Evaluating the Effectiveness of Upward Bound Programs

Master’s Thesis

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By

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Abstract

The purpose of this study was to determine the effectiveness of Upward Bound programs in terms of meeting the national program goal, which is increasing the percentage of low-income, first-generation college students who successfully pursue postsecondary education opportunities. This was completed by examining the responses of a nationally represented sample (NELS:88/2000), who identified themselves as participants of Upward Bound, matched the program objectives: increasing the rate of high school graduation, increasing the rate of enrolling in post-secondary education, and ensuring students generate the skills needed to succeed post high school. A comparison group was created based on the remainder of the sample who matched the background characteristics of Upward Bound students via propensity scoring. Students were placed in subgroups based on the number of years enrolled in Upward Bound. Responses from the students about graduating from high school, applying for post-secondary education and financial aid, enrolling in post-secondary education, and either graduating from or remaining at a post-secondary institution were captured and analyzed via binary logistic regression testing.

Students that participated in Upward Bound were on average twice as likely to apply for post-secondary education, apply for financial aid, enroll in a post-secondary institution and graduate from or remain enrolled in a post-secondary institution. For every year of participation in Upward Bound a student was on average twice as likely to apply
for post-secondary education, apply for financial aid, and enroll in a post-secondary education. Results support previous research that Upward Bound participants are more likely to graduate high school, apply for post-secondary educational opportunities, and eventually enroll in some form of post-secondary institution.
Dedication

I dedicate my work to my loving and supportive parents who always encouraged me to achieve my dreams, my fiancée Gretel Long who has not only been the editor of many drafts of this report but also my source of confidence; my former Upward Bound students who I had to leave behind in order to complete my coursework and who remind me daily that evaluations are about more than just statistics; and finally Gail Miller, my Upward Bound director, who inspired me to conduct this study for the benefit of current and future students who may have an opportunity to pursue their dreams of post-secondary education.
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Field of Study

Major Field: Education
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Chapter 1: Introduction to the Study

Four thousand, eight hundred nineteen dollars. That is the average cost to serve a student in Upward Bound during the academic year and annual summer program, according the US Department of Education (ED, 2008). Since its implementation in 1966, the Upward Bound program, funded by ED, has been designed to prepare first-generation college-bound high school students for a post-secondary education experience. While there has been support for Upward Bound, the program has not been without opposition. Questions remain as to whether or not the program is a sound investment of funding in achieving its desired results: every student having the opportunity to pursue a post-secondary education. This study examined data of a nationally represented sample of students who were enrolled in Upward Bound as well as a sample that shared similar characteristics but did not participate to determine the effectiveness of the Upward Bound program.

Background

Because Upward Bound is federally funded, it has been involved in several evaluations to determine the effectiveness of the program. Effectiveness of Upward
Bound has frequently been defined by the Department of Education’s Office of Post-
Secondary Education (2008) as to the extent which the program was meeting the national
goal,

- increasing the percentage of low-income, first-generation college students
  who successfully pursue postsecondary education opportunities.

Low-income is defined as having a family income of less than 150 percent of the poverty
level in taxable income (Cahalan & Curtin, 2004). First-generation college students,
hereafter referred to as first-generation, have been defined as students whose parents or
legal guardians have never completed a bachelor’s degree (Cahalan & Curtin, 2004).
Two-thirds of students who participate in a local Upward Bound program, hereafter
referred to as a chapter, must be classified as both low-income and first-generation. The
remaining one-third can be either low-income or first-generation. Upward Bound
attempts to achieve the national program goal by how well the following objectives
among low-income and first-generation students are met (Pyecha & Berls, 1976):

- Increasing the rate of high school graduation,
- Increasing the rate of entry into a post-secondary institution, and
- Generating skills and motivation necessary for students to succeed in education
  beyond high school.

These objectives have been evaluated in prior studies as a method for determining
effectiveness (Burkheimer, 1976; Pyecha & Berls, 1976).

Studies have contained a myriad of designs including an evaluation using a pre- and
posttest comparing student performance, motivation, and self-esteem levels of students
who attended Upward Bound’s summer program (Hunt, 1967), a mixture of interviews
and mailed questionnaires to administrators whose high schools contained Upward Bound students (McCalley, 1969), and results from data gathered through interviews, academic records, and questionnaires from students who were involved in Upward Bound compared to those that were not (Burkheimer, 1976; Moore, 1997; Myers & Schrim, 1999). These studies found concurrent evidence that Upward Bound was successful at improving self-esteem, motivation towards pursuing post-secondary education, and enrollment into post-secondary education opportunities.

In contrast to the successes of Upward Bound, these studies also showed that involvement in Upward Bound has not significantly impacted academic achievement for the students. Research has shown that one of the factors that contribute to this disconnect is the vague language that was originally included in defining core curriculum for program grant applications and as a result students were either placed in summer courses that were not reflective of what they were taught in high school during the academic year or in courses regardless of proficiency in the subject (Gordon & Jabolonsky, 1967; James, 1979; Staats, 1974). Research has also revealed that it is difficult for Upward Bound to be measured on the academic achievement of students. Each chapter varies in terms of students served and in the ways that specific strategies are implemented; there is not just a single intervention, or even two or three clearly delineated interventions (Burkheimer, 1976). Since each chapter serves the needs of the target population, different concerns are addressed. Some chapters may have students that are struggling to graduate high school due to a learning disability or are not proficient in English, while others may have students that do not have the counseling services necessary to ensure that every student is provided equal opportunities to be informed about the importance of
pursuing a post-secondary education and the requirements that follow. Thus, some chapters put a stronger focus on after-school tutoring and Saturday school sessions while others prepare students for college assessment testing like the ACT or SAT as well as various study skills like note-taking or time-management.

However, the results of the studies are not without concern. Claims have arisen that the research designs were not as pure as results indicate (Pell Institute, 2002). Also, there have been concerns as to whether or not it is ethical to create a design using a control and treatment group for this program. Subjects are students whose lives could have been made more beneficial by being chosen as the treatment, participation in the Upward Bound program, and without said treatment the future livelihood of the student could be seriously impacted (Field, 2007). Yet, despite all of the research showing that each Upward Bound chapter is different and the non-connection between Upward Bound and academic achievement, chapters are still considered for future funding based on meeting independent objectives and the academic performance of their students.

Theoretical Framework

When a program is being evaluated for effectiveness, there are several designs that can be used depending on the age of the program and for what purpose it is being investigated. If the program is new and funders want to know about how it works to monitor oversight and observe potential benefits, then a process evaluation will be conducted. Process evaluations are used to help officials in the program understand what procedures are implemented, how they are connected, and what improvements are needed
to improve operations (Weiss, 1998). However, when someone thinks of an evaluation being conducted on a program, one typically surmises that it is being tested in terms of reaching the goals that define why the interventions of the program are necessary, otherwise known as an outcome evaluation (Stufflebeam, Madaus, & Kellaghan, 2000).

Outcome evaluations can be separated into several categories depending on the type of desired results: program evaluation, effectiveness evaluation, impact evaluation, and policy evaluation. Program evaluation uses person and organization-referenced outcomes to determine current and desired outcomes as well as their uses (Schalock, 2001). Effectiveness evaluation is the extent to which a program met its goals and objectives (Schalock, 2001). Impact evaluation investigates whether or not a program made a difference compared to not having a program or having an alternative (Schalock, 2001). Policy evaluation examines the equity, efficiency, or effectiveness of policy outcomes (Schalock, 2001). Because Upward Bound is a federal program, it is evaluated from both an effectiveness approach and an impact approach. Federal programs, especially in education and other social objectives, have very strict budgets with limited funding. Policymakers desire to ensure that all monies invested will produce the greatest impact, and want clear and concise data to support their decisions to fund a program. Since these approaches are used currently to determine whether or not Upward Bound should remain funded, both tenets of impact and effectiveness evaluation, hereafter known as effectiveness-impact evaluation, will be used as the framework for this study.
Purpose of the Current Study

The purpose of this study was to determine the effectiveness of Upward Bound programs in terms of meeting the national program goal, increasing the percentage of low-income, first-generation college students who successfully pursue postsecondary education opportunities. Using an effectiveness-impact evaluation approach and readdressing questions addressed in previous studies, this study explored the effectiveness of the Upward Bound program by examining the retention rates of a nationally representative sample of students who had participated in Upward Bound activities between 1988 and 1992, enrolled in post-secondary education, and remained until matriculation. The sample used for this study was derived from the National Educational Longitudinal Survey 1988:2000 (NELS:88/2000). Prior research has shown that the longer a student remains in Upward Bound, the higher the rate of impact on the student in regards to post-secondary education (Myers & Schirm, 1999).

Research Questions

To determine the extent to which the aforementioned objectives for Upward Bound programs were met, the following research questions were addressed:

1. How many Upward Bound participants graduated from high school?
   a. Does the number of years a student is enrolled in Upward Bound predict high school graduation rate?

2. How many Upward Bound participants enrolled in a post-secondary program?
a. Does the number of years a student is enrolled in Upward Bound predict applying for post-secondary education?

b. Does the number of years a student is enrolled in Upward Bound predict applying for financial aid to attend a post-secondary institution?

3. How many Upward Bound participants graduated from a post-secondary institution?

a. Does the number of years a student is enrolled in Upward Bound predict post-secondary enrollment rate?

b. Does the number of years a student is enrolled in Upward Bound predict post-secondary graduation?

The first research question examines how well Upward Bound meets the program’s primary objective, which is increasing the rate of high school graduation. Before a student can enroll in a post-secondary institution, the student must either graduate high school or earn a General Educational Development certificate. The supporting question for this study explored whether or not the number of years a student is enrolled in Upward Bound has any effect on a student graduating high school.

The second question examined how well Upward Bound met the other program objectives, including increasing the rate of entry into a post-secondary institution and generating skills and motivation necessary for students to succeed in education beyond high school. The first supporting question for this study explored whether or not the number of years a student participated in Upward Bound had any effect on a student enrolling in a post-secondary institution. For this study, a post-secondary institution is a location that a student applies to in order to receive further training in a program that will
result in a certificate or degree and provide necessary skills and abilities to perform specialized functions. The second supporting question explored whether or not the number of years a student participated in Upward Bound had any effect on whether or not a student will apply for financial aid. Applying for financial aid is one of the activities that have been used in previous studies to support or falsify claims that students have the skills necessary to succeed beyond high school (Burkheimer, 1976).

