race. The Wald Chi Square for race, white or non-white, was 37.45 (1 df) with a probability  $p \leq .0001$  which indicated that the difference in the effects of this variable in the two survey years was statistically significant after controlling for the other independent variables. In 1986-87 the odds of non-white students receiving Pell or Stafford aid were only 85% of the odds of white students receiving such aid controlling for dependency, gender, institutional control, level, location, and income. In 1989-90 the odds of non-white students receiving aid were only 58% as great as the odds of white students receiving aid controlling for the same set of independent variables. The impact of race was much more pronounced in 1989-90 than it was in 1986-87 when controlling for dependency, gender, institutional control, level, location, and income.

Income. The Chi Square statistic for the variable income was 17.14 (5 df) and a probability  $p \leq .05$  which indicated that the difference in the effect of income on receipt of Pell and/or Stafford aid was statistically significant in the two survey years after controlling for the

other independent variables. The odds of receiving aid in 1989-90 were particularly pronounced for students in income levels four (1.46), and five (1.34), and were least pronounced for income categories two (1.09) and three (1.09).

### Pell Grants

When receipt of a Pell grant was taken as the dependent variable there was no statistically significant interaction between receipt of a Pell Grant and level of the institution, home location of the student, or the gender of the student. The data indicated that the impacts of level, location, and gender on the odds of receiving a Pell Grant when controlling for the impact of the other independent variables were similar in 1986-87 and 1989-90.

Institutional Control. The Wald Chi Square statistic for the variable institutional control was 4.41 (1 df) with a probability  $p \leq .04$  which indicated that the difference in the effect of control on receipt of Pell Grants was statistically different in the two survey years after controlling for the other independent variables. The odds ratio in 1986-87 was 1.05 indicating that the odds of receiving a Pell Grant at a private school were 5% greater than the odds of receiving a Grant at public schools controlling for dependency, level, location, dependency, gender, race, and income. In 1989-90 the odds of receiving Pell Grants at private schools had increased to be 20% greater than the odds of receiving Pell aid at a public school when controlling for dependency, gender, level, location, race, and income. Thus the impact of institutional control was more pronounced in 1989-90 than it was in 1986-87 with the same set of independent variables held constant for both survey years.

Dependency. The Wald Chi Square for the variable dependency was 20.94 (1 df) with a probability  $p \leq .0001$  which indicated that the difference in the effect of dependency on receipt of a Pell Grant was statistically significant in 1986-87 and 1989-90 after controlling for the other independent variables. The odds ratio in 1986-87 was 1.75, indicating that the odds of independent students receiving a Pell Grant were 75% greater than the odds of dependent students receiving Pell Grants, controlling for gender, institutional control, level, location, race,



and income. The odds ratio in 1989-90 was 2.38 indicating that the odds of independent students receiving a Pell Grant were 138% greater than the odds of dependent students receiving a Pell Grant after controlling for other variables in this study. The impact of dependency was thus more pronounced in the second survey when controlling for the same set of independent variables in both survey years.

Race. The Wald Chi Square for the variable race was 16.36 (1 df) with a probability  $p \leq .0001$ . The difference in the effect of race was statistically significant in the two surveys after controlling for the other variables. The odds ratio in 1986-87 was .61, indicating that the odds of non-white students receiving a Pell Grant were only 61% of the odds of white students receiving Pell Grants controlling for the effects of dependency, gender, institutional control, level, location, and income. In 1989-90 the odds ratio of .45 indicated that the odds of non-white students receiving Pell Grants were only 45% of the odds of white students receiving Pell aid controlling for dependency, gender, institutional control, level, location, and income. The impact of race was definitely more pronounced in 1989-90 than it was in 1986-87 controlling for the same set of independent variables.

Family Income. The Chi Square statistic for the variable income was 340.27 (5 df) with a probability  $p \leq .0001$ . The difference in the effect of income on receipt of Pell Grants was statistically significant in the two survey years after controlling for the other independent variables. The odds ratios for all levels of income, except level two, indicated that the odds of students receiving Pell Grants were greater in 1989-90 than the odds of receiving these grants in 1986-87, controlling for dependency, gender, institutional control, level, location, and race. The odds were particularly pronounced for income levels four (2.91), five (8.04), and six (2.98). The odds ratio for income level two was .98 which indicated that students in the two surveys had similar odds of receiving Pell Grants controlling for dependency, gender, institutional control, level, location, and race.

