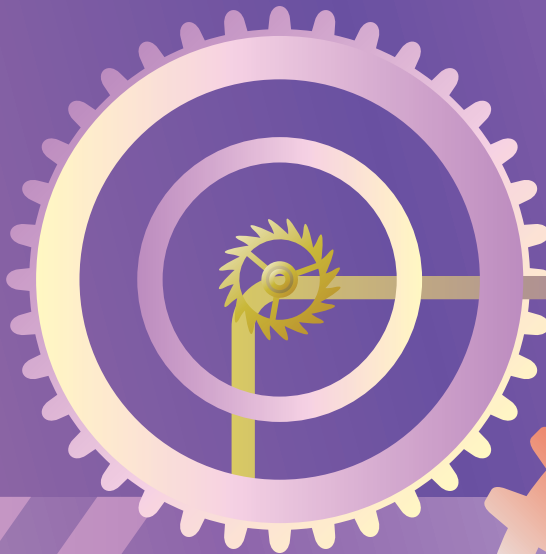


Addressing Study Error in the Random Assignment

National Evaluation of UPWARD BOUND:

Do the **Conclusions Change?**



Prepared by:

MARGARET CAHALAN



COE


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acronym guide

A simple guide to help you understand the acronyms used within this report.

BA	Bachelor of Arts (Degree)	NELS:88	National Education Longitudinal Study
CACE	Complier Average Casual Effect	NSC	National Student Clearinghouse
COE	Council for Opportunity in Education	OMB	Office of Management & Budget
CPS	Current Population Survey	OPE	Office of Postsecondary Education
CTE	Career and Technical Education Program	OPEPD	Office of Planning, Evaluation and Policy Development
ED	U.S. Department of Education	PART	Program Assessment Rating Tool
EHSGY	Expected High School Graduation Year	PAS	Program and Analytical Studies Division
EOC	Educational Opportunity Centers	PPSS	Policy and Program Studies Services
FSA	Federal Student Aid	SFA	Student Financial Aid
GEAR UP	Gaining Early Awareness and Readiness for Undergraduate Programs	SSS	Student Support Services
HEOA: 2008	Higher Education Opportunity Act (of 2008)	STATA	a general-purpose statistical software package
IES	Institute for Education Sciences	TOT	Treatment on the Treated
IPEDS	Integrated Postsecondary Education Data System	TRIO	Term used to describe a group of federal programs: Upward Bound, Upward Bound Math-Science, Veterans Upward Bound, Talent Search, Student Support Services, Educational Opportunity Centers, and the McNair Scholars Program
ITT	Intent to Treat	TS	Talent Search
JTPA	Job Training Partnership Act	UB	Upward Bound
MA	Master of Arts (Degree)	UBMS	Upward Bound Math-Science
NCES	National Center for Education Statistics		
NCHEMS	National Center for Higher Education Management Systems		



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SOURCE: National Evaluation of Upward Bound (UB) study conducted 1992-93 to 2003-04

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Executive Summary

The last four years have witnessed considerable debate in Congress concerning the Upward Bound (UB) program's continued funding, absolute priorities, and evaluation procedures. These debates have culminated in the 2008 passage of the re-authorization of the Higher Education Opportunity Act (HEOA- HR4137). This act, while calling for rigorous evaluations within TRIO, contains a prohibition against new TRIO evaluation studies that require projects to recruit more students than they would normally serve for purposes of random assignment evaluation. Much of this debate was sparked by the actions following the program being designated as "ineffective" in the OMB Program Assessment Rating Tool (PART) process. The UB program was rated as "ineffective" primarily on the basis of only one ambitious random assignment study begun in the 1990's that is the focus of this paper,—the *National Evaluation of Upward Bound* (designated here as the *1992-2004 UB Evaluation*). Following published reports of lack of overall positive effects, but substantial effects on postsecondary entrance for students deemed more academically at risk, the Bush Administration budgets in FY05 and FY06 called for "zero funding"; and at the same time the Department of Education (ED) developed various initiatives and priorities designed to "reform" the program on the basis of the *1992-2004 UB Evaluation* results. ED developed an absolute priority that required all successful applicants to the 2006 grant competition to serve at least one-third high academic risk students and requiring one-third of participants to begin service by the 9th grade. ED also began a new study to evaluate these reforms. There followed an intensive effort on the part of the TRIO community against the Absolute Priority and the new evaluation, as representing an attempt to redefine the program's focus without a legislative mandate. In 2007, Congress cancelled funding for the new evaluation, and in 2008 the Absolute Priority itself was cancelled by the HEOA re-authorization.

The *1992-2004 UB Evaluation* took on the character of a "high-stakes evaluation" with clear consequences for the program in terms of its PART labeling, reform policy decisions, and funding recommendations. Eventually it also had serious Congressionally-mandated consequences in terms of TRIO evaluation method prohibitions. For these reasons, it seems especially important that we consider the lessons learned from this important study for future TRIO evaluations. The history of this unique study provides an excellent case study in the issues faced by evaluators in designing and implementing a large-scale, nationally-representative random assignment study, and in using the results to address questions of national educational program evaluation and policy development.

This executive summary provides a summary of each of the sections in the body of the report. By way of introduction, the first part of the body of this paper gives an overview of the *1992-2004 UB Evaluation*, and its interaction with the development of ED policy. Subsequent sections focus on a detailed examination of technical issues and present results of re-analyses addressing study error. A final section considers lessons learned and recommends that the PART rating for Upward Bound be re-considered in the light of these new analyses.

Our major finding is that when study error issues are addressed, the Upward Bound program demonstrated statistically significant and substantive positive impacts on the major goals of the program, postsecondary entrance, application for financial aid; and attainment of postsecondary credentials. For example, when replicating the core Intent to Treat (ITT) analysis, but using federal student financial aid (SFA) administrative records to supplement data for survey non-responders and adjusting for students' expected high school graduation year (EHSGY), we find that UB has a statistically significant overall impact of 6.9 percentage points on the likelihood of having evidence on the applicable surveys or the aid files of attending postsecondary education by +1 (about 18 months) after EHSGY, (figure IV; table 5). Instrumental variable regression results, controlling for selection effects, for the analyses of Treatment on the Treated (TOT) finds an impact of 10.9 percentage points. Results without an outlier Project 69 found to introduce bias into the estimates, and deemed more robust, found increases of 9.1 percentage points for the ITT estimates and 14.2 for the TOT estimates. Significant and substantial positive results were also found for the award of any postsecondary degree or credential by the end of the study period; and we also found large significant results for BA attainment without the outlier and bias introducing Project 69.