The final research question explored how well Upward Bound achieved the national program goal, of increasing the percentage of low-income, first-generation students who successfully complete some form of post-secondary education. While it is important for students to enroll in post-secondary education, without ensuring the students complete their program of study, then the poor educational outcomes that have been reported historically will continue at the current or higher rate.

Significance of the Study

This was the first known study conducted using the National Educational Longitudinal Survey (NELS:88/2000) for purposes of evaluating the effectiveness of Upward Bound programs. Although previous evaluations have addressed the above research questions, no study before has examined the retention rate and graduation rate of students who participated in Upward Bound for the length of time as this study proposes. There is very limited literature available on evaluations of Upward Bound programs and their effectiveness. Most of the literature on Upward Bound evaluations is not readily available to the public and has been federally funded. Thus, this study was conducted by an independent researcher with no affiliation to federal, state, or local government. Data
from this study could provide insight as to what areas of the program need to be modified, added, or eliminated to ensure that all resources are allocated in a reasonable manner that will result in maximum output. It also can contribute to the knowledge regarding improved achievement rates for low-income and first-generation students.

Overview of Methodology

This study was quasi-experimental and was conducted using pre-existing, publicly-available NELS:88/2000 data. In particular, the data file is longitudinal in that it consists of students who were randomly surveyed in 1988 as 8th graders, followed up in 1992 as 12th graders, again in 1994 as potential students in their second year of post-secondary education, and finally in 2000 as those early in their careers. Data was received from approximately 150 student responses whose results were reported in NELS:88/2000 and who were identified as participants of Upward Bound. Students with similar characteristics as those in Upward Bound were matched to create the comparison group to investigate whether or not participation in Upward Bound has any effect on enrolling in and graduating from a post-secondary institution (N_{Upward Bound} = 148, N_{Comparison} = 148).

The data analysis process involved the use of Microsoft Excel and SPSS statistical analytic software. Excel was used to clean up the data and the SPSS software was used to conduct all analyses to answer each research question. The data sample was large enough to produce an accurate effect size as the size of each sample was at least n = 30 (Cohen, 1992). Also, the data sample was representative of the population: 1.23% of the NELS
sample were identified as enrolled in Upward Bound which is similar to the proportion of students enrolled in Upward Bound in 1990 (Moore, 1997; U.S. Census, 1990).

Summary

This chapter presented an introduction to the current study regarding Upward Bound, evaluations conducted on the program, and the determination of effectiveness. The purpose of this study was to determine the effectiveness of the Upward Bound program in terms of meeting the national program goal, increasing the percentage of low-income, first-generation college students who successfully pursue postsecondary education opportunities. Examining each of the questions that match with the three program objectives along with the national program goal provided a clearer method to determine whether or not the Upward Bound program has been effective overall.
Chapter 2: Review of Relevant Literature

The purpose of this study was to determine the effectiveness of the Upward Bound program in terms of meeting the national program goal, which is increasing the percentage of low-income, first-generation college students who successfully pursue postsecondary education opportunities. This chapter provides an introduction to the research related to this study. First, a brief history of Upward Bound as it is related to research is introduced, followed by current Upward Bound activities, and then a description of the concept of program effectiveness. Finally, the limitations of prior studies are addressed.

History of Upward Bound

In 1964 President Johnson signed the Economic Opportunity Act (EOA) as part of his War on Poverty. Shortly after, the Office of Economic Opportunity (OEO) was formed to head initiatives that were created as a result of the EOA. Upward Bound’s pilot program was one of these initiatives. The first implementation of the pilot included 18 various colleges and universities across the United States and served approximately 6,000 students, all of which were seniors (Hunt, 1967). The program lasted for six to eight weeks during the summer and then included a follow-up academic component during the
school year. During the school year approximately 4,500 Upward Bound participants enrolled in some form of post-secondary educational experience with 90% of the students entering a four-year college or university program (Hunt & Hardt, 1969). Given the effective results of the Upward Bound pilot program, OEO decided to make its funding permanent. Guidelines were developed to apply for funding to start new chapters. Program objectives were also defined that needed to be met by all chapters, including increasing the high school graduation rate of Upward Bound participants, increasing the post-secondary education enrollment rate, and generating skills and motivation necessary for students to succeed in education beyond high school.

By 1966, over 200 colleges and universities were sponsoring Upward Bound chapters, serving up to nearly 19,000 students (Hunt, 1967). As the number of chapters increased, some were concerned about the program’s effectiveness overall and began to conduct evaluations. Also, others were concerned that because OEO was supervised by an independent contractor, Education Associates Inc, it was easier for new chapters to be funded because the private firm was not subject to government restraints (McCalley, 1969). Thus in 1969, Upward Bound was transitioned from OEO to the Department of Education, where it currently resides today.

Skeptical that $1500.00 per student, almost one-third of the national average cost per student (McCalley, 1969), was needed for a program to succeed, a federal study was conducted by Greenleigh Associates to determine whether or not the funding for Upward Bound programs was making an impact. The results revealed a significant increase in high school retention rate of low-income students compared with students enrolled in high school before Upward Bound was available: 93% as opposed to 69%. Also, there
was a higher post-secondary enrollment rate: 67% of low-income students who participated in Upward Bound were enrolling in post-secondary education as opposed to the national enrollment rate of 20% for low-income students. Despite those that criticized the large amount invested into a six to eight week summer program and follow-up activities throughout the academic year, the cost-benefit analysis reported that economic benefits for Upward Bound students exceed costs three to one (McCalley, 1969).

Yet not all were supportive of the program at the time. A report to the Commission on Civil Rights comments on the lack of academic evaluation as a concern about the effectiveness of Upward Bound programs: “In general both phases include academic content that does not make an attempt to parallel the regular secondary school work” (Gordon & Jabolonsky, 1967, p.7). Despite the negative responses to Upward Bound, many reported the program as a great success. Results revealed that a significant number of students changed their high school academic track to take more college-preparatory classes. In regards to the retention of Upward Bound students in college or universities, professors indicated that many Upward Bound students currently enrolled as freshmen were performing better academically than the average freshmen at their colleges (McCalley, 1969). Thus, despite the claims that students were not benefitting academically by participating in Upward Bound, evidence continued to rise to counter the claim.

When Upward Bound was evaluated again in 1973, Burkheimer and others reported that the high school retention rate of Upward Bound students was higher than that of students not in Upward Bound: 98% vs. 93% respectively. Also, the rate of post-secondary enrollment was higher for students that were in Upward Bound than for
students not in Upward Bound: 71% vs. 47%. Although once again there was not significant evidence to show the effectiveness of Upward Bound in improving academic achievement, students in Upward Bound received better offers in grants/scholarships from colleges or universities than the control group. Burkheimer (1976) argues “supporting evidence suggests Upward Bound is providing supportive, advocacy, and advisory services that facilitate entrance to post-secondary enrollment” (p. 20).

In the late 1990s, another national study was conducted by Mathematica Policy Research to report changes that had occurred to the Upward Bound program and to help determine whether or not it was still effective. Moore (1997) argues that there has been a change in the environment since the last evaluation done in the 1970s including the addition of a significant number of Upward Bound programs; the impact of a large amount of educational reform affecting the secondary school systems, specifically school accountability for improving disadvantaged students’ achievement; and an increase of alternative pre-college programs. Upward Bound chapters were also forced to offer classes that were part of the high school curriculum, such as mathematics through Precalculus, laboratory sciences, foreign language, and composition and literature, rather than more abstract or special topics classes that previous chapters had implemented such as number theory, astronomy, and theatre.

The results from the evaluation did not portray Upward Bound in a positive light. Many students who enrolled into Upward Bound remained for only a short while. Myers and Schirm (1999) report that “the typical participant was exposed to Upward Bound for only 19 months, and remained commonly in the program for one summer and parts of two academic years” (p. xix). Also, Upward Bound had a limited impact on students
during high school. The students were expected by the researchers to earn more credits of math and science than students not in Upward Bound. Instead, there was not a significant impact on in-school behavior, grade point average, or credits earned. Finally, while as a whole Upward Bound demonstrated a small impact on students, some groups received greater benefits. Participants in Upward Bound who had lower educational expectations benefitted substantially more compared to students who had greater educational expectations (Myers & Schirm, 1999). Likewise, there was a significant interaction between students who were low-income as well as students who were classified as first-generation.

In 2002, the Pell Institute for the Study of Opportunity for Higher Education released a report countering these findings. One of the problems with the Mathematica study was the random selection of students to be in either the control or treatment group. Each student prior to this study was self-selected by the project based on recommendations, interviews, and needs addressed by the program. Also, 54% of the control group participants participated in other supplemental services, such as Gear-Up, school programs, or services run by the community to promote post-secondary enrollment, which added in a different variable to test (Pell Institute, 2002). No longer was the study on the effects of Upward Bound on students versus non-Upward Bound students; now there was an additional treatment that was implemented to over half of the control group, thus severely limiting what factor(s) would address any changes between the two groups.
Upward Bound Activities

While there are national objectives that Upward Bound chapters are evaluated on yearly that help determine whether or not they receive additional funding through new grants, the specifics of how each chapter operates are unique. Even though the guidelines for funding required the curriculum to prepare students for college through critical thinking, effective expression, and a positive attitude toward learning, each chapter developed initiatives that meet the individual needs of the student community it serves (Community, 1965). Hunt (1967) argues, “The issue is not ‘which program is best’ but rather ‘which programs are more effective with certain kinds of students’” (p. 26). Burkheimer (1976) concluded that because each program varies in terms of students served and in ways that specific strategies are implemented, there is not just a single intervention, or even two or three clearly delineated interventions. Chapters fulfilled the general objectives required by the Department of Education, but did so in their own individual manner and continue to do so to this day. However, each student that participates in Upward Bound is involved in two components: the summer program and the academic year program.