### Stafford Loans

When receipt of a Stafford Loan was taken as the dependent variable there was no statistically significant interaction between receipt of a Stafford Loan and level of the institution and gender, home location, or race of the student. The data indicated that the impacts of level, gender, home location, and race on the odds of receiving a Stafford Loan when controlling for all independent variables were similar in 1986-87 and 1989-90.

Institutional Control. The Wald Chi Square for the variable institutional control was 15.17 (1 df) with a probability  $p \leq .0001$  which. The difference in the effect of control on receipt of a Stafford Loan was statistically different in the two survey years after controlling for the other independent variables. The odds ratio in 1986-87 was 2.67, indicating that the odds of students at private institutions receiving Stafford Loans was 167% greater than the odds of students receiving Stafford Loans at public schools while controlling for dependency, gender, level, location, race, and income. The odds ratio in 1989-90 was 2.22, indicating that the odds of students at private schools receiving a Stafford Loan were 122% greater than the odds of receiving a Stafford Loan at a public school controlling for the same set of independent variables. The data thus indicated that the impact of institutional control on receipt of Stafford funds was more pronounced in 1986-87 than in was in 1989-90, controlling for dependency, gender, level, location, race, and income in both surveys.

Dependency. The Wald Chi Square for the variable dependency was 5.66 (1 df) with a probability  $p \leq .02$  which indicated that the difference in the effect of dependency on the receipt of a Stafford Loan was statistically significant in the two survey years after controlling for the other independent variables. The odds ratio in 1986-87 was 1.59, indicating that the odds of independent students receiving a Stafford Loan were 59% greater than the odds of independent students receiving Stafford aid when controlling for gender, institutional control, level, location, race, and income. The odds ratio in 1989-90 was 1.82, indicating that the odds of independent students receiving Stafford Loans was 82% greater than the odds of dependent students receiving

such aid controlling for the same set of independent variables. Thus the likelihood of independent students receiving Stafford Loans increased in 1989-90 when controlling for gender, institutional control, level, location, race, and income.

Income. The Chi Square statistic for the variable income was 2.73 (5 df) with a probability of  $p \geq .05$  which indicated that the difference in the effect income on receipt of Stafford Loans was not statistically significant in the two survey years after controlling for the other independent variables. This means that the odds of receiving a Stafford Loan according to income level were not statistically different in 1986-87 and in 1989-90.

#### Question #4

*Are there differences in the odds of receipt of aid for students at four-year colleges from North Carolina and from other locations in the United States and did the impact of North Carolina residence on receipt of aid differ in the 1986-87 and 1989-90 NPSAS studies?*

The sample for these studies was selected using a three step procedure. The first selection was geographic area, followed by selection of institutions, and completed by selection of a sample of students within the institutions. While this approach may yield reasonable results for the nation as a whole, results for smaller geographic areas, such as states, may be less stable. Therefore results comparing North Carolina with the national sample should be treated with caution.

Responses to this question are based on the data analyzed in the three preceding questions. In Question #1 the researcher analyzed whether the probability of receiving aid differed by location, i.e., whether the student's home address was in North Carolina or not. The analysis of receipts of Pell and/or Stafford aid indicated that the difference in receipt of aid was statistically significant with the odds of students outside North Carolina receiving aid twice as great as the odds of students whose home address is North Carolina receiving aid. This general pattern was repeated when receipt of Pell Grants and Stafford Loans were analyzed separately. There was a statistically significant difference in the odds of receiving Pell Grants with the odds

of students with home addresses outside North Carolina receiving Pell aid 73% greater than the odds of students whose home addresses were in North Carolina receiving this type of aid.

Similarly the odds of receiving a Stafford Loan for students whose home was outside North Carolina were 179% greater than the odds of students from North Carolina receiving such aid.

In addressing Question #2 the researcher analyzed the data to determine whether there was a difference in the likelihood of receiving financial aid in the two survey years between students from North Carolina and students whose home addresses were outside of North Carolina. At this point the researcher studied the difference in receipt of aid for each survey year rather than the question of a difference in receipt of aid based on having a home address in North Carolina. The analysis of the Chi Square statistics and odds ratios indicated that there was no difference in the effect of home state on odds of receiving Pell Grants, Stafford Loans, or both in the two survey years.