STUDY DESIGN AND HISTORY

The National Evaluation of Upward Bound (UB) is a nationally-representative random assignment study that followed a multi-grade cohort from 1992-93 to 2003-04 to evaluate the impact of a flagship federal pre-college academic support and supplemental service program for disadvantaged high school students. In an atypical and ambitious study design, the study methodology combined a random assignment study to measure program impact, with a complex multi-stage national probability sample. The sampling design had a dual goal of producing national estimates and also producing disaggregated estimates for various sub-groups of interest. The thesis of this report is that a number of sampling design and non-sampling error issues combined together to confound some of the major conclusions that have thus far been published concerning the program.

The Department of Education has published four contractor reports containing impact estimates derived from the study (Myers and Schirm 1996; 1999; and Myers et al. 2004; Seftor et al. 2009). Mathematica Policy Research, the contractor for the study concluded in the third follow-up report that: “the Upward Bound Program had no effect on overall enrollment or total credits earned at postsecondary institutions, but it may have increased enrollment in four-year postsecondary institutions” (Myers et al. 2004). The third follow-up report also found that there were significant and substantial effects for the bottom 20 percent of study participants on 9th grade academic indicators, and for students with lower expectations (defined as expecting less than a bachelor’s degree). The unpublished fourth follow-up report and the recently published fifth follow-up report, contains similar overall results for postsecondary entrance. The fourth and fifth follow up Mathematica reports both found significant positive effects for the award of any postsecondary degree or credential, but did not find effects for the award of the bachelor’s degree.

APPROACH OF THIS REPORT

We draw from methodological work from three intersecting traditions. These are work in experimental design and program evaluation examining the threats to validity (for example, Heckman 2000; and Shadish, Cook, and Campbell 2001); work within survey methods research on “total survey error (TSE)” (for example, Groves, et al 2004); and, the statistical and program evaluation standards (for example, the *Program Evaluation Standards* 1994, and the *National Center for Education Statistics Standards*, Seastrom 2002).

This report examines the Upward Bound study design and analyses relative to four basic assumptions of random assignment studies:

- The sample is representative of the population for which the study is intended to generalize;
- The treatment and control group are equivalent on factors related to outcomes;
- The treatment and control group are treated equally except for the treatment; and
- The treatment and control group are mutually exclusive with regard to the treatment.

Sampling and Non-Sampling Error Concepts—To aid in the discussion, we utilize the concepts of sampling and non-sampling error. Sampling error refers to error that comes from the fact that we have selected a sample to represent the population of interest rather than conducting a census of the entire population. Non-sampling error refers to other types of error not related to the sample design such as survey non-response bias which can be present in a census as well as a sample. Both sampling and non-sampling error can be partitioned into error due to variance and error due to bias. The term bias refers to errors that affect the expected value of the estimate, taking it away from the true value of the target parameter. Variable errors affect the spread of the distribution of the estimates over potential repetitions of the study process (Dodge 2003).

In this paper, five specific interrelated issues are examined relative to the UB evaluation. Issues examined include: 1) basic sample design flaws and unequal weighting; 2) treatment-control group non-equivalency and bias in favor of the control group issues; 3) lack of precision in outcome measures used in analyses and the need for standardization by expected high school graduation year (EHSGY); 4) survey non-response bias; and 5) service substitution and dropout issues.

Sample design flaws and unequal weighting issues—Due to a goal of representing and disaggregating results by a wide range of project demographics, the sample is highly stratified with strata of unequal sizes. The first stage project level sample included 46 strata for 70 projects¹, and a number of the strata are represented by only one project. Projects were allowed to develop additional strata for their applicants, so that that the study actually had 339 end stage sampling strata with an average of 8 student members per strata. Baseline weighting reflects large

¹ For this study, only UB projects that had been operating for three years or more were considered eligible. At the time there were about 395 projects meeting this criteria. Of the 70 projects sampled, the participating sample was 67.

variations in probabilities of project and applicant selection and poststratifications were done to take into account these individual project level strata and to equalize treatment and control totals per project. *Contrary to probability sampling and weighting standards, only one project (known as Project 69) was selected from the largest study-defined stratum. As a result there are very serious unequal weighting issues and very large design effects, with this one project representing 26 percent of the weights (Figure I).*

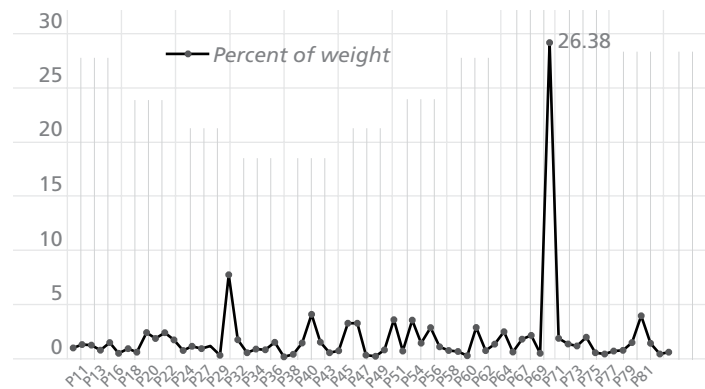
Moreover, examination of the project with 26 percent of the weight reveals that, although randomly selected to represent the largest four-year public stratum, it was actually a former two-year college taken over by a city university system to serve as a branch campus, with largely career and technical less-than-four-year programs. It also did not have the hallmark UB four-year grantee summer residential program—as it has no on-campus housing. *To mitigate this situation, we conducted weighting sensitivity analyses and results of all models included in this paper are presented both weighted and unweighted.*

Figure I shows that one project known as Project 69 accounts for fully 26.4 percent of the total weight for the sample.

FIGURE I. Percentage distribution of sum of the weights by project for the 67 projects making up the study sample
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

NOTE: Of the 67 projects making up the UB sample just over half (54 percent) have less than 1 percent of the weights each and one project (69) accounts for 26.4 percent of the weights.