Creating a summer program that keeps students engaged can be difficult, especially for first-generation students who may have no parental guidance or support for pursuing post-secondary opportunities and who may be separated from friends and activities miles away from them. While guidelines for the summer curriculum set by the Department of Education were established, individual programs interpreted the meanings differently. Some programs created compensatory education curriculum that would
model classes that were being offered in high school while others made use of university resources and real-life applications, such as using the university labs to examine chemical reactions or simulating a stock market.

Prior research had shown that for culturally disadvantaged students with low conceptual level, a highly structured course is more beneficial than one where students are given more options (Hunt, 1967). Similarly, Dr. Gloria Joseph, Director of Special Education at Cornell University, stated that there should be more emphasis placed on remedial work in basic subjects like Math, English, and Science. She was not supportive of the differentiation of curriculum between the Upward Bound program and the traditional program at the schools (James, 1979). The Comptroller General E.B. Staats agreed with Joseph in his report to Congress. He argued that Upward Bound summer academic curriculums were not designed to correct students' educational weaknesses that were most likely to adversely affect their success in college and instead students were placed in classes regardless of mastery level (Staats, 1974).

Other chapters are more liberal with their designing of courses. Some educators argue that if a student has a higher conceptual level, they will learn best when they are given more options with their education (Hunt, 1967). Instead of a mathematics class that would be similar to what a student would take in high school, some chapters offer advanced classes that are more challenging, such as logic or history of mathematics theory. Likewise, instead of focusing on grammar rules and reading comprehension, some curriculums focused on public communication such as writing plays, creating videos, or designing a magazine. When Upward Bound was established it was the hope of the policymakers that the hosting institution would provide resources that would cause
the students to be excited about learning through activities such as laboratory experiments or applicable projects. Previously, the guidelines for application for Upward Bound programs (Community, 1965) considered non-conventional courses as one of the criteria for an academic curriculum.

The academic year follow-up curriculum for each chapter is just as varied as the summer program. Each initiative is designed to meet one of the national objectives depending on the needs of the student. Some programs have tutoring after school or on Saturdays to help students remain in high school and eventually graduate while others focused on standardized testing and determining which profession the student wanted to pursue after post-secondary education. In order to promote post-secondary enrollment, each chapter traditionally provides students with opportunities to visit college campuses. In addition, students are provided with personalized counseling services to address academic needs, to help fill out college applications, to learn about financial aid and scholarship opportunities, to obtain standardized testing assistance, and to gain advice about which post-secondary institution is the right choice for each student (Myers & Schrim, 1999).

In addition, students often participate in various cultural activities to expand their horizons and provide them with similar opportunities as their more affluent peers. However, this aspect of the program has not occurred without contention about wasteful spending. Dr. Gloria Joseph criticized Upward Bound for having “cultural frills” that were not needed and were of little benefit to students (James, 1979). Dr. Billings, National Director of Upward Bound replied to her criticisms by stating that cultural events allow for an integrated curriculum. These events provided students the
opportunities to appreciate what they were learning through theatre, museums, and concerts, and for some students, these events allowed them to see what professions could be awaiting them that they may not have considered beforehand (James, 1979).

Program Effectiveness

Since each chapter of Upward Bound provides programming according to the needs of their students, it is very difficult to determine whether or not a chapter has been effective without creating measures to determine how well the national objectives were met. Even Greenleigh Associates admitted this during their evaluation: “In retrospect, it can be said that the attempt to measure the impact of Upward Bound on the secondary school system was inappropriate” (McCalley, 1969, p. 19). Thus, multiple evaluation designs have been created to try to assess whether or not this nationally funded program has been effective.

In the summer of 1966, shortly after Upward Bound became an official program, Hunt (1967) attempted a process evaluation to understand how the initiatives started by multiple chapters compared with each other and what impact was made on students. He also wanted to understand what characteristics of students were similar among those who participated in Upward Bound to help determine the needs of the population. Through the results from the biographical questionnaire given out during the first week of the summer program and then again at the beginning of the academic year, the researchers were able to address how students were affected by Upward Bound. While there was no change in academic achievement, there was a dramatic change in students’ motivation to attend college as well as understanding the importance of graduating from a post-secondary
institution (Hunt, 1967). Also, students reported themselves to be more confident personally, and felt more in control of what happens around them as well as the impact that their present choices make on the future. When repeated with a larger sample in 1969, similar results were obtained (Hunt & Hardt, 1969).

As Upward Bound was moved from the leadership of OEO to the Department of Education, another evaluation was conducted to understand the process and its impact on the local community. Accusations arose that schools needed programs like Upward Bound and its summer curriculum because the schools could not adequately solve the problem of educating the target population on their own (McCalley, 1969). To address this concern the evaluators chose adults that interacted with the students instead of surveying the Upward Bound participants. The researchers set up interviews to meet with a sample of sixteen chapters’ school counselors, administrators, and teachers whose students participated in Upward Bound. They mailed surveys to the remaining 400 professionals in which at least one student in their school district participated in Upward Bound.

However, analyzing the data collected was difficult because the quality of the interview data was determinant on the researcher asking the right types of questions as opposed to the mailed survey which inquired about quantifiable curriculum changes. Also, it was difficult for professionals to comment about the students enrolled in Upward Bound as they often represented less than one percent of the school population (McCalley, 1969). Nevertheless, the results were similar to Hunt’s: Upward Bound was a great source of motivation for students, but there was still no significant difference in
academic achievement as measured by change in grade point average from enrollment to graduation or change in standardized testing scores.

As the program expanded dramatically in the number of chapters and students being served, it was decided that a follow-up study on the effectiveness of Upward Bound should be conducted. Burkheimer (1976) used a multitude of sampling techniques to obtain data for their evaluation. Sample chapters were chosen based on stratification of student ethnicity, number of students served, project location, project emphasis and type of host institution (Burkheimer, 1976). Of that sample two communities with multiple high schools in the student population and at least one school that had students not enrolled in Upward Bound were compared with the remaining 34 high schools who did serve Upward Bound students stratified on grade level, ethnicity, low-income status, and economic risk. In addition to the students being evaluated, program directors and staff were also interviewed. Using a combination of questionnaires and data records, Burkheimer (1976) concluded that the high school graduation rate and post-secondary enrollment rate of students enrolled in Upward Bound were significantly higher than the control group’s rates. He also concluded that Upward Bound helped students prepare for post-secondary enrollment better than the control based on the greater percentage of students involved with Upward Bound who applied for federal aid and who also received better grants and scholarships from post-secondary institutions. Thus, supporting evidence suggested that Upward Bound programs were effective in providing supportive, advocacy, and advisory services that facilitated entrance into post-secondary education programs (Burkheimer, 1976).
Nearly twenty years later, with greater educational opportunities for disadvantaged students interested in obtaining a post-secondary education along with stricter curriculum and grant application guidelines for programs, the Department of Education commissioned another evaluation to be conducted on Upward Bound. Although the program had significant experience and many document cases for analysis, it was still unclear to policy makers what effect such a largely funded program had on first-generation secondary school students. Mathematica Policy Research sought to explain the effect more clearly. Using a longitudinal study of students who applied to join Upward Bound between 1992 and 1994, they randomly assigned students to either Upward Bound or to a control group. Students were required to complete a background characteristic survey prior to random assignment. This data, paired with the students’ high school records, allowed the researchers to investigate short-term impacts including types of courses taken in high school, educational expectations, attitudes about post-secondary education, misbehavior in school and parent involvement (Moore, 1997). Each director of an Upward Bound chapter that had at least one student who participated in the sample was also selected to complete a survey regarding operations and staffing. The response rate was very high: over 95% with both students and staff. After the first year of the study, Moore (1997) reported that Upward Bound was only effective for students of certain populations, namely those who were both low-income as well as academically low-performing. The researchers followed up with the students in both Upward Bound as well as the control group annually, concluding in 2004.

In the final follow-up of the Mathematica study, Seftor, Mamun, and Schirm (2009) argue that Upward Bound does not have a significant effect on the post-secondary
enrollment rate of the average student. The number of students who participated in Upward Bound and applied to two or four year institutions was not statistically different compared to the students who were part of the control group. Students were also not more likely to apply for financial aid based on enrollment in Upward Bound. However, the researchers report that like with many longitudinal studies, the student response rate decreased over time, which could possibly skew the results. At the same time, Mathematica did reiterate that the length of participation in Upward Bound had a dramatic effect on post-secondary enrollment along with the student being part of a certain subgroup.

Limitations of Previous Evaluations

Each of the previous evaluations reported results about various aspects of Upward Bound and its participants. Hunt (1967) conducted a process evaluation since he was interested in the Upward Bound procedures that occurred during a summer program and the academic year that followed. While this has been useful to understand what activities a student participated in, the study was limited by including only results of students that participated in Upward Bound by comparing pre and posttest responses. Even when Hunt and Hardt (1969) followed up with a larger study and compared Upward Bound students with students with similar characteristics, they limited their analysis to motivation to apply for post-secondary education and not applying to, enrolling, or even graduation from or retention at a post-secondary institution.
While Greenleigh Associates’ investigation of responses from adults that interact with Upward Bound participants provided information about how outsiders perceived the program, the responses from the adults combined with high school records were not enough to determine whether or not the Upward Bound program met the national goal of having low-income first-generation students graduate from a post-secondary institution or even objectives established by the program to meet the goal (McCalley, 1969). There was a common theme from the survey and interview responses that Upward Bound had a significant educational impact on student participants, but again this study was limited in scope to investigate student progress via individual responses through the students’ first year at a college or university, not retention or matriculation.

Although the primary research questions for this study are similar to Burkheimer’s (1976), there are limitations in the design and capacity of this prior evaluation. Burkheimer’s comparison group was chosen from communities that contained at least two high schools, selecting one high school as the Upward Bound treatment group and the other for the control. This design is susceptible to possible contamination and questions the validity of the results. A student selected to participate in Upward Bound could interact with a comparison group student on a regular basis through social situations. During these interactions important information learned from participating in Upward Bound could be passed to a member of the comparison group, who is not supposed to receive any other information about completing a bachelor’s degree outside of what one would learn from non-programmatic resources such as school counselors, community events, or even preparation programming hosted at a religious location, such as a church or synagogue. Also, the findings from the study could have been a result of
between-differences since the groups were from two different samples and not the same sample. Thus, school environment could explain part of the results obtained in the study. Once again, the research study does not cover analysis beyond enrollment into post-secondary education and is not a good measure to justify whether or not the national goal for funding Upward Bound has been achieved.