In addressing Question #3 the researcher analyzed whether the receipt of aid was independent of the impact of the other variables in the model, i.e., dependency, gender, institutional control, level, race, or income. The analysis of the Chi Square statistics and the odds ratios indicated that the differential effect of home state on the odds of receiving Pell Grants, Stafford Loans, or both in the two survey years remained non-significant after controlling for dependency, gender, institutional control, level, race, and income.

As a separate analysis the researcher used a logistic regression model without the 1989-90 variables to determine the relationship between location and receipt of aid when dependency, gender, institutional control, level, race, or income were held constant. The analysis of the Chi Square statistics and the odds ratios indicated that in 1986-87 that students whose home addresses were not North Carolina were 93% more likely to receive combined Pell and/or Stafford aid, 47% more likely to receive only Pell Grants, and 184% more likely to receive Stafford Loans when the other variables were held constant.

### Summary

The results of this study are based on the ratios calculated for each variable for each question which indicate the odds of one group receiving aid as compared to another group within that same variable, i.e., dependent compared to independent students, males compared to females, public schools compared to private schools, schools that award doctoral degrees compared with those who do not, whites compared to non-whites, and home address in North Carolina compared to students whose home address is not in North Carolina. Table 4.11 is a summary of these ratios for each of the first three research questions.

Table 4.11

Overview of Odds Ratios. 1989-90 to 1986-87

Variable	Reference Category	<u>Question #1</u>			<u>Question #2</u>						<u>Question #3</u>					
		P/S	Pell	Staff	1986-87			1989-90			1986-87			1989-90		
Period	1986	*	1.37	0.84	**	**	**	**	**	**	**	**	**	**	**	**
Dependency	Dependent	1.16	1.96	0.91	1.30	2.63	*	1.11	1.61	*	2.04	1.75	1.59	2.70	2.38	1.82
Gender	Male	1.09	1.18	*	*	*	*	*	*	*	1.01	*	*	0.88	*	*
Inst. Control	Public	0.65	1.07	0.50	*	1.22	0.46	*	1.02	0.52	2.23	1.05	2.67	2.03	1.20	2.22
Level of Inst.	Grant Dr.	1.19	1.31	1.05	1.25	1.39	0.90	1.15	1.27	1.00	*	*	*	*	*	*
Location	NC	2.00	1.73	2.79	*	*	*	*	*	*	*	*	*	*	*	*
Race	White	2.18	3.29	1.11	2.02	*	*	2.30	*	*	0.85	0.61	*	0.58	0.45	*
Income***																
	Level 1				0.81	0.88	*				1.21	1.27	*			
	Level 2	0.68	0.55	0.94	0.71	0.73	*				1.09	0.98	*			
	Level 3	0.50	0.36	0.85	0.72	0.99	*				1.09	1.33	*			
	Level 4	0.37	0.17	0.81	1.00	2.38	*				1.46	2.91	*			
	Level 5	0.23	0.04	0.67	1.01	7.14	*				1.34	8.04	*			
	Level 6	0.08	0.01	0.25	0.89	2.86	*				1.16	2.98	*			

\*These variables had no effect on the odds of receiving aid.

\*\*In questions 2 and 3 there was not an overall comparison between the 2 survey years.

\*\*\*In questions 2 and 3 the odds ratios for income are comparisons of the odds of receiving aid in '89 relative to odds in '86.

\*\*\*On question 1, odds ratios for income are comparisons of the odds of receiving aid in levels 2-5 relative to the odds in level 1.

## CHAPTER V

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This study analyzed data collected in the National Postsecondary Student Aid Studies in 1986-87 and 1989-90. The results of this study are based on the responses of a sample of students who attended four-year colleges in fall, 1986 and fall, 1989. There were 21,313 respondents in 1986 and 30,336 respondents in 1989 for a total sample of 51,649 students. This research studied the odds of students receiving Pell Grants and /or Stafford Loans based on certain characteristics. These characteristics were the independent variables in the study: dependency, whether at the time of the study the student was classified for financial aid purposes as dependent on family or independent of their support; location, whether the home state for the student was North Carolina or not North Carolina; race, white vs. non-white gender; institutional control, whether the college was a public or private institution; level of the institution, whether the college does or does not grant doctoral degrees;, and family income by categories as defined in the 1986-87 NPSAS study reports.