SOURCE: Data tabulated December 2007 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education; study conducted 1992-9 to -2003-04.



Treatment-control group bias in favor of the control group—Very importantly examination of the project with 26 percent of the weight also indicated substantial bias in the composition of the treatment and control groups in favor of the control group on key variables associated with outcomes. *With the poststratified weights, the control group in this project was found to report higher educational expectations, a higher grade at baseline, to be more likely to have algebra or above in 9th grade, to be less likely to be classified as a high academic risk, and to be more likely to be female (Figure II and Table 1 in report body).*

These differences, combined with the large weight, compromised the overall equivalency of the treatment and control groups on factors related to outcomes; and were inadequately controlled for in published analyses. Without Project 69 the treatment and control groups are seemingly well matched in terms of these variables (figure II, table 1 and figures 4-6 in report body). In a random assignment study there should be about a 50-50 balance between treatment and control group in the percent of sample members with attributes related to study outcomes. As can be seen in figure III, this balance was compromised by the large imbalances in Project 69. For example, in Project 69, 80 percent of the high academic risk students were in the treatment group and 20 percent in the control group (figure 4 in body of report). The sample without Project 69 is well balanced with 51 percent of the high risk students in the treatment group and 49 percent in the control group (figure 5 in body of report). However, given that Project 69 carries 26 percent of the weight, the overall sample is unbalanced with 58 percent of the high risk students in the treatment group and 42 percent in the control group (figure III below).

Sensitivity analyses revealed that even with inclusion of some baseline controls for some of the non-equivalencies used in the models published in previous reports, results are sensitive to the inclusion or exclusion of Project 69 (see appendices D and E). None of the analyses in published reports or in this paper use academic risk variables as controls, as they are from 9th grade transcripts that for some students occurred after they had begun participation in Upward Bound. The grade variable used by Mathematica in their analyses was that from the Student Selection Form that was not keyed to a fixed time point. To mitigate the role of the outlier project, we present all results both with and without this one outlier project. Estimates for the 74 percent of the sample not represented by Project 69 are deemed more robust than the national estimates that include Project 69.

Figure II shows that the UB treatment and control group are well matched without Project 69 on the variables in the chart; however, in Project 69 the treatment and control group manifest substantial differences. For example, 56 percent of the control group in Project 69 expected an MA or higher at baseline compared with 15 percent of the treatment group. In contrast, among the other 66 projects in the sample, 38 percent of the control group and 37 percent of the treatment group expected an MA or higher.

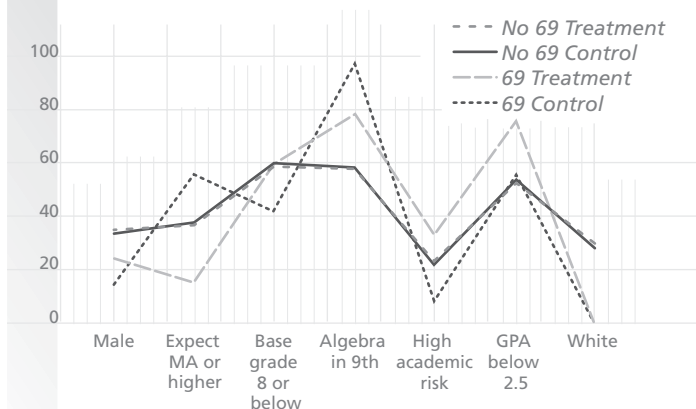


FIGURE II. Percentage of Project 69 and all other projects having various attributes by treatment and control group status
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

NOTE: Project 69 tabulation based on the 85 sample cases from Project 69 (52 controls and 33 treatment cases—poststratified weighted to 11,536 cases—5,768 treatment and 5,768 controls). The category “No 69 treatment” and “No 69 control” represents all the other projects in the sample excluding Project 69; these 66 projects are considered to represent 74 percent of the UB applicants in the study period.

SOURCE: Data tabulated December 2007 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education; study conducted 1992-93 to 2003-04.

Figure III is read as follows: For example, among those who were classified as higher academic risk, 58 percent were in the treatment group and 42 percent in the control group. In a random assignment study distribution should be about 50-50 between treatment and control group; figure shows imbalance in overall sample with Project 69 included.

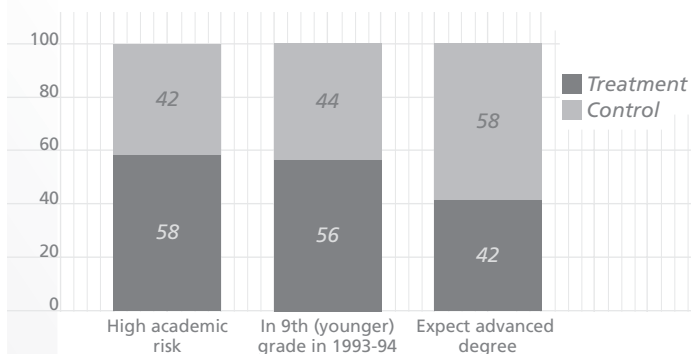


FIGURE III. Percentage distributions for all 67 sampled projects (including Project 69) between treatment and control groups among those sample members who were a higher academic risk, in the 9th (younger) grade in 1993-94, and who expected an advanced degree at baseline
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

NOTE: High academic risk includes those sample members in the bottom 20 percent of the sample on 9th grade GPA and other academic indicators.

SOURCE: Data tabulated April 2009 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education; study conducted 1992-93 to 2003-04.

Lack of standardization for expected high school graduation dates in outcome variable calculation—The study applicant cohort was a multi-grade one. The “last grade completed” reported on the Baseline Survey spanned from 7 to 10 and baseline completion spanned over an 18-month period, adding additional complexity to the study. *There is an unbalance between the treatment and control group in expected high school graduation year (EHSGY) with the control group more frequently having earlier completion dates (seemingly largely introduced by Project 69).* These inadequately controlled for differences appear to have been biasing the results obtained without standardization (Tables 2 and 3 in report body). *To correct for this we tabulated an expected high school graduation year and looked at postsecondary entrance within +1 year of the EHSGY (within about 18 months of June graduates) and by within +4 years following the high school graduation year and bachelor’s completion in +6 and +8 years.*²

² Because of some inconsistency in high school graduation year, and that fact that a portion of the baseline surveys were completed with reference to 1991-92 instead of 1992-93, actual tabulation was for -1 or +1 of the year of expected high school graduation; and +4 years of expected high school graduation year.