At present, there is only one national evaluation of Upward Bound that has been used to describe the effectiveness of the program nationally: the longitudinal study conducted by Mathematica Policy Research. While this investigation did attempt to give clear and concise results for understanding the effectiveness and impact of Upward Bound, it was not without limitations. Like Burkheimer (1976), the design for the study consisted of a group of students who participated in Upward Bound as well as a comparison group. However, as indicated in the final report for this study, the groups were not as pure as described in the design. In fact, nearly 15% of students in the comparison group reported as participating in either a Classic or Math and Science Upward Bound (Seftor, Mamsun, & Schirm, 2009). As previously mentioned another 50% of the comparison group participated in another academic supplemental service organized by the school or the community, further questioning the validity of the results from the study. Like all previous studies, the matriculation rate of students was not observed and the data from this evaluation cannot be used to determine whether or not the national goal has been reached. Thus, a study is needed that will observe matriculation rates of low income and first-generation students and determine whether or not a program has been designed that will enable success in post-secondary educational opportunities.
Summary

This chapter described previous research and the history of Upward Bound was introduced. By understanding how Upward Bound was created along with the contentions that rose about the effectiveness of the program, one can understand why it is so important that a study proposes to address these contentions and demonstrate the attainment of not only the program objectives but also the national program goal. Next, Upward Bound activities conducted during the summer program and academic year were introduced. Each program has specific initiatives tailored to their students’ needs, yet aligned with achieving the national objectives. The concept of program effectiveness was also defined and described through the various evaluations conducted on Upward Bound. Finally, limitations of prior evaluations were addressed supporting the current study. In order to answer the research questions posed in Chapter 1, the next chapter outlines the study, including definitions of the variables, its procedures and its methods.
Chapter 3: Methodology

The purpose of this study was to determine the effectiveness of the Upward Bound program in terms of meeting the national program goal, increasing the percentage of low-income, first-generation college students who successfully pursue postsecondary education opportunities. This chapter describes the nationally representative sample that was used for this study. The measurement of all included variables was described followed by a discussion of the procedure, including how the information was gathered, analyzed, and interpreted.

Population/Sample

The data for this study was derived from the National Educational Longitudinal Survey of 1988 (NELS 88) student responses. In particular, the study focused on students that participated in the third follow-up survey in 1994 and the fourth follow-up survey in 2000. In 1988, the first wave contained over 24,000 8th grade students’ survey responses. In 1994, when students were asked whether or not they participated in Upward Bound, the total number of survey responses decreased to 14,915. Finally, in 2000 the number of students who responded dropped to only 9,900 - less than half of the original data sample surveyed in 1988. From the 9,900 respondents, 148 students identified themselves as participants in Upward Bound. Seventy-nine students only participated in Upward Bound
for one year, either during their freshman or junior year. These participants made up the
largest percentage of the students in Upward Bound. Twenty-three students participated
in Upward Bound two years, 30 students participated three years, and only 16 reported
participating in Upward Bound all four years of high school. Table 3.1 shows the
demographics of the overall sample. Most of the students in NELS:88/2000 are first-
generation, female, from a family that is not considered low-income, and/or did not take
remedial courses in math or English in high school.

Table 3.1

<table>
<thead>
<tr>
<th>Demographic Statistics (NELS:88/2000)</th>
<th>Upward Bound</th>
<th></th>
<th></th>
<th>Non-Upward Bound</th>
<th></th>
<th>National Comparison*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>N = 148</td>
<td>N = 9752</td>
<td>N = 11,914,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First-generation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes (1)</td>
<td>131</td>
<td>88.51</td>
<td>6648</td>
<td>68.17</td>
<td>9,110,000</td>
<td>76.46</td>
</tr>
<tr>
<td>No (0)</td>
<td>17</td>
<td>11.49</td>
<td>3104</td>
<td>31.83</td>
<td>2,804,000</td>
<td>23.54</td>
</tr>
<tr>
<td>Low-income</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes (1)</td>
<td>99</td>
<td>66.89</td>
<td>1643</td>
<td>16.85</td>
<td>4,920,482</td>
<td>41.30</td>
</tr>
<tr>
<td>No (0)</td>
<td>49</td>
<td>33.11</td>
<td>8109</td>
<td>83.15</td>
<td>6,993,518</td>
<td>58.70</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes (1)</td>
<td>53</td>
<td>35.81</td>
<td>4606</td>
<td>47.23</td>
<td>6,116,647</td>
<td>51.34</td>
</tr>
<tr>
<td>No (0)</td>
<td>95</td>
<td>64.19</td>
<td>5146</td>
<td>52.77</td>
<td>5,797,353</td>
<td>48.66</td>
</tr>
<tr>
<td>African American</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes (1)</td>
<td>125</td>
<td>84.46</td>
<td>814</td>
<td>8.35</td>
<td>1,505,929</td>
<td>12.64</td>
</tr>
<tr>
<td>No (0)</td>
<td>23</td>
<td>15.64</td>
<td>8938</td>
<td>91.65</td>
<td>10,408,070</td>
<td>87.36</td>
</tr>
<tr>
<td>Remedial Courses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes (1)</td>
<td>124</td>
<td>83.78</td>
<td>3171</td>
<td>32.52</td>
<td>2,096,864</td>
<td>17.60</td>
</tr>
<tr>
<td>No (0)</td>
<td>24</td>
<td>16.22</td>
<td>6581</td>
<td>67.48</td>
<td>9,817,136</td>
<td>82.40</td>
</tr>
</tbody>
</table>

Note. * = (Census, 2001; Bennett, 1993; Commerce, 1992).

Table 3.2 shows the percentages of students overall and by years of participation
of Upward Bound in terms of parent education, income, and gender. Fourteen of the
students that participated in Upward Bound did not indicate one or more demographic
variables. To account for this, values were replaced with the mean value of each category (first-generation, low-income, and female). Overall, nearly all of the students had parents who did not complete a bachelor’s degree. About two-thirds of the students that participated in Upward Bound were considered low-income and female.

Table 3.2
Parent Ed., Income, and Gender Descriptives (Upward Bound Students, NELS:88/2000)

<table>
<thead>
<tr>
<th>Cohort</th>
<th>N</th>
<th>First Gen</th>
<th>Not First Gen</th>
<th>Low-income</th>
<th>Not LI</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>148</td>
<td>89.9</td>
<td>10.1</td>
<td>66.9</td>
<td>33.1</td>
<td>35.8</td>
<td>64.2</td>
</tr>
<tr>
<td>One Yr</td>
<td>79</td>
<td>84.8</td>
<td>15.2</td>
<td>63.3</td>
<td>36.7</td>
<td>41.8</td>
<td>48.1</td>
</tr>
<tr>
<td>Two Yr</td>
<td>23</td>
<td>93.9</td>
<td>6.1</td>
<td>51.5</td>
<td>48.5</td>
<td>30.4</td>
<td>60.9</td>
</tr>
<tr>
<td>Three Yr</td>
<td>30</td>
<td>83.3</td>
<td>16.7</td>
<td>73.3</td>
<td>26.7</td>
<td>16.7</td>
<td>70.0</td>
</tr>
<tr>
<td>Four Yr</td>
<td>16</td>
<td>81.3</td>
<td>18.7</td>
<td>62.5</td>
<td>37.5</td>
<td>50.0</td>
<td>50.0</td>
</tr>
</tbody>
</table>

*Note.* Ed. = Education. First Gen = First-generation. LI = Low-income.

Table 3.3 shows the percentages of students overall and by years of participation in Upward Bound in terms of ethnicity and participation in remedial math or English classes. Fourteen of the students that participated in Upward Bound did not indicate one or more demographic variables. To account for this, values were replaced with mean values of each category (African American and taken at least one remedial math or English class). More than three-fourths of the students are African American and reported taking a remedial English or math course. Each of the variables investigated to answer the research questions are described in further detail in the following sections.
Table 3.3
Ethnicity and Remedial Classes Descriptives (Upward Bound Students, NELS:88/2000)

<table>
<thead>
<tr>
<th>Cohort</th>
<th>N</th>
<th>African American (%)</th>
<th>Not African American (%)</th>
<th>R. CLASSES TAKEN (%):</th>
<th>Taken</th>
<th>Not Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>148</td>
<td>84.5</td>
<td>15.5</td>
<td>83.8</td>
<td>16.2</td>
<td></td>
</tr>
<tr>
<td>One Yr</td>
<td>79</td>
<td>83.5</td>
<td>16.5</td>
<td>73.4</td>
<td>26.6</td>
<td></td>
</tr>
<tr>
<td>Two Yr</td>
<td>23</td>
<td>60.6</td>
<td>39.4</td>
<td>90.9</td>
<td>9.1</td>
<td></td>
</tr>
<tr>
<td>Three Yr</td>
<td>30</td>
<td>83.3</td>
<td>16.7</td>
<td>76.7</td>
<td>23.3</td>
<td></td>
</tr>
<tr>
<td>Four Yr</td>
<td>16</td>
<td>87.5</td>
<td>12.5</td>
<td>81.3</td>
<td>18.7</td>
<td></td>
</tr>
</tbody>
</table>

Note. R. = Remedial.