Analyses of these data were based on three research questions relating to all the independent variables and the dependent variable - receipt of aid, in the two different years and on a fourth question which explored the specific issue of whether there was a difference in the receipt of aid for students from North Carolina compared with students from places other than North Carolina. The analyses explained the receipt of financial aid in three categories - 1) receipt of Pell Grants and/or Stafford Loans, 2) receipt of Pell Grants only, and 3) receipt of Stafford Loans only. In each category the researcher analyzed the receipt of aid in relationship to the independent variables listed above. The primary analytical procedures used in the study were Chi Square statistics to determine the statistical significance of the association between the independent variables and the receipt of financial aid and logistic regression analysis to identify

odds ratios for the interaction of each independent variable with the dependent variable to identify the likelihood of students with certain characteristics receiving aid. The odds ratios were calculated for each of the survey years which made it possible to identify differences in the patterns of receiving aid in the two survey years.

In addressing the first question the researcher analyzed the differences in the proportion of students receiving aid using each of the independent variables which identified the overall odds of receiving aid for each option of each variable. In the second question the researcher analyzed whether the odds of receiving aid according to each independent variable were different in the two survey years. In the third question the researcher analyzed whether the odds of receiving aid according to each independent variable were different in the two survey years when the analysis controlled for the effects of all the other independent variables simultaneously. In the fourth question the researcher analyzed whether the odds of receiving aid were different for students whose home addresses were in North Carolina (regardless of where they were enrolled in school) as compared with students whose home address was outside of North Carolina.

### Findings

QUESTION #1: Did the probability of receiving financial aid differ by year, location, level, gender, race, family income, dependency status, and institutional type for students at four-year colleges?

#### Dependency

1. In the second survey year there was an increase in the proportion of the student sample classified as independent students. In 1986-87, 22% of the sample were independent students and in 1989-90, 33% of the sample were independent students.
2. Generally independent students had greater odds of receiving Pell Grants and/or Stafford Loans or Pell Grants only than did dependent students.



3. Dependent students had greater odds of receiving Stafford Loans only than did independent students.

#### Gender

1. The distribution of males and females was equal in the two survey years with 47% male and 53% female in the samples for each year.
2. In the general comparison of the total sample, women had greater odds of receiving a Pell and/or Stafford or a Pell Grant only. There was no statistically significant difference in receipt of Stafford Loans for males and females.

#### Institutional Control

1. In the second survey year there was an increase in the proportion of students attending private colleges. In 1986-87, 47% of the total sample attended private colleges and in 1989-90, 54% of the total sample attended private colleges.
2. Students attending private schools were less likely to receive Pell and/or Stafford aid or Stafford Loans only. Students attending private schools were a little more likely (7%) than public school students to receive Pell Grants only.

#### Level

1. The distribution of schools offering doctorates and schools not offering doctorates was similar in the two survey years with 53% of the sample study offering doctorates in 1986-87 and 52% offering doctorates in 1989-90.
2. In the general comparison of the total sample, students at schools that did not offer doctorates were more likely to receive aid in all three categories than were students at schools that did offer doctorates.

#### Location

1. The number of students whose home addresses were in North Carolina decreased from 1986-87 to 1989-90. In the first survey year 2.8% of the sample had home addresses from North Carolina and in the second survey 1.7% of the sample were from North Carolina.

2. In the general comparison of the total sample, students whose home addresses were outside North Carolina were more likely to receive aid in all three categories than were students whose home addresses were in North Carolina.

### Race

1. The sample for each survey was predominately white, but the proportion of non-white students increased from 15% in 1986-87 to 21% in 1989-90.
2. Non-white students had substantially greater odds of receiving Pell and/or Stafford aid or of receiving Pell Grants only than did white students. Non-whites were also more likely to receive Stafford Loans, but at much smaller odds than those in the other two aid categories.

### Income

The income categories used in this study were as follows:

Level 1 - less than \$11,000, Level 2 - \$11,000 - 17,000,

Level 3 - \$ 17,000 - 23,000, Level 4 - \$23,000 - 30,000,

Level 5 - \$30,000 - 50,000, and Level 6 - over \$50,000.