Study attrition and non-response bias—Study attrition, especially differential attrition, is a concern in longitudinal studies. The UB evaluation survey response rates have been exceptionally high, but they have declined with each round of data collection. They range from 99 percent on the baseline (required for entrance into the study “waiting list”), to 74 percent on the fifth follow-up. Reports through the fourth follow up have been based on only responders to the survey rounds with weights adjusted for non-response. There is evidence that estimates based on only those who respond to the survey have a positive bias and that the non-response adjustments increasing the weights of responders within categories that were used in the study may not be adequately addressing this issue. As the control group has consistently had response rate differences of 4-5 percentage points lower than treatment group members, they have been more subject to these adjustments. Examination of administrative records from the federal student financial aid applicant and award files indicates large significant differences between survey responders and non-responders in likelihood of being found on the aid files (for example, 79 percent of responders to the fourth follow-up were found on the aid files, while 62 percent of non-responders were found on the aid files in the period of 1994-95 to 2003-04) (Figure 7 in report body). This is taken as an indication that those who respond to the surveys were also those who more frequently had positive postsecondary outcomes. *To mitigate this potential source of bias, we use a longitudinal file of all sample members and use federal student aid applicant files,³ and, where appropriate, National Student Clearinghouse (NSC) data to impute outcome measures.* The Fifth follow-up report for the first time in the UB study analyses also uses administrative records; however, this report differs from the approach taken in the Mathematica report in several ways, among them that this report takes a more conservative approach to the use of NSC data.

As the NSC only began operations one or two years before the first students in this sample were graduating from high school (1995) and reports only having about 25 percent coverage by 1996, we use NSC data only for estimates of degrees earned. In addition to poor coverage there is evidence of bias due to clustering of UB participants in grantees who were not participating in NSC at the time, such as Project 69. NSC did not begin coverage of degrees earned until after it began coverage of enrollment so this data, while usually taking place later when coverage was higher, is also problematic. While caution is still needed, we have the most confidence in the NSC data for bachelor's degree receipt that would have occurred later when coverage had increased especially among four-year institutions.

Equivalent or similar service substitution and study no-show/dropout biases—Critics of the UB evaluation have been most aware of and vocal about the issues surrounding receipt of equivalent or similar services by the control group. Evaluation participants and their representatives have maintained that this is a source of control group contamination and have communicated this concern to Congress as early as 1999.⁴ Analyses of the UB study randomization files and survey results reveals that the task of keeping the treatment and control group mutually exclusive with regard to the intervention was not easy or subject to complete control by the study conductors. Participating projects indicated in debriefings that they were told they could interact with individuals in the control group as they would with other students they rejected. As they would normally do, they referred the students to other alternative services including other TRIO services. Given that the reason for the rejection was the random assignment, project staff may have tried harder to find programs for those they would have normally served. They also indicated that student mobility and other issues limited their ability to make realistic offers of opportunity for Upward Bound to some of those selected for the treatment group. About 26 percent of the treatment group was coded as “Dropouts” on the *Horizons* Waiting List Randomization File at the time of being given the “offer” of UB participation or shortly thereafter, and at least 18 percent reported never participating in any Upward Bound activity. All of these cases have been kept in the Intent to Treat (ITT) grouping forming the basis for published study conclusions. Using the study weights, at least 12 percent of the control group has evidence of participation in Upward Bound Math-Science (UBMS) or UB. UBMS was an initiative of the UB program begun in 1991, around the same time as the start of the national UB evaluation. Overall, 76 percent of the sample reported some form of pre-college support services with some academic component before or after randomization over the course of the applicable surveys (60 percent of the control group and 92 percent of the treatment group) (table 4 in the report body).

Published reports have emphasized the Intent to Treat (ITT) analyses of the original treatment and control group that reflected Mathematica's random assignment of those completing the baseline survey to be given the chance for the “UB opportunity.” This paper also continues a focus on the ITT analyses of those given the “UB opportunity.” However, we also place emphases on the Treatment on the Treated (TOT) or Complier Average Causal Effect (CACE) that may be a more valid measure, of Upward Bound's impact given the circumstances of this study. The TOT/CACE analyses were also included in Mathematica published reports, but until the fifth-follow-up report, UBMS was not considered an equivalent service. These analyses use a two-stage instrumental variables regression, designed to explicitly model selection effects using actual participation as an instrumented variable (Bloom H. 2005; Angrist, J., Imbens G., Rubin D. 1996).

³ For postsecondary attendance, the aid applicant status was used as indication of enrollment rather than the Pell Award file due to the income requirement for Pell Award. However, models were also run using Pell Award criteria with similar results; see appendix tables E-2 and E-3.

⁴ These concerns were summarized in a letter from Arnold Mitchem, president of COE, to Congressman William Golding in April 1999.

To help in further understanding of the study results, and the role of UB/UBMS vis-à-vis other pre-college support services, we include two new sets of quasi-experimental observational analyses. Using the two-stage instrumental variables regression to help mitigate but not eliminate selection bias, we explore the association of UB/UBMS participation with key outcomes relative to those reporting only some (thought to be less intensive) “other pre-college support service participation.” In another set of models, we compare those with no reported pre-college support service participation with those who reported any type (UB/UBMS or any other) of reported service participation.

Our consideration of these issues was influenced by Heckman, Hohman, Smith, and Khoo’s (2000) reanalysis of the Job Training Partnership Act (JTPA) studies in which they considered the interpretation of evidence from social experiments when persons randomized out of a program being evaluated have good substitutes for it, and when persons randomized into a program do not enter the program or drop out. They note that “evidence that one program is ineffective relative to close substitutes is not evidence that the type of service provided by all of the programs is ineffective, although that is the way experimental evidence is often interpreted” (Heckman et al. 2000).

Our approach in this paper is to try to present as much observational information on the extent of equivalent or similar services received and the extent of non-participation as is available, and to include additional modeling of the associations between services and outcomes to complement the Intent to Treat (ITT) analyses of those randomly assigned to be given the UB opportunity. Thus three types of comparisons are noted below.