First-generation

The independent variables used in this study were first-generation, low-income, gender, ethnicity, remedial classes, upward bound participation, and years of enrollment. In order for a student to be considered first-generation, neither parent completed a bachelor’s degree. As previously mentioned, an Upward Bound chapter is required to have at least two-thirds of all of its participants be classified as both first-generation and low-income. The other one-third of the students in a chapter can be either first-generation or low-income. However, a student whose parent has completed a bachelor’s degree likely has someone who can encourage him or her to pursue educational opportunities beyond high school and also will guide the student to achieve this objective. This is a dichotomous variable dependent on the student responses regarding parent education (0 = parents achieved a bachelor’s degree or higher, 1 = parents did not complete a bachelor degree).
Low-income

In order for a student to be considered low-income, his or her family must not earn more than the amount of 150% of the poverty level in taxable income (Cahalan & Curtin, 2004). This amount is based on the size of the family compared to annual income; students with more members in the family have a higher income threshold that could be attained and still be allowed to participate in Upward Bound. Low-income status was determined by the wages earned in 1992 compared with the size of the family (Fisher, 1992). This was a dichotomous variable dependant on the student responses regarding parent income level and family size. (0 = student’s family was not considered low-income, 1 = student’s family was considered low-income).

Gender and Ethnicity

According to Myers and Schirm (1999), less than one-third of Upward Bound participants were male in 1992 and over half of the participants were African American. Thus, these variables were investigated to control any potential bias that might have skewed the results of the study. Gender was coded as a dichotomous variable based on student response (0 = female, 1 = male). Ethnicity was also coded a dichotomous variable based on student response (0 = not African American, 1 = African American).
Remedial Classes

As previously discussed, some researchers believe that Upward Bound chapters need to have remedial programs, implying that students in Upward Bound struggle academically. Previous studies infer that Upward Bound is most effective for students who do not perform well in high school (Myers & Schirm, 1999; Seftor, Mamsun, & Schirm, 2009). This was a dichotomous variable dependant on the student responses about whether or not a remedial math or English class was taken while in high school. (0 = no remedial math or English classes were taken, 1 = at least one remedial class was taken).

Data Analysis

In order to respond to the research questions, binomial logistic regression tests were conducted to observe whether or not participating in Upward Bound could predict the values of other variables used to answer the aforementioned research questions. Data obtained from the NELS about each student that indicated he/she participated in Upward Bound was checked for consistency and formatted into Microsoft Excel for analysis. Afterwards, the independent variables (first-generation, income, gender, ethnicity, and remedial classes) were inputted into SPSS 17.0 to conduct a logistic regression test to predict group membership into Upward Bound. Using the probability scores of this test to create a propensity score, a comparison group for the study was created using the closest neighbor, or nearest available method. This method matches the propensity score of an
Upward Bound student with the first student of the remainder of the sample that has the same score. Since propensity scores are the conditional probability of treatment given observed covariates, these values will eliminate possible bias, and increase precision (D’Agostino, 1998). By matching the scores from the students who participated in Upward Bound with the remainder of the sample, any students with nearly equal values will have approximately the same background characteristics. Scores were rounded to the nearest thousandth. Each record was then assigned a randomized number and then sorted by the propensity score value, participation in Upward Bound, and the value of the randomized number, thus eliminating possible selection bias. The comparison group helps to explain what possible outcomes could result had a student with similar characteristics as a student in Upward Bound not been able to participate in the program. Sample size for the comparison group was the same as the number of participants in Upward Bound, n = 148. Table 3.4 shows the descriptives for both students that participated in Upward Bound as well as students in the comparison group. Overall, the frequency of students with each characteristic was very similar across both groups.
Table 3.4
Demographic Statistics (Upward Bound vs. Comparison Group)

<table>
<thead>
<tr>
<th></th>
<th>Upward Bound</th>
<th>Comparison Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N = 148</td>
<td>N = 148</td>
</tr>
<tr>
<td>First-generation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes (1)</td>
<td>131</td>
<td>132</td>
</tr>
<tr>
<td>No (0)</td>
<td>17</td>
<td>16</td>
</tr>
<tr>
<td>Low-income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes (1)</td>
<td>99</td>
<td>101</td>
</tr>
<tr>
<td>No (0)</td>
<td>49</td>
<td>47</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes (1)</td>
<td>53</td>
<td>54</td>
</tr>
<tr>
<td>No (0)</td>
<td>95</td>
<td>94</td>
</tr>
<tr>
<td>African American</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes (1)</td>
<td>125</td>
<td>126</td>
</tr>
<tr>
<td>No (0)</td>
<td>23</td>
<td>22</td>
</tr>
<tr>
<td>Remedial Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes (1)</td>
<td>124</td>
<td>120</td>
</tr>
<tr>
<td>No (0)</td>
<td>24</td>
<td>28</td>
</tr>
</tbody>
</table>

After the comparison group was created, the data from the new sample was inputted into SPSS 17.0 to conduct binary logistic regression tests (α = 0.05, one-tailed) to determine possible predictions as well as the odds ratio to determine effect size. The following research questions were addressed:

**Question 1: How many Upward Bound participants graduated from high school?**

Answering this question required the responses of the students described above who indicated during the fourth follow-up study whether or not they graduated from high school. These responses were coded into a binary variable, hsgrad, based on whether or not a student reported graduating from high school (1 = yes, 0 = no). For further investigation, students were classified by the variable enrollment, a continuous variable that was coded based on the number of years a student participated in Upward Bound. A
table was created with frequencies and percentages of students who indicated that they graduated from high school, both overall as well as based on enrollment value.

**Question 1a: Does the number of years a student is enrolled in Upward Bound predict high school graduation rate?**

After controlling for parent or guardian level of education, level of family income, gender, ethnicity, and remedial course participation, it was hypothesized that participation in Upward Bound will increase the likelihood of graduating from high school. To test this theory, the independent variables UBparticipation, a dichotomous variable that indicated whether or not a student participated in Upward Bound (1 = yes, 0 = no), and the propensity score, as described above, were entered into a binary logistic regression along with the dependent variable, *hsgrad*, also as described above. Statistical significance and possibility of association were determined based on the p-value and value of odds ratio. The variable enrollment was then entered into the model to examine whether or not the number of years of participation in Upward Bound had any effect on whether or not a student graduated high school.

**Question 2: How many Upward Bound participants enrolled in a post-secondary program?**

Addressing this research question involves the variable enrollment which is described above, and also a dichotomous variable, *pseenroll*, which was coded based on whether or not the student applied for post-secondary education (1 = yes, 0 = no). A table was created with frequencies and percentages of students who indicated that they enrolled in post-secondary education, both overall as well as based on enrollment value.
**Question 2a: Does the number of years a student is enrolled in Upward Bound predict applying for post-secondary education?**

After controlling for parent or guardian level of education, level of family income, gender, ethnicity, and remedial course participation, it was hypothesized that participation in Upward Bound will increase the likelihood of applying to a post-secondary institution. To test this theory, the independent variables UBparticipation and propensity score along with the dependent variable \( pseapply \), as described above, were entered into a binary logistic regression. Statistical significance and possibility of association were determined based on the p-value and value of odds ratio. The variable enrollment was then entered into the model to examine whether or not the number of years of participation in Upward Bound had any effect on whether or not a student applied for post-secondary education.

**Question 2b: Does the number of years a student is enrolled in Upward Bound predict applying for financial aid to attend a post-secondary institution?**

After controlling for parent or guardian level of education, level of family income, gender, ethnicity, and remedial course participation, it was hypothesized that participation in Upward Bound will increase the likelihood of applying for financial aid. To test this theory, the independent variables UBparticipation and propensity score, as described above, along with the dependent variable \( finaidapply \), a dichotomous variable coded based on the whether or not the student applied for post-secondary financial aid (1 = yes, 0 = no), were entered into a binary logistic regression. Statistical significance and possibility of association were determined based on the p-value and value of odds ratio. The variable enrollment was then entered into the model to examine whether or not the
number of years of participation in Upward Bound had any effect on applying for applying for financial aid.

**Question 3: How many Upward Bound participants who enrolled in post secondary education graduated from the institution?**

Addressing this research question involved the variable enrollment as described above, and also a binary variable, *psegrad*, which was coded based on the whether or not the student graduated or remains enrolled at a post-secondary institution (1 = yes, 0 = no). A table was created with frequencies and percentages of students who indicated that they enrolled in post-secondary education, both overall as well as based on enrollment value.

**Question 3a: Does the number of years a student is enrolled in Upward Bound predict post-secondary enrollment rate?**

After controlling for parent or guardian level of education, level of family income, gender, ethnicity, and remedial course participation, it was hypothesized that participation in Upward Bound will increase the likelihood of enrolling in a post-secondary institution. To test this theory, the independent variables UBparticipation and propensity score, as described above, along with the dependent variable *pseenroll*, as described above, were entered into a binary logistic regression. Statistical significance and possibility of association were determined based on the p-value and value of odds ratio. The variable enrollment was then entered into the model to examine whether or not the number of years of participation in Upward Bound had any effect on whether or not a student enrolled at a post-secondary institution.
Question 3b: Does the number of years a student is enrolled in Upward Bound predict post-secondary graduation?

After controlling for parent or guardian level of education, level of family income, gender, ethnicity, and remedial course participation, it was hypothesized that participation in Upward Bound will increase the likelihood of graduating from or remaining enrolled in a post-secondary institution. Testing this theory required the independent variables UBparticipation and propensity score along with the dependent variable psegrad, as described above. These variables were entered into a binary logistic regression. Statistical significance and possibility of association were determined based on the p-value and value of odds ratio. The variable enrollment was then entered into the model to examine whether or not the number of years of participation in Upward Bound had any effect on graduating from or remaining enrolled at a post-secondary institution.

Summary

This chapter discussed the sample under study, outlined the measurement of the variables, and presented the procedures, including how the information was gathered, analyzed, and interpreted. The next chapter presents the results obtained with those procedures.
Chapter 4: Results

The purpose of this study was to determine the effectiveness of Upward Bound programs in terms of meeting the national program goal, increasing the percentage of low-income, first-generation college students who successfully pursue postsecondary education opportunities. This chapter presents the statistical results obtained from the research conducted in an effort to answer the research questions related to the effectiveness of Upward Bound based on how well the students’ results met the program objectives.