1. The percentage of students in the lowest income level increased from 17% in 1986-87 to 23% in 1989-90. The percentages of students in income levels two and three remained approximately the same for the two survey years. There were slight differences in the percentages of students in income levels four, five, and six in the two survey years.
2. In the general comparison of the total sample, the odds of students receiving aid decreased as the level of income increased. This was true for all three categories of aid, although more pronounced for Pell Grants than for Stafford Loans.

QUESTION #2: Was the relationship of location, level, gender, race, family income, dependency status, and institutional control to the probability of students at four-year colleges receiving federal financial aid different in 1986-87 and 1989-90?

### Dependency

1. In comparing receipt of aid in the two survey years, the difference between independent and dependent students was more pronounced in 1986-87 than in 1989-90 for Pell and/or Stafford aid or for Pell Grants only.
2. There was no difference in the odds ratios assessing the impact of dependency on receipt of a Stafford Loan in the two survey years.

### Gender

In the comparison of receipt of aid by gender in the two survey years, there was no statistically significant difference between survey years in the impact of gender on receipt of aid for any of the three categories of aid.

### Institutional Control

1. The impact of institutional control on odds that a student would receive Pell Grants was more pronounced in 1986-87 than in 1989-90.
2. The impact of institutional control on the odds of receiving Stafford Loans was slightly more pronounced in 1989-90 than in 1986-87.
3. There was no difference in the impact of institutional control on the odds of getting Pell and/or Stafford aid between the two years.

### Level

1. Students at schools not offering doctorates were more likely to receive a combination of aid or a Pell Grant than were students at schools which confer doctorates. The impact of institution level on the odds of receiving aid was greater for both types of aid in 1986-87 than in 1989-90.
2. Students at schools not offering doctorates were less likely to receive Stafford Loans in 1986-87 than students attending schools which did confer doctorates. In 1989-90 the odds of receiving a Stafford Loan were the same for students at both types of school.

### Race

1. The impact of race on receipt of Pell and/or Stafford aid was greater in 1989-90 than in 1986-87, with non-whites 2.02 times more likely to receive aid than whites in 1986-87 and 2.3 times more likely than whites in 1989-90.
2. There was no statistically significant difference in the impact of race on the odds of receiving a Pell Grant or a Stafford Loan in the two survey years.

### Income

The income categories used in this study were as follows:

Level 1 - less than \$11,000, Level 2 - \$11,000 - 17,000,

Level 3 - \$ 17,000 - 23,000, Level 4 - \$23,000 - 30,000,

Level 5 - \$30,000 - 50,000, and Level 6 - over \$50,000.

1. Students in income levels one, two, three, and six were less likely to receive Pell and/or Stafford aid in 1989-90 than were students in 1986-87. The odds to receive combined aid for in income levels four and five were essentially the same in the two survey years.
2. Students in income levels one and two were less likely to receive Pell Grants in 1989-90 than were students in 1986-87. The odds for students in income level three to receive grants were about the same in the two survey years. The odds of receiving grants for students in income levels four, five, and six were much greater in 1989-90 than in 1986-87 (although the actual number of Pell Grants awarded to students in these categories was low in both years).
3. There was no statistically significant difference in the impact of income on student receipt of Stafford Loans between the two survey years.

**QUESTION #3:** Are there joint effects among the variables of level, location, gender, race, family income, dependency status, and institutional control in terms of their interaction with the different years of the studies?

Each of these analyses was conducted on the pertinent variables between the two survey years while holding all other variables constant. The results for each analysis are shown for the variables.

#### Dependency

1. Independent students were more likely to receive Pell and/or Stafford aid, Pell Grants only, or Stafford Loans only than were dependent students in both 1986-87 and 1989-90.
2. The differences between independent and dependent students for the odds of receiving Pell and/or Stafford aid, a Pell Grant only, or a Stafford Loan only were more pronounced in 1989-90 than in 1986-87.

#### Gender

1. The odds for females to receive Pell and/or Stafford aid in 1989-90 fell to 88% of the odds of males to receive this aid.
2. There were no differences in the impact of gender on receipt of either Pell Grants or Stafford Loans.