1. The Intent to Treat (ITT) estimates use logistic regression to model the impact of being randomly assigned to the treatment or control group independent of whether the sample member actually entered into the treatment. It is most properly thought of as the impact of being given the “Upward Bound Opportunity.”
2. The Treatment on the Treated (TOT) or Complier Average Causal Effect (CACE) analyses uses instrumental variables regression to control for selection effects, and estimates the impacts of actual participation in the Upward Bound service. Two-stage instrumental variables regression first estimates the relationship of the variables in the model to participation in UB/UBMS; and then uses this factor in the second stage regression to control for but not eliminate the selection effects in the model.
3. As we know that more than half of the control group members reported they participated in non-UB or non-UBMS supplemental pre-college services with an academic component, a third set of comparisons, using instrumental variables regression, was also done. One of these looked at differences between those who had evidence of UB/UBMS participation compared with those that only had evidence of some other non-UB/non-UBMS service.

Controls used in the models were grade in reference year; low-income status; first generation status; grade on student selection form; baseline educational expectations; race/ethnicity; sex; and past participation in pre-college services. As noted, estimates are reported weighted and unweighted, and with and without Project 69.

MAJOR FINDINGS

Major findings from analyses that attempt to correct or mitigate the identified study errors were as follows:

Descriptive Findings

- Overall about 68 percent of the sample had evidence of postsecondary entrance in +1 (18 months) of expected high school graduation year and just over 70 percent had evidence of entering within +4 years. By the end of the study period, (2003-2004) that was 6 to 10 years after expected high school graduation year about 78 percent had evidence of postsecondary entrance.
- Estimates for the attainment of any postsecondary credential for the entire sample by the end of the study period (not comparing treatment and control group) range from about 35 percent based on surveys and available NSC data to about 47 percent based on data from only responders to the fifth follow up survey. This later estimate of 47 percent, based only on survey data, is probably an overestimate based on issues of survey non-response bias; and the estimate of 35 percent based on survey data supplemented by NSC data for non-responders is probably an underestimate due to NSC lack of coverage issues. Just under 20 percent of the sample had attained a BA degree in +6 years of expected high school graduation.

Impact Estimates

- Contrary to previously published findings, if study error issues are addressed by using federal student financial aid (SFA) administrative records to supplement data for survey non-responders and adjusting outcome measures for students' expected high school graduation year (EHSGY), we found significant positive impacts of Upward Bound on postsecondary entrance and for applying for financial aid within +1 and +4 years of EHSGY. For example, we found impacts of 6.9 percentage points for "UB opportunity" or Intent to Treat (ITT) estimate, and 10.9 percentage points for the Treatment on the Treated (TOT) estimate for postsecondary entrance in +1 year. As these results include the bias introducing Project 69 they probably underestimate the true effect of Upward Bound (Figure IV).
- More robust results, estimating effects for the 74 percent of the sample not represented by Project 69 show impacts of 9.1 percentage points for the ITT result and 14.2 for the TOT result for postsecondary entrance evidence in +1 year of EHSGY. Similar results were obtained using only the Student Financial Aid files to observe rates of applying for financial aid (Tables 5-8 in report body).
- In observational two-stage instrumental variables regression taking into account but not eliminating selection effects, Upward Bound/Upward Bound Math-Science (UBMS) participation was also found to be significantly associated with positive outcomes relative to those who participated only in some other type of (presumably less intensive) "non-UB/non-UBMS pre-college support or supplemental" service (Tables 7 and 9 in report body).
- Consistent with previously-published findings, large statistically significant positive effects were found on postsecondary entrance for the sub-group deemed to be of higher academic risk (bottom 20 percent on 9th grade academic indicators). Statistically significant positive findings, however, were also found for those in the top 80 percent on the same indicators (Table 8 in report body).
- Overall, positive significant results were found for ITT and TOT estimates for UB for the attainment of any postsecondary degree or credential by the end of the study period (Table 10 and Appendix Table B-6).
- As with postsecondary entrance, results for attainment of any degree or credential were seemingly very large for those with lower expectations and in the bottom 20 percent on academic indicators (deemed more at risk) at baseline (Table 10 and Appendix Table B-6). However, unequal weighting and the outlier Project 69 characteristics emphasizing programs below the bachelor's degree may be affecting these results.
- Estimates for the attainment of the BA degree in +6 years that included the bias introducing Project 69 were not significant. In estimates considered more robust, among the 74 percent of UB of the sample not represented by Project 69 (based on the other 66 projects in the sample), there is a 28 percent increase in the probability of attaining a bachelor's degree in +6 years (17 percent for the treatment group and 13.3 for the control group) for the Intent To Treat (ITT) estimate and very importantly a 50 percent increase for the Treatment on the Treated (TOT) estimate (21.1 percent for the treatment group and 14.1 for the control group) (table 10 in report body).
- In contrast to the results for any postsecondary degree or credential, considering BA receipt only, among the bottom 20 percent on 9th grade academic indicators, only three percent (25 unweighted cases) had evidence of attaining a bachelor's degree within +6 years of EHSGY. This sample number is too few for treatment-control group comparisons.
- Among the top 80 percent, on academic indicators, about 24 percent had evidence of a BA in +6 years and positive significant and substantial effects were found for the UB program for estimates with and without Project 69 (Table 14 in report body).

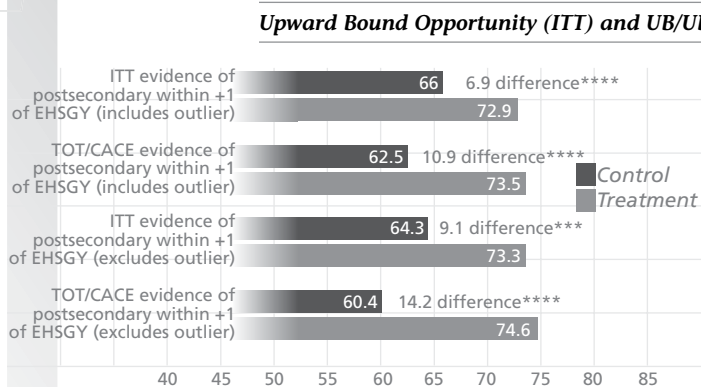


FIGURE IV. Estimated rates of evidence of postsecondary entrance within +1 (about 18 months) of expected high school graduation year (EHSYG) for Upward Bound Opportunity (ITT) and UB/UBMS participation (TOT)
National Evaluation of Upward Bound, Study conducted 1992-93 to 2003-04

*/**/***/**** Significant at 0.10/0.05/. 01/00 level.