**Question 1: How many Upward Bound participants graduated from high school?**

Table 4.1 shows the frequencies and percentages of the students who graduated from high school overall and by years of participation in Upward Bound. All Upward Bound cohorts had close to a 100% graduation rate. Only three students who were in Upward Bound for only one year did not graduate high school. The comparison group achieved similar results.
Table 4.1
High School Graduation Frequency Distribution (Years of Upward Bound Participation)

<table>
<thead>
<tr>
<th>Upward Bound Cohort</th>
<th>Graduated from HS</th>
<th>Did not graduate from HS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Overall</td>
<td>286</td>
<td>96.6</td>
<td>10</td>
</tr>
<tr>
<td>Overall Upward Bound</td>
<td>145</td>
<td>98.0</td>
<td>3</td>
</tr>
<tr>
<td>1 Year Only</td>
<td>76</td>
<td>96.2</td>
<td>3</td>
</tr>
<tr>
<td>2 Years Only</td>
<td>23</td>
<td>100.0</td>
<td>0</td>
</tr>
<tr>
<td>3 Years Only</td>
<td>30</td>
<td>100.0</td>
<td>0</td>
</tr>
<tr>
<td>4 Years Only</td>
<td>16</td>
<td>100.0</td>
<td>0</td>
</tr>
<tr>
<td>Did Not Participate</td>
<td>141</td>
<td>95.3</td>
<td>7</td>
</tr>
</tbody>
</table>

*Note. HS = High School.*

Question 2: How many Upward Bound participants enrolled in a post-secondary program?

As shown in Table 4.2, there was a high proportion of Upward Bound students who enrolled in post-secondary education programs as opposed to those who did not enroll. The comparison group achieved similar results as the Upward Bound cohorts, but had a significantly smaller difference when compared with Upward Bound students overall.

Table 4.2
Post-Secondary Education Frequency Distribution (Years of Upward Bound Participation)

<table>
<thead>
<tr>
<th>UB Student Cohort</th>
<th>Enrolled in PSE</th>
<th>Did not Enroll in PSE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Overall</td>
<td>239</td>
<td>80.7</td>
<td>57</td>
</tr>
<tr>
<td>Overall UB</td>
<td>129</td>
<td>87.2</td>
<td>19</td>
</tr>
<tr>
<td>1 Year Only</td>
<td>64</td>
<td>81.0</td>
<td>15</td>
</tr>
<tr>
<td>2 Years Only</td>
<td>19</td>
<td>86.4</td>
<td>3</td>
</tr>
<tr>
<td>3 Years Only</td>
<td>30</td>
<td>100.0</td>
<td>0</td>
</tr>
<tr>
<td>4 Years Only</td>
<td>16</td>
<td>100.0</td>
<td>0</td>
</tr>
<tr>
<td>Did Not Participate</td>
<td>110</td>
<td>74.3</td>
<td>38</td>
</tr>
</tbody>
</table>

*Note. UB = Upward Bound. PSE = Post-secondary education.*
Question 3: How many Upward Bound participants who enrolled in post secondary education graduated?

As shown in Table 4.3, those who participated in Upward Bound for two or four years had the highest rate of graduation or remaining enrolled in a post-secondary institution compared to the other cohorts. The comparison group had similar results with the students that participated in Upward Bound for three years, but not overall.

Table 4.3
Post-Secondary Graduation or Remain Frequency Distribution (Years of Upward Bound Participation)

<table>
<thead>
<tr>
<th>UB Student Cohort</th>
<th>Graduated or Enrolled in PSE</th>
<th>Not Graduated or Enrolled in PSE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Overall</td>
<td>143</td>
<td>48.2</td>
<td>153</td>
</tr>
<tr>
<td>Overall UB</td>
<td>83</td>
<td>56.1</td>
<td>65</td>
</tr>
<tr>
<td>1 Year Only</td>
<td>46</td>
<td>58.2</td>
<td>33</td>
</tr>
<tr>
<td>2 Years Only</td>
<td>15</td>
<td>68.2</td>
<td>7</td>
</tr>
<tr>
<td>3 Years Only</td>
<td>12</td>
<td>40.0</td>
<td>18</td>
</tr>
<tr>
<td>4 Years Only</td>
<td>10</td>
<td>62.5</td>
<td>6</td>
</tr>
<tr>
<td>Did Not Participate</td>
<td>60</td>
<td>40.5</td>
<td>88</td>
</tr>
</tbody>
</table>

*Note. UB = Upward Bound. PSE = Post-Secondary Education.*

Propensity Scoring

Although measures were taken to try to match the comparison group of students to those that participated in Upward Bound, neither group predicted for Upward Bound assignment when comparing parent education, family income status, ethnicity, gender, and remedial classes taken. Thus, it appears to be even more difficult to determine just which students are the best candidates to be members of Upward Bound. Nonetheless, even though a student had at most a probability of nearly 29% of being assigned to
Upward Bound, the scores for students in Upward Bound as well as students in the comparison group were almost identical when being selected for analysis.

Logistic Regression

Before conducting logistic regressions on the remaining follow-up research questions, steps were taken to ensure all assumptions were satisfied. First, the sample size is sufficient enough for maximum likelihood estimation, at least 10 records per independent variable being investigated (Mertler & Vannatta, 2001). Second, because logistic regression relies on goodness of fit to assess the model of the data, no more than 20% of the cells in the sample have an expected frequency of less than five (Mertler & Vannatta, 2001). Finally, all missing values were removed from the sample prior to analysis.

**Question 1a: Does the number of years a student is enrolled in Upward Bound predict high school graduation rate?**

Logistic regression was conducted to determine whether or not participation in Upward Bound would predict graduating from high school. Regression results indicated that the overall model fit of participation in Upward Bound was acceptable (-2 Log Likelihood = 85.645; Goodness-of-Fit = 8.538) but was not statistically reliable in distinguishing between students that did and did not graduate from high school ($\chi^2(2) = 1.769$, $p > 0.05$, one-tailed). The model correctly classified 96.6% of the cases. Regression coefficients are presented in Table 4.4. *Wald* statistics indicated that participation in Upward Bound was not able to predict graduation from high school.
Years of participation in Upward Bound were also not able to predict graduation from high school.

Table 4.4
Regression Coefficients: High School Graduation

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>Wald</th>
<th>df</th>
<th>p</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propensity</td>
<td>-13.357</td>
<td>.068</td>
<td>1</td>
<td>.794</td>
<td>.000</td>
</tr>
<tr>
<td>UB Participation</td>
<td>.876</td>
<td>1.564</td>
<td>1</td>
<td>.211</td>
<td>2.401</td>
</tr>
<tr>
<td>Constant</td>
<td>3.205</td>
<td>13.358</td>
<td>1</td>
<td>.000</td>
<td>24.658</td>
</tr>
</tbody>
</table>

**Question 2a:** Does the number of years a student is enrolled in Upward Bound predict applying for post-secondary education?

Logistic regression was conducted to determine whether or not participation in Upward Bound would predict applying for post-secondary education. Regression results indicated the overall model fit of participation in Upward Bound was questionable (-2 Log Likelihood = 378.674; Goodness-of-Fit = 8.160) but was statistically reliable in distinguishing between students that did and did not apply for post-secondary education ($\chi^2(2) = 21.010, p < 0.05$, one-tailed). The model only correctly classified 59.5% of the cases. Regression coefficients are presented in Table 4.5. *Wald* statistics indicated that participation in Upward Bound was able to predict applying for post-secondary education. Students who participated in Upward Bound were 2.694 times more likely to apply for post-secondary education than students that did not participate in Upward Bound.
Logistic regression was then conducted to determine whether or not years of participation in Upward Bound would predict applying for post-secondary education. Regression results indicated the overall model fit of participation in Upward Bound was questionable (-2 Log Likelihood = 367.679; Goodness-of-Fit = 4.387) but was statistically reliable in distinguishing between students that did and did not apply for post-secondary education ($\chi^2(3) = 32.005$, $p < 0.05$, one-tailed). The model only correctly classified 62.8% of the cases. Regression coefficients are presented in Table 4.6. Wald statistics indicated that the number of years a student participated in Upward Bound was able to predict applying for post-secondary education. The odds of applying for post-secondary education were 1.897 times higher for every year a student participated in Upward Bound compared to those that did not.

Table 4.5
Regression Coefficients: Applying for Post-Secondary Education

<table>
<thead>
<tr>
<th></th>
<th>$B$</th>
<th>$Wald$</th>
<th>$df$</th>
<th>$p$</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propensity</td>
<td>-42.388</td>
<td>4.572</td>
<td>1</td>
<td>.032*</td>
<td>.000</td>
</tr>
<tr>
<td>UB Participation</td>
<td>.991</td>
<td>16.086</td>
<td>1</td>
<td>.000*</td>
<td>2.694</td>
</tr>
<tr>
<td>Constant</td>
<td>1.540</td>
<td>18.247</td>
<td>1</td>
<td>.000</td>
<td>1.731</td>
</tr>
</tbody>
</table>

Note. *$p < 0.05$, one-tailed.

UBEnrollment = Upward Bound Enrollment.
Question 2b: Does the number of years a student is enrolled in Upward Bound predict applying for financial aid to attend a post-secondary institution?

Logistic regression was conducted to determine whether or not participation in Upward Bound would predict applying for financial aid. Regression results indicated that the overall model fit of participation in Upward Bound was questionable (\(-2 \text{ Log Likelihood} = 361.980; \text{ Goodness-of-Fit} = 5.733\)) but was statistically reliable in distinguishing between students that did and did not apply for post-secondary education \((\chi^2(2) = 25.347, p < 0.05, \text{ one-tailed})\). The model only correctly classified 65.9% of the cases. Regression coefficients are presented in Table 4.7. Wald statistics indicated that participation in Upward Bound was able to predict applying for post-secondary education. Students who participated in Upward Bound were 3.488 times more likely to apply for financial aid than students that did not participate in Upward Bound.