#### Institutional Control

1. Students at private institutions were over twice as likely to receive Pell and/or Stafford aid or a Stafford Loan only than were students from public schools. The impact of institutional control on the odds of receiving Pell and/or Stafford aid or a Stafford Loan only were more pronounced in 1986-87 than in 1989-90.
2. In comparing the receipt of Pell Grants, students attending private schools were only slightly more likely to receive Pell Grants than were students from public schools. The impact of institutional control on receipt of Pell Grants was more pronounced in 1989-90 than in 1986-87.

#### Level

The impact of the level of the institution on the odds of receiving financial aid did not differ between the two survey years.

### Race

1. White students were more likely to receive Pell and/or Stafford aid or a Pell Grant only than were non-white students, and this effect was more pronounced in 1989-90 than in 1986-87.
2. There was no statistically significant difference in the impact of race on the odds of receiving a Stafford Loan in the two survey years.

### Income

The income categories used in this study were as follows:

Level 1 - less than \$11,000, Level 2 - \$11,000 - 17,000,

Level 3 - \$ 17,000 - 23,000, Level 4 - \$23,000 - 30,000,

Level 5 - \$30,000 - 50,000, and Level 6 - over \$50,000.

1. Students at all income levels were more likely to receive Pell and/or Stafford aid or Pell Grants only in 1989-90 than they were in 1986-87. This finding is true only for the categories examined, i.e., dependent, white male students in North Carolina at public, doctoral-granting institutions.
2. There was no statistically significant difference in the impact of income on receipt of Stafford Loans between the two survey years.
3. Odds of receipt for Pell and/or Stafford aid and especially for receipt of Pell Grants were much greater in 1989-90 than in 1986-87 for the higher three income categories. Differences between survey years were less pronounced in the lower three income categories.

QUESTION #4: Are there differences in the odds of receipt of aid for students at four-year colleges from North Carolina and from other locations in the United States and did the impact of North Carolina residence on receipt of aid differ in the 1986-87 and 1989-90 NPSAS studies?

The sample for these studies was selected using a three step procedure. The first selection was of geographic area, followed by selection of institutions, and completed by selection

of a sample of students within the institutions. While this approach may yield reasonable results for the nation as a whole, results for smaller geographic areas, such as states, may be less stable. Therefore, results comparing North Carolina with the national sample should be treated with caution.

1. The proportion of students whose home address was in North Carolina was very small in both surveys. In 1986-87 the percentage was 3% and in 1989-90 it was 2%.
2. Students whose home addresses were outside North Carolina were much more likely to receive financial aid in any of the three categories, Pell and/or Stafford, Pell only, or Stafford only, than were students whose home addresses were in North Carolina.
3. There was no statistically significant difference in the impact of home state on receipt of any category of financial aid between the two survey years.
4. There was no statistically significant difference in the impact of home state on receipt of any category of financial aid between the years.
5. Students whose home addresses were outside of North Carolina were almost twice as likely to receive Pell and/or Stafford aid as were students whose home addresses were in North Carolina.
6. Students outside North Carolina were more likely to receive a Pell Grant only and almost three times more likely to receive a Stafford Loan than were students whose home addresses were in North Carolina.

#### Comparison with Previous Research

Previous research on financial aid has included analyses of issues about gender, race, and family income. This section compares portions of that research with the findings of this study.

#### Gender

Moran (1986) found that through the early 1980's females did not benefit from federal financial aid programs to the same extent that males benefitted. She also noted that low-income females were more likely to seek Pell Grants than were low-income males, but that these females

seemed reluctant to seek loan funds. The present study found that the odds for receiving Pell and/or Stafford aid or Pell Grants were greater for females than for males, but that loan opportunities were comparable for both sexes. After control for other variables, females were slightly more likely than males to receive Pell and/or Stafford aid in 1986-87, but significantly less likely than males to receive such aid in 1989-90. Thus, one impact of the legislation may have been to reverse gains made by females in the 1980's.

Mortenson (1991) indicated that high school graduation rates and college participation were increasing among females in the period 1967-89. The results of the present study support this as the participation of females was higher than the participation of males in both years of the study - 53% females and 47% males.