NOTE: UB = regular Upward Bound; UBMS = Upward Bound Math-Science; ITT = intent to treat; TOT = treatment on treated; CACE = complier average causal effect. Model based estimates based on STATA logistic and instrumental variables regression taking into account the complex sample design. Weighted estimates use poststratified weights. See table 5 in body of the report for detailed note.

SOURCE: Data tabulated January 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; and federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

LESSONS LEARNED

1. The key conclusion that the Upward Bound program has “no detectable effect on postsecondary enrollment” should be reconsidered in the context of the OMB PART process. The results from the analyses correcting for sampling and non-sampling error indicate that the program demonstrated statistically significant and substantive effects on the key goals of the program.
2. The experience of this UB evaluation suggests that even in rigorous random assignment studies serious attention must be paid to sampling and non-sampling error and non-equivalencies between treatment and control groups that may bias the conclusions.
3. Much additional analysis is possible and greatly needed making use of a rich data set that contains detailed information collected over six surveys as well as project and target schools surveys. ED is currently working on preparing the data files to be made available under restricted license to interested researchers.
4. The experience of this UB evaluation suggests that it is very difficult to attempt national probability of selection estimation with complex multi-stage strata reflecting a planned disaggregating and coverage of special sub-groups of interest, and still maintain the treatment-control group equivalencies of a simple random assignment study.
5. The four-year applicant grade/time span combined with the probability of selection weights greatly increased the complexity of this study and makes it very important to use adequate controls for EHSYG in modeling results. The issues this introduced into the study suggests that multi-grade/time cohorts should be avoided in any new study design.
6. This study confirms the importance of issues of postsecondary retention and completion. At baseline about 97 percent of the sample indicated they expected to obtain some form of a postsecondary degree and 72 percent expected a BA or higher. In contrast, by the end of the study period about 78 percent had evidence of entering postsecondary and an estimated 35 to 47 percent had evidence of any degree or certificate. Just over 20 percent had attained a BA degree.
7. The length and seriousness of these UB study evaluation methods and policy debates is a testimony to the complexity of the issues. As we look to the future in the light of the new HEOA evaluation language, it is clear that a new generation of TRIO evaluations must be designed that will involve working in partnership with stakeholders in developing designs and procedures that are feasible, useful, accurate, and ethical. Caution needs to be taken making sure the conclusions are warranted and that the results reported are transparent. The challenges will be to develop and implement rigorous protocols that will answer questions for practitioners concerning how best to use resources, how best to serve different types of students, and how to adapt programs to the ever-changing secondary/postsecondary landscape.

The Report

1. Introduction

The second National Evaluation of Upward Bound begun under U.S. Department of Education (ED) sponsorship in 1991 has been a source of controversy since its planning stage.⁵ On the one hand, the evaluation is a landmark study, with a rigorous design employing a random assignment method combined with a national probability sample of projects (something very rare). It has been conducted very carefully with high levels of resources, and has had very high response rates. On the other hand, the subjects of the evaluation, the Upward Bound projects, and the state and national organizations representing the TRIO community (such as WESTOP and the Council for Opportunity in Education (COE)), have questioned the study feasibility and validity since its initiation, and more so as the results were published (Baker 1999). As the review below indicates, the study has also had a noticeable influence on development of Department of Education (ED) policy.

POLICY CONTEXT

In the context of published reports showing lack of overall effects, but findings of significant effects with sub-groups of students determined to be at a “higher academic risk” and reporting “lower baseline college expectations,” the Office of Management and Budget (OMB) urged the program to enact improvements increasing the targeting of the program to students more at academic risk. In response, the Department of ED developed the “Upward Bound Initiative” designed to provide additional funding to projects to serve students deemed to be more “at risk.” This initiative was also more consistent with the increased emphasis on accountability and raising achievement test scores of lower performing students following passage of No Child Left Behind (NCLB). On the basis of the study reports, the program was given an “ineffective” rating by OMB in the newly devised Program Assessment Rating Tool (PART). Justified on the basis of the PART rating, the FY2005 and FY2006 federal budgets prepared by the Bush Administration called for zero funding of Upward Bound, Talent Search (TS), and GEAR UP. The recommendation for zero funding was dropped in the FY07 and FY08 budgets.

In 2006, ED began design work on a new random assignment study described in the *Absolute Priority for Upward Bound Program Participant Selection and Evaluation* published by the Department of Education in the Federal Register on September 22, 2006. The Absolute Priority would require that one-third of the students be defined as academically at risk as evidenced by low GPA or not passing a high school competency test. The new study planned to use much the same methodology to evaluate the priorities as had been used in the previous evaluation. The major argument made against the new planned study to Congress concerned issues related to having to deliberately recruit more students than usual, knowing that half would not be allowed to enter treatment and would be blocked from ever getting the treatment by the grade related entrance requirements that were also planned as part of the priority. In February 2008, after Congressional legal blockage of funding for the study in 2007, ED cancelled the new study. These debates culminated in the 2008 Higher Education Opportunity Act (HEOA: HR4137) which contains language prohibiting ED from requiring projects to participate in evaluations when the study “requires the eligible entity to recruit additional students beyond those the program or project would normally recruit; or results in denial of services for an eligible student under the program or project.” The HEOA language, while specifically requiring rigorous evaluations of Upward Bound, also strengthens the focus on evaluations designed to identify those practices most useful to achieving program goals (rather than overall black box evaluations of program effectiveness) and identifying those students who can most benefit from services (see Appendix A-1 for new language concerning TRIO evaluations).

⁵ The first national evaluation was completed in 1979 by RTI—Burkheimer, G., J. Riccobono, and J. Wisenbaker. In 1991, ED began the second National Evaluation of Upward Bound, and first random assignment study of the program, conducted under a series of three contracts awarded to Mathematica Policy Research. The final contract ended in November of 2007.

This language prohibiting certain types of random assignment studies using recruitment methods similar to those used in the 1992-2004 National Evaluation of Upward Bound probably means that the study will not be repeated in the near future. Its history however, provides a case study from which we can learn about the issues faced by evaluators in designing and implementing a large scale nationally representative random assignment study and using the results to address questions of national education program evaluation and policy development.