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>Wald</th>
<th>df</th>
<th>p</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propensity</td>
<td>10.420</td>
<td>.263</td>
<td>1</td>
<td>.608</td>
<td>33517.446</td>
</tr>
<tr>
<td>UBParticipation</td>
<td>1.249</td>
<td>23.615</td>
<td>1</td>
<td>.000*</td>
<td>3.488</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.405</td>
<td>14.788</td>
<td>1</td>
<td>.000</td>
<td>.245</td>
</tr>
</tbody>
</table>

\(\text{Note.} \ *p < 0.05, \text{ one-tailed.}\)

Logistic regression was then conducted to determine whether or not years of participation in Upward Bound would predict applying for financial aid. Regression results indicated the overall model fit of participation in Upward Bound was questionable \((-2 \text{ Log Likelihood} = 356.378; \text{ Goodness-of-Fit} = 4.146\)) but was statistically reliable in distinguishing between students that did and did not apply for post-secondary education \((\chi^2(3) = 30.949, p < 0.05, \text{ one-tailed})\). The model only correctly classified 66.9% of the
cases. Regression coefficients are presented in Table 4.8. *Wald* statistics indicated that the number of years a student participated in Upward Bound was able to predict applying for financial aid. The odds of applying for financial aid were 1.447 times higher for every year a student participated in Upward Bound compared to those that did not.

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>Wald</th>
<th>df</th>
<th>P</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propensity</td>
<td>8.479</td>
<td>.170</td>
<td>1</td>
<td>.680</td>
<td>4812.703</td>
</tr>
<tr>
<td>UBParticipation</td>
<td>.556</td>
<td>1.998</td>
<td>1</td>
<td>.158</td>
<td>1.743</td>
</tr>
<tr>
<td>Enrollment</td>
<td>.370</td>
<td>5.382</td>
<td>1</td>
<td>.020*</td>
<td>1.447</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.376</td>
<td>15.984</td>
<td>1</td>
<td>.000</td>
<td>.253</td>
</tr>
</tbody>
</table>

*Note.* *p* < 0.05, one-tailed. UBEnrollment = Upward Bound Enrollment.

**Question 3a: Does the number of years a student is enrolled in Upward Bound predict post-secondary enrollment rate?**

Logistic regression was conducted to determine whether or not participation in Upward Bound would predict enrolling into a post-secondary institution. Regression results indicated that the overall model fit of participation in Upward Bound was questionable (-2 Log Likelihood = 278.576; Goodness-of-Fit = 7.279) but was statistically reliable in distinguishing between students that did and did not apply for post-secondary education (χ²(2) = 11.460, p < 0.05, one-tailed). The model correctly classified 80.7% of the cases. Regression coefficients are presented in Table 4.9. *Wald* statistics indicated that participation in Upward Bound was able to predict enrolling at a post-secondary institution. Students who participated in Upward Bound were 2.372 times more likely to enroll into a post-secondary institution than students that did not participate in Upward Bound.
Logistic regression was then conducted to determine whether or not years of participation in Upward Bound would predict applying for financial aid. Regression results indicated the overall model fit of participation in Upward Bound was questionable (-2 Log Likelihood = 266.785; Goodness-of-Fit = 7.960) but was statistically reliable in distinguishing between students that did and did not apply for post-secondary education ($\chi^2(3) = 23.250$, $p < 0.05$, one-tailed). The model correctly classified 80.7% of the cases.

Regression coefficients are presented in Table 4.10. Wald statistics indicated that the number of years a student participated in Upward Bound was able to predict enrolling into a post-secondary institution. The odds of enrolling into a post-secondary institution were 3.109 times higher for every year a student participated in Upward Bound compared to those that did not.

Table 4.9
Regression Coefficients: Post-Secondary Enrollment

<table>
<thead>
<tr>
<th>B</th>
<th>Wald</th>
<th>df</th>
<th>P</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propensity</td>
<td>48.732</td>
<td>4.163</td>
<td>1</td>
<td>.041*</td>
</tr>
<tr>
<td>UBParticipation</td>
<td>.856</td>
<td>1.855</td>
<td>1</td>
<td>.173</td>
</tr>
<tr>
<td>Enrollment</td>
<td>1.134</td>
<td>6.803</td>
<td>1</td>
<td>.009*</td>
</tr>
<tr>
<td>Constant</td>
<td>1.811</td>
<td>18.415</td>
<td>1</td>
<td>.000</td>
</tr>
</tbody>
</table>

Note. *p < 0.05, one-tailed.

Table 4.10
Regression Coefficients: Post-Secondary Enrollment by Years of UBEnrollment

<table>
<thead>
<tr>
<th>B</th>
<th>Wald</th>
<th>df</th>
<th>P</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propensity</td>
<td>-48.732</td>
<td>4.163</td>
<td>1</td>
<td>.041*</td>
</tr>
<tr>
<td>UBParticipation</td>
<td>-.856</td>
<td>1.855</td>
<td>1</td>
<td>.173</td>
</tr>
<tr>
<td>Enrollment</td>
<td>1.134</td>
<td>6.803</td>
<td>1</td>
<td>.009*</td>
</tr>
<tr>
<td>Constant</td>
<td>1.811</td>
<td>18.415</td>
<td>1</td>
<td>.000</td>
</tr>
</tbody>
</table>

Note. *p < 0.05, one-tailed. UBEnrollment = Upward Bound Enrollment.
Question 3b: Does the number of years a student is enrolled in Upward Bound predict post-secondary graduation?

Logistic regression was conducted to determine whether or not participation in Upward Bound would predict graduating from or remaining enrolled in a post-secondary institution. Regression results indicated that the overall model fit of participation in Upward Bound was questionable (-2 Log Likelihood = 402.705; Goodness-of-Fit = 5.900) but was statistically reliable in distinguishing between students that did and did not graduate or remain enrolled in a post-secondary institution ($\chi^2(2) = 7.301$, p < 0.05, one-tailed). The model only correctly classified 57.8% of the cases. Regression coefficients are presented in Table 4.11. Wald statistics indicated that participation in Upward Bound was able to predict graduating from or remaining enrolled in a post-secondary institution. Students who participated in Upward Bound were 1.873 times more likely to graduate or remain enrolled in a post-secondary education than students that did not participate in Upward Bound.

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>Wald</th>
<th>df</th>
<th>p</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propensity</td>
<td>6.424</td>
<td>.115</td>
<td>1</td>
<td>.735</td>
<td>616.350</td>
</tr>
<tr>
<td>UBParticipation</td>
<td>.628</td>
<td>7.098</td>
<td>1</td>
<td>.008*</td>
<td>1.873</td>
</tr>
<tr>
<td>Constant</td>
<td>-.479</td>
<td>2.112</td>
<td>1</td>
<td>.146</td>
<td>.619</td>
</tr>
</tbody>
</table>

*Note.  *p < 0.05, one-tailed.

Regression results indicated the overall model fit of participation in Upward Bound was questionable (-2 Log Likelihood = 402.213; Goodness-of-Fit = 3.788) and was not statistically reliable in distinguishing between students that did and did not graduate or remain enrolled in a post-secondary institution ($\chi^2(2) = 7.793$, p > 0.05, one-
tailed). The model only correctly classified 57.8% of the cases. Regression coefficients are presented in Table 4.12. *Wald* statistics indicated that the number of years a student participated in Upward Bound was not able to predict applying for post-secondary education.

Table 4.12

<table>
<thead>
<tr>
<th>Propensity</th>
<th>UBParticipation</th>
<th>Enrollment</th>
<th>Constant</th>
<th>B</th>
<th>Wald</th>
<th>df</th>
<th>p</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.965</td>
<td>.832</td>
<td>-.108</td>
<td>-.487</td>
<td>1</td>
<td>4.910</td>
<td>1</td>
<td>.027</td>
<td>.435</td>
</tr>
<tr>
<td>.134</td>
<td>4.910</td>
<td>.492</td>
<td>.638</td>
<td></td>
<td></td>
<td></td>
<td>.714</td>
<td>1058.724</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* *p* < 0.05, one-tailed. UBEnrollment = Upward Bound Enrollment.

Summary

Overall, a review of the frequency distributions revealed that students who participated in Upward Bound also graduated from high school. The comparison group had similar results. There was also evidence supporting the prediction that students who participated in Upward Bound will enroll in some form of post-secondary education. Again, the comparison group achieved similar results. However, only about half of the students who participated in Upward Bound graduated from a post-secondary institution or were still currently enrolled as of 2000. Less than half of the comparison group achieved the same result.

The binary logistic regression tests displayed possible predictions between participation in Upward Bound and applying for post-secondary education, applying for financial aid, enrolling in post-secondary education, and graduating from or remaining
enrolled in a post-secondary institution. Participation in Upward Bound was not able to predict high school graduation.

Adding years of enrollment to the binary logistic regression tests led to further predictions. Based on years of enrollment in Upward Bound one can possibly predict whether or not a student will apply for post-secondary education, financial aid, and/or enroll in a post-secondary institution. It was not able to predict high school graduation or graduating from or remaining enrolled at a post-secondary institution. The implications of the research findings of all the above analyses will be addressed in the next chapter.
Chapter 5: Summary and Discussion

As an aid to the reader, the final chapter of the thesis restates the research problem and reviews the major method used in the study. Next, an analysis of the results as well as implications for Upward Bound is presented. Then, limitations of the study are described. Finally, suggestions for future research are detailed.

Summary of the Study

The purpose of this study was to determine the effectiveness of the Upward Bound program in terms of meeting the national program goal, increasing the percentage of low-income, first-generation college students who successfully pursue post-secondary education opportunities. Based on the data obtained from the students that were identified as participating in Upward Bound in NELS:88/2000 (n = 148) along with a comparison group that shared similar characteristics as the students selected (n = 148), the following research question was addressed: Does the number of years that a student participated in Upward Bound predict high school graduation, enrolling into a post-secondary institution, or graduating from or remaining in an institution of post-secondary education? Data was coded based on student responses and analyzed using binary logistic regression tests for significance and odds-ratios for effect size. The results are indicated below.
Overall, participation in Upward Bound was able to predict an increased likelihood of applying for post-secondary education, applying for financial aid, enrolling in post-secondary education and graduating from or remaining enrolled in a post-secondary education than not participating. In fact, participation in Upward Bound was twice as likely to increase the likelihood of the above outcomes compared to the likelihood of achieving the above outcomes by students that did not participate in Upward Bound. However, participation in Upward Bound was not able to predict high school graduation. Each year enrolled in Upward Bound increased the likelihood that a student would apply for post-secondary education, apply for financial aid, and enroll in a post-secondary education. Achieving these outcomes was twice as likely for every year a student participated in Upward Bound compared to the likelihood of achieving these outcomes by a student who was not in Upward Bound. The number of years a student participated in Upward Bound was not able to predict a higher likelihood of high school graduation or graduating from or remaining enrolled in a post-secondary institution.