### Race

Mortenson (1991) analyzed participation in higher education by different racial groups by studying high school graduation rates, equity of access to higher education, and completion of college. He found that the differences in graduation rates between whites and blacks decreased to 2% by 1989. A review of equity of access for different racial groups and of college completion figures indicated that access to higher education for students of color improved during the 1970's, but decreased in the 1980's.

In the present study the odds of non-white students receiving financial aid were less than the odds of white students receiving aid when holding all other independent variables constant. In the second survey year the odds of non-whites receiving aid were even lower than they were in the first survey year when all other independent variables were held constant. This was true for receipt of Pell Grants as well as Stafford Loans so it seems to be not just a matter of unwillingness to assume debt. These findings seem to suggest that the financial aid system is not functioning to support non-white participation in higher education.



### Income

Mortenson and Wu (1990) found that family income was strongly related to the rate at which students participated in college. They found that college participation increased in the 1980's because of increases in participation of students from the top three income quartiles. Concurrently participation of students with family incomes in the lowest quartile decreased. They concluded that the federal goal of providing equity of opportunity in higher education was not met in the 1980's because of the increasing gap between participation of students from the lowest quartile and students from the upper three quartiles.

The present study found a significant increase in the number of students in the lowest income level in 1989-90 as compared to 1986-87. This seems to contradict the findings of Mortenson and Wu (1990), but may be explained by the increase in the number of independent students in 1989-90 based on changes in the federal definition of independent vs. dependent students. This study also found that the changes from 1986-87 to 1989-90 seemed to favor upper-income students, after control for other variables.

Thus, taken as a whole, the impact of the legislation seems to have been to favor white, male, middle- to upper-income students in the distribution of aid. This might have been an unanticipated impact of change in the definition of dependency, especially if white males were more likely to be independent than other race/gender groups in 1989-90.

### Implications

The intent of Public Law 99-498, the 1986 reauthorization of the Higher education Act was:

Purpose.- It is the purpose of this part to assist in making available the benefits of postsecondary education to eligible students (defined in accordance with section 484) in institutions of higher education by -

- (1) providing basic educational opportunity grants to all eligible students; . . .
- (4) providing for special programs and projects designed

(A) to identify and encourage youths with financial or cultural need with a potential for postsecondary education,

(B) to prepare students from low-income families for postsecondary education . . ."

(Public Law 99-498, Sec.401,10/17/86)

The findings in the present study indicate that in 1989-90 the focus of Pell Grant and Stafford Loan programs extended beyond students from low-income families and other traditionally disadvantaged groups.

1. Female students were less likely than male students to receive aid in 1989-90 while holding other variables constant.
2. Non-white students were less likely to receive aid comparing 1986-87 with 1989-90 while holding other variables constant.
3. Students in all income levels were more likely to receive aid in 1989-90 than in 1986-87, but the greatest impacts were for students whose incomes were less than \$11,000 or in the range \$23,000 to \$50,000.

Other implications of this study involve findings about dependency and location.

1. The change in the definition of independent students in PL 99-498 increased the number of independent students between 1986-87 and 1989-90. Some of these students who were newly classified as independent were in the lowest income category which made them eligible for more aid than if they had remained dependent students. This shift may be a larger number than originally projected and may cause increased demand on federal financial resources, particularly Pell Grant funds.
2. Using home address as the basis for determining location, students from North Carolina were much less likely to receive Pell or Stafford aid than were students from places other than North Carolina.

### Discussion of the Results

Federal financial aid programs were initiated to assist high school graduates to be able to attend college. Much of the currently popular discussion of financial aid has been about the management of the system and procedures for financial aid, e.g., tightening regulations for loans, creating incentives for repayments, or focusing on the problems of loan defaults. There has been little discussion about who receives funds, whether there is equity in the distribution of funds, or who benefits from these programs both directly and indirectly.

Two of the underlying tenets of the Pell Grant and Stafford Loan programs have been access to higher education and reasonable choice of an institution to attend. Access means students have an equal chance to participate in higher education through the availability of financial assistance and encouragement to qualified students to pursue postsecondary education. Reasonable choice means that financial considerations should not prevent students from attending schools of their choosing.

The results of the present study indicate that in 1989-90 Pell Grants and Stafford Loans were less available to females and non-whites which indicates that there was less opportunity for females and non-whites to participate in higher education than there was in 1986-87.