SOURCES OF ERROR

This paper includes a critical look at several potential sources of study error and study issues, some of which have been previously raised by researchers who have reviewed the study design and reports (Baker 1999) and others that have not been previously discussed. The major thesis of this review and re-analyses is that a number of factors have combined together to confound some of the conclusions that have been thus far published concerning the average effects of the Upward Bound program on the major outcomes of interest. Interrelated issues examined include: 1) basic sample design flaws and unequal weighting; 2) treatment-control group non-equivalency and bias in favor of the control group issues; 3) lack of precision in outcome measures used in analyses and the need for standardization by expected high school graduation year (EHSYG); 4) survey non-response bias; and 5) service substitution and dropout issues.

PROGRAM BACKGROUND

UB is one of the earliest (begun in 1965), most intensive (typically involving a six- to eight-week summer residential stay on a college campus and a non-residential academic year component) and, by legislative requirement, academically-focused of the federal high school pre-college supplemental service programs. The program was designed to help achieve one of the first articulated major missions of the U.S. Department of Education—equal educational access.⁶ The federal authorization for making TRIO⁷ grants in the 1998 re-authorization used the following language:

“The Secretary shall, in accordance with the provisions of this chapter, carry out a program of making grants and contracts designed to identify qualified individuals from disadvantaged backgrounds, to prepare them for a program of postsecondary education, to provide support services for such students who are pursuing programs of postsecondary education, to motivate and prepare students for doctoral programs, and to train individuals serving or preparing for service in programs and projects so designed.” (Higher Education Act of 1965, 1998 Higher Education Act Amendments Subpart 2—Federal Early Outreach and Student Services Programs CHAPTER 1—FEDERAL TRIO PROGRAMS SEC. 402A. 20 U.S.C. 1070a–11).

The specific language authorizing Upward Bound is as follows:

(a) PROGRAM AUTHORITY—The Secretary shall carry out a program to be known as Upward Bound that shall be designed to generate skills and motivation necessary for success in education beyond secondary school. (Appendix A gives legislative requirements for the program as outlined in the 1998 HEA reauthorization).

The study was conducted under the general congressional authorization for TRIO evaluations that states they shall be conducted “for the purpose of improving the effectiveness of the programs and projects assisted under this chapter....”

The study design was an ambitious one, involving a nationally-representative probability sample of 70 projects⁸, combined with as a random assignment of about 3,000 “applicants” for the voluntary supplemental pre-college service program into a treatment and control group. The *Horizons* study (the name printed on materials given out in recruitment) followed participants for an 11-year period, with six participant surveys, project surveys, target school surveys, case studies, and detailed service records.

⁶ Upward Bound (begun in 1965), Talent Search (begun in 1971), Educational Opportunity Centers (EOC) (begun in 1975), and GEAR UP (begun in 1998) are four major federal high school programs focused on postsecondary preparation in middle and high school.

⁷ TRIO refers to a set of programs authorized under the Higher Education Act to promote college entrance and success for low-income and first-generation college students. Originally referring to a set of three programs (Upward Bound (UB), Talent Search (TS), and Student Support Services (SSS)), the term “TRIO” has been kept even though there are now several more programs including McNair and Educational Opportunity Centers (EOC). As specified in the legislation two-thirds of the participants in each UB project must be from families that are both low-income (defined as 150 percent of poverty) and in which neither parent has a BA college degree; the other one-third of participants must meet one of these criteria.

⁸ The original sample included 70 projects. Due to project level non-response, the participating sample was 67 projects.

The Department of Education has published four contractor reports containing impact estimates derived from the study (Myers and Schirm 1996; 1999; and Myers et al. 2004; Seftor et al. 2009). Mathematica Policy Research, the contractor for the study concluded in the third follow-up report that: “the Upward Bound Program had no effect on overall enrollment or total credits earned at postsecondary institutions, but it may have increased enrollment in four-year postsecondary institutions ” (Myers et al. 2004). The third follow-up report also found that there were significant and substantial effects for the bottom 20 percent of study participants on 9th grade academic indicators, and for students with lower expectations (defined as expecting less than a bachelor’s degree). The unpublished fourth follow-up report and the recently published fifth follow-up report, contain similar results for postsecondary entrance. The fourth and fifth follow-up Mathematica reports both found significant positive effects for the award of any postsecondary degree or credential, but did not find effects for the award of the bachelor’s degree

MAJOR FINDINGS

We find after examining the sample design and corresponding weighting that the study suffers from serious sample design flaws resulting in unequal weighting, representation issues, and important treatment control group non-equivalency issues introduced by one project (known as Project 69) with an unusually large weight (26 percent of the total weight). Reflecting a flawed sample design, this project was selected as a single project representing the largest defined stratum—so we are unable to estimate the sampling variance. This project, selected to represent a four-year public stratum with average sized UB projects, is a former community college with largely two-year programs taken over by a city university system to serve as a branch campus. It does not have the UB hallmark summer residential program—present in 90 percent of the four-year public grantees that Project 69 is representing. Most importantly, Project 69 has indicators of serious treatment-control group non-equivalencies that bias the overall study estimates in favor of the control group on variables found to be related to outcomes such as academic risk classification, educational expectations, and grade at baseline. Weighting and outlier sensitivity analyses revealed that the size and significance of the effect are consistently sensitive to the inclusion or exclusion of this one project that introduces bias into the estimates, even when controlling for the available baseline survey data differences between the treatment and control group. This work attempts to control for this bias, in several ways: 1) increasing the precision of and reducing the bias in the outcome measures by standardization to expected high school graduation year and appropriate use of administrative records to supplement survey data; and 2) by presenting the results with and without Project 69 and also weighted and unweighted.

A major finding of these analyses is that when replicating the core Intent to Treat (ITT) analysis, but using federal student financial aid (SFA) administrative records to supplement data for survey non-responders and adjusting for students’ expected high school graduation year (EHSGY), we find that UB has a statistically significant overall impact of 6.9 percentage points on the likelihood of having evidence on the applicable surveys or the aid files of attending postsecondary education by +1 (about 18 months) after EHSGY, (Figure IV in Executive Summary; Table 5). Instrumental variable regression results, controlling for selection effects, for the analyses of Treatment on the Treated (TOT) finds an impact of 10.9 percentage points. Results without Project 69, deemed more robust, found increases of 9.1 percentage points for the ITT estimates and 14.2 for the TOT estimates.