Implications for Upward Bound

Similar to past evaluations (Hunt & Hardt, 1967; McCalley, 1969; and Burkheimer, 1976) this study supports the claim that students who participate in Upward Bound are likely to apply for post-secondary educational opportunities and eventually enroll in some form of post-secondary institution. In fact, Upward Bound students overall were more likely to enroll in post-secondary education and eventually graduate or remain enrolled in an institution than the comparison group. Compared to national statistics,
there was a significant difference in the rate of graduating from high school between students that participated in Upward Bound and the national population of students in 1992 (98% vs. 75%, Snyder, 1992), as well as in the rate of enrolling in a post-secondary institution (97% vs. 82%, Snyder, 1992). Given prior studies that indicate that the target population that Upward Bound serves, low-income and first-generation, tend to have lower educational outcomes than their counterparts, the results are even more significant (Orfield et al., 2004).

Thus, from an impact approach outcome evaluation, Upward Bound is an effective program. The research suggests that participation in Upward Bound results in a difference of results from not participating in Upward Bound. Results from studies such as these are especially important to policy makers who are trying to increase graduation rates of students through initiatives such as No Child Left Behind and Closing the Achievement Gap. Students targeted by these programs are mostly low-income and the first in their family history to pursue post-secondary education, the same target population sought by Upward Bound chapters. By realizing the impact that Upward Bound can have on these students, policy makers can argue for increased funding for current chapters to serve more students. Also, new chapters could be established where populations of students that meet necessary criteria to participate in Upward Bound exist but do not have access to similar resources.

However, from an effectiveness approach outcome evaluation, the results are not quite as clear. On the one hand, the study was not able to support the program objective that participation in Upward Bound would increase high school graduation. This is likely
due to the high numbers of students in the sample that were able to graduate high school regardless of participation in Upward Bound.

On the other hand, Upward Bound was able support the second program objective that participation in Upward Bound would increase applying for post-secondary education. In fact, the results indicated that students that participated in Upward Bound were twice as likely to apply for post-secondary education. These results are comforting to stakeholders because they are aware that applying to a post-secondary institution is the first step necessary to degree or certification.

In addition, regarding the national program goal of Upward Bound, to successfully pursue post-educational opportunities, there was statistical significance found that would support the claim that participation in Upward Bound would predict graduation or remaining enrolled in a post-secondary institution. Students that participated in Upward Bound were twice as likely to graduate from or remain enrolled in a post-secondary institution, further demonstrating the necessity for students to have opportunities to participate in Upward Bound in which the national post-secondary dropout rate is 50% or greater depending on the ethnicity of the student (Nathanson, 2001). Thus, in evaluating Upward Bound from an effectiveness approach, outside of the high school graduation objective, one can surmise that Upward Bound is able to increase the likelihood to meet the program objectives as well as the national program goal.

This study was able to support Myers and Schrim’s (1999) claim stating that the longer a student is in Upward Bound the higher the likelihood that the student will enroll in a post-secondary education program. In fact, for every year a student participates in Upward Bound he or she was three times as likely to enroll in a post-secondary
institution. With each year of participation in Upward Bound it is likely that a student is exposed to multiple opportunities that would lead to the above results. When a student enters Upward Bound the importance of achieving a post-secondary education is demonstrated in multiple ways, whether via college visits, professional speakers, workshops, or specialized curriculum. It is not uncommon for a student who participates for multiple years in Upward Bound to be able to explain to others how to obtain federal funding via the Free Federal Application for Student Aid. However, this study was not able to support this claim regarding high school graduation, for reasons likely as described above, or graduating from or remaining enrolled in a post-secondary institution.

Based on the results of this study, some may surmise that the number of years a student participates in Upward Bound is irrelevant and argue for the best cost-benefit analysis where one year of participation is enough of a treatment for a student to achieve the objectives set by the program. However, despite one year of participating in Upward Bound it is highly unlikely that the participants’ low-income or first-generation status would be removed and thus the same barriers to achieving a post-secondary education remain. Also, it would be difficult to determine which year is the most crucial for a student to participate in Upward Bound during high school and will cause the greatest likelihood to graduate high school, enroll in post-secondary education and earn a degree or certificate of completion.

Typically as a high school freshman, the student begins to understand study skills, the importance of succeeding academically, as well as which career path is the best fit. During the sophomore year a student has the opportunity to fix past mistakes and chart a
more successful course. However, it is potentially during the junior year where many students mature and realize that their time remaining in high school is fading quickly and as a result they begin taking academic matters seriously. If a student has been performing poorly up to this point, he or she may believe that they are incapable of achieving a post-secondary education. Upward Bound can provide the motivation to convince the student that there are many opportunities still available despite any setbacks. This is also typically the time when students begin to consider what colleges are worth exploring as well as are provided a chance to discover academic strengths and weaknesses through college entrance standardized tests such as the ACT or SAT. Yet, some may argue that since most of the monetary benefits a student receives while in Upward Bound come during senior year, students should participate during their final year of high school above any other. Along with college application waivers, students receive assistance applying for post-secondary education, searching for scholarships and financial aid, discerning which financial package is the most beneficial, and choosing the career path that best fits them. Thus, it is impossible to limit Upward Bound to one year as it has initiatives for the students as they pass from one stage into another.

The final program objective of Upward Bound, giving students the skills needed to succeed post-high school, is harder to evaluate than the previous two due to its difficulty to measure. As mentioned previously, evaluators have examined the rate of applying for financial aid to determine whether or not this objective has been met (Burkheimer, 1976). Yet, many attempt to determine the effectiveness of this objective in terms of academic achievement. We live in a society where policymakers want a simple answer stating which programs are effective and deserve scarcely-available funding and
which programs need to be eliminated to make room for new applicants. Thus, academic achievement appears to be the proper measuring scale to help determine effectiveness, despite multiple evaluations failing to relate significant results with Upward Bound (Hunt & Hardt, 1969; McCalley, 1969; Burkheimer, 1976; Moore, 1997).

Perhaps what needs to change is how academic achievement is measured. A student who performs poorly in school but who is strong in a trade skill such as auto repair, culinary arts, or cosmetology may be able to continue at a trade school and achieve a certificate that allows him/her to perform that occupation. Or perhaps students on these paths could be tracked using a different variable to measure Upward Bound’s preparation of the students to be successful in educational opportunities past high school.

Another variable that could potentially determine whether or not the student has the skills to achieve past high school is self-confidence. While this variable has been computed in prior studies (Hunt & Hardt, 1969; Burkheimer, 1976), it has not been used in recent evaluations because it does not address the national program goal. In larger schools, studies have shown that some students are not mentored and encouraged by a guidance counselor or mentor and as such do not feel that they are able to succeed or are aware of post-secondary education options (Cahanan & Curtin, 2004). Upward Bound addresses this need by providing students with an academic advisor or mentor, an individual that helps students find necessary resources for success. For some students, whose home and school life may be very unstable and at times dangerous, the structure of an Upward Bound chapter can provide safety and security along with the knowledge that someone cares for them and wants to see them succeed.
Limitations

This study chose the comparison group based on matching characteristics with Upward Bound participants and is only a quasi-experimental study, thus any generalizations that may arise from the results should be approached cautiously. Since it is unknown whether or not these students represent a diverse population in terms of location, it is impossible to suggest any form of causality without repeating the study using a representative sample. In order for a student to become a member of Upward Bound, a student must demonstrate the “will to achieve” by displaying interest in participating, applying to join the program, and being accepted by the local chapter. Thus, every study involving Upward Bound could contain a possible selection bias based on how the students are assigned. Also, the data used in this study were supplied via answers to survey questions from students, who may have knowingly or unknowingly provided incorrect data. Thus, the matching of variables between students in Upward Bound and comparison group may have errors based on misidentification. In addition, students in the comparison group may have participated in some other form of post-secondary preparation classes or programs.

Since this was a longitudinal study it is quite possible that the results may have suffered from a mortality effect, where the students originally asked in 1992 whether or not they participated in Upward Bound were unable to be contacted for follow-up responses, thus leading to only having 148 students for this study.
Suggestions for Further Research

To obtain a stronger understanding about the students and their activities, it would be very beneficial to work with primary data rather than archival. If possible, students would be selected from a much smaller population, such as a district or state, to determine any impact before expanding the research study to a region and then possibly across the United States. Academic achievement would be examined to determine how and why it has not effectively been tracked and observed as an effect of Upward Bound. Students have to display some form of academic merit in order to graduate high school or obtain a GED and then continue on to some form of post-secondary educational experience and eventually graduate. Much of the educational policies of today such as No Child Left Behind are benchmarked based on standardized testing that is meant to measure academic achievement. Policymakers want a measurement to determine whether or not a chapter is successful at meeting its targeted goals to determine how much and to which chapters limited funding should be distributed.

An additional study to consider is one that could explain the benefits of Upward Bound that are not directly understood by the program guidelines. Instead of a purely quantitative study, a QUAN-qual mixed method would be conducted with qualitative data gathered through interviews or focus groups. The results from the qualitative analysis would provide additional information to support quantitative data used to help determine the effectiveness of this federally funded program and provide a more complete portrayal of the multiple facets of Upward Bound. Future studies would also incorporate
psychological factors such as self-confidence and motivation into future models as they are commonly associated with academic achievement.

In conclusion, this study was able to support the claim that Upward Bound was an effective program based on its abilities to achieve the national program goal: increasing the percentage of low-income, first-generation college students who successfully pursue postsecondary education opportunities; as well as the Upward Bound program objectives: to increase the rate of entry into a post-secondary institution and to ensure students generate the skills and motivation necessary to succeed in education beyond high school. Hopefully the results of this study will encourage similar studies to be conducted that will eventually provide enough supporting evidence that Upward Bound is not only effective in increasing the ability for a low-income, first-generation student to achieve a post-secondary education but also that adequate funding can be allocated so that every eligible student across the nation can participate, and not just a select few.
References