There were many factors in 1989-90 which seem to address issues to encourage females to participate in higher education and to pursue financial aid assistance. There were more females than males participating in higher education and there were provisions in PL 99-498 that were designed to encourage females to seek financial aid as needed. These provisions included allowing child care costs as part of the expenses included in determining the need for a Pell Grant and allowing students enrolled in less than a half-time academic load to qualify for Pell Grants under some circumstances.

The numbers of non-white students in the sample also increased from 1986-87 to 1989-90. The initial analysis of receipt of financial aid by race indicated that non-white students were more likely to receive aid than were their white colleagues, but when these results were analyzed

holding all the other independent variables constant the odds reversed - whites were more likely to receive aid in 1989-90 than were non-whites. This means that the earlier results were heavily influenced by one or more of the other independent variables, such as income or dependency status that blocked the specific impact of race on receipt of aid.

Both of these results are troubling for a number of reasons. PL99-498 included provisions that were designed to encourage students to apply for aid: development of a simplified needs test for low-income students, changes in the definition of independent students to expand the number of students eligible for financial aid, establishment of a common application process and common calendar of deadlines for applications, inclusion of child care as an allowable expense for Pell Grant calculations, and extension of eligibility to some students who were taking less than a half-time academic schedule. The results of this study suggest that these provisions were not operationally effective in providing equity for female and for non-white students.

The reduction of the odds of females and for non-whites of receiving financial aid focuses directly on the issue of access to higher education. These results indicate that in 1989-90 females and non-whites had less access to higher education than did white males. To the extent that this happens, individual students who were not able to participate in postsecondary education lose specific opportunities for the direct benefits of additional education and society loses the potential talents and contributions of these people. Higher education is not a pre-requisite for making contributions to society, but it is an important component which helps bring people into the public domain where it is easier to become involved and easier to impact decision-making.

While aid continued to be available to students in the lower income levels in 1989-90, funds were expanded to include more middle-income students in 1989-90 than in 1986-87. One of the significant economic changes which have occurred in the United States since 1965 has been the squeezing of middle-income families who often cannot afford to send their children to college. Results of this study indicate that the changes in PL 99-498 also opened access and choice for students from these families. This represents a shift in the opportunities available through

financial aid, suggesting that public policy-makers have heard the cries from middle-income families and are responding to make sure that they continue to be able to participate in postsecondary education.

The discrepancies of receipt of aid between students from North Carolina and other home addresses are puzzling and disturbing to educators from North Carolina. The cost for in-state residents to attend schools in North Carolina is lower than in-state tuition in many other states and this certainly impacts these results, but it is unclear what other factors contribute to these results. The fact that the analysis demonstrated no differences in receipt of aid between the two survey years, suggests that the discrepancies were not heavily influenced by federal legislation. The basis for the discrepancies must lie in other issues which should be explored through additional research.

#### Recommendations for Additional Research

Each study is limited in scope and provides opportunities to identify areas for additional research. The scope of the present study was limited in that it analyzed data for students who were already involved in the postsecondary system. It did not address issues of why students decide not to participate in higher education or decide not to try to access financial aid resources. It also did not address the benefits that accrue to postsecondary institutions through their participation in the financial aid process, e.g., impact on enrollments if financial aid changed significantly. These two issues could be addressed in future research. In addition, other topics for additional research grow more directly out of this study. Some topics are listed below.

1. The National Center for Educational Statistics plans to continue to conduct the NPSAS every three years. The data collected for 1992-93 will provide a basis for additional analysis of the impact of PL 99-498 on receipt of aid by gender, race, income level, and dependency status. Studies of who receives aid should be continued to provide information to assist in developing federal financial aid legislation, policies, and

regulations and to determine whether financial aid programs are meeting federal policy goals.

2. A study should be initiated to analyze financial aid practices in North Carolina to study the distribution of aid to determine whether students who live in the state have appropriate access to Pell and Stafford funds to meet their educational needs.
3. A limitation of the present study is the lack of information about students who do not apply for aid and therefore are not able to consider going to a four-year college. A study should be initiated at the secondary level to determine which factors impact a student's decision to apply for college and for financial aid and to identify interventions that will help students in making these important decisions.

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