Results for attainment of a BA degree are especially sensitive to inclusion of this project (69), in which 56 percent of the control group expected to obtain an MA or above when they completed the baseline survey and 15 percent of the treatment group so expected. When Project 69 is included results are insignificant and become significant when it is excluded. As this single project accounts for 26 percent of the weight, estimates without Project 69 represent 74 percent of UB at the time of the study. For the other 66 projects in the sample, there is a 28 percent increase in the probability of attaining a bachelor’s degree in +6 years (17 percent for the treatment group and 13.3 for the control group) for the Intent To Treat (ITT) estimate; and a 50 percent increase for the Treatment on the Treated (TOT) estimate (21.1 percent for the treatment group and 14.1 for the control group) (table 10). Unweighted estimates with Project 69 included are also positive and significant for attainment of a BA in +6 years.

PAPER PURPOSES

The purposes of this paper are fivefold:

- To provide a transparent critical look at the study design, implementation, and analyses that considers ways to constructively address issues of study measurement error and validity that have been identified;
- To provide a re-analysis that questions some of the major conclusions published from the study;
- To provide a previously ignored look at the observational quasi-experimental effects of the role of receipt of other pre-college services;
- To focus on lessons learned both from a study methodology and policy perspective; and
- To serve as documentation for anticipated users of the files; and to invite further analysis of the data that ED is preparing for release under restrictive license.

REPORT STRUCTURE

Throughout the report we take the approach of maximizing transparency and multiple methods of viewing the data. In the remainder of the paper, we review some basic assumptions of experimental design and potential sources of error; review the national evaluation of Upward Bound data and describe our methods; present results of the re-analyses; and discuss lessons learned. In addition, Appendices A to E provide additional documentation and information for material discussed in the text.

2. Assumptions, Threats to Validity, and Study Error

This report draws from methodological work from three intersecting traditions: work examining the threats to validity in experimental designs and program evaluation (for example, Heckman, Hohman, Smith, and Khoo 2000; Shadish, Cook and Campbell 2001; Bloom 2005); work in survey methods research in the area of “total survey error” (for example, Groves, et al. 2004); and standards work within the statistical and program evaluation community (for example, *Joint Committee on Program Evaluation Standards* 1994; *National Center for Education Statistics Standards*, Seastrom 2002).

SAMPLING AND NON-SAMPLING ERROR CONCEPTS

This report includes a critical look at several experimental design validity issues, as well as survey sampling and non-sampling measurement error relative the National Evaluation of Upward Bound. In this paper we are using the terms “sampling error” and “non-sampling error” generally to distinguish those errors that come from the sample design from other errors. *By sampling error, we simply mean the error caused by observing a sample instead of the whole population.* Sampling errors refer to differences between estimates based on a sample survey and the corresponding population values that would be obtained if a census was carried out using the same methods of measurement. Non-sampling errors include all other errors affecting a survey. Non-sampling errors can and do occur in all studies, including censuses (Sarndal, Swenson, and Wretman, 1992; Silva 2004; Dodge 2003).

Statisticians distinguish between two types of sampling errors—bias and variable errors. The term *bias* refers to errors that affect the expected value of the estimate, taking it away from the true value of the target parameter. *Variable errors* affect the spread of the distribution of the estimates over potential repetitions of the study process. Bias is usually made negligible by having an adequate sampling design, sample size and estimation methods. The argument of my paper is that issues with these aspects of the Upward Bound study have contributed to some bias in the impact estimates in favor of the control group that have led to a failure to detect statistically significant program impacts.

Variations in the possible sample values of a statistic can theoretically be expressed as sampling errors, although in practice the exact sampling error is typically unknown. A key parameter describing this spread is the *standard error* or the standard deviation of the sampling error distribution. Typically estimates of the standard error are derived from examining the variation between sub-samples or the cases drawn in the sample such as in Balanced Repeated Repetition (BRR) or Jackknife estimation of the standard error. If there is only one case drawn from a sampling stratum, (as is the case with many of the strata in the UB study) we are unable to estimate the *variance*. The likely size of the sampling error can generally be controlled by taking a large enough sample from the each of the stratum in the population; *however sampling one project from a stratum representing the largest number of projects is not considered an adequate sample when weights are to be used that are the inverse of the probability of selection.* Estimates and checks of how well the sample is representative of the universe are also typically done by checking estimates based on the sample with known totals from the universe.

As we are using the term here, “non-sampling error” is a catch-all term for the deviations from the true value of the estimate that are not a function of the sample chosen, including various systematic errors (Silva 2004; Dodge 2003). Two examples, relevant to this study, are survey non-response bias and lack of precision in outcome measurement. Non-sampling errors are much harder to quantify than sampling error. Non-sampling errors include two broad classes of errors. These are errors due to non-observation and errors in observations. Errors due to non-observation result from failure to obtain the required data from parts of the target population (coverage errors) or from part of the selected sample (non-response error). Coverage or frame errors refer to wrongful inclusions, omissions and duplications of survey units in the survey frame, leading to over- or undercoverage of the target population. Non-response errors are those caused by failure to obtain data for units selected for the survey. Measurement errors concern having observed values for survey questions and variables after data collection that differ from the corresponding true values that would be obtained if ideal or gold standard measurement methods were used. As we are using the term here, the lack of standardization of outcome measures by expected high school graduation year (EHSGY) is a form of non-sampling measurement error. In some cases, there is no clear dividing line between nonresponse, coverage and measurement errors (Silva 2004).

Non-sampling errors can also be partitioned into non-sampling variance and non-sampling bias. Non-sampling variance measures the variation in survey estimates if the same sample would be submitted to hypothetical repetitions of the survey process under the same essential conditions. Non-sampling bias refers to errors that result from the survey process and survey conditions, and would lead to survey estimates with an expected value different from the true parameter value. In this context, we found that Upward Bound sample members with positive outcomes were more likely to respond to the surveys. In this case irrespective of the sampling design and repetitions of the survey, without any external information, (such as the federal aid files) the survey only based estimates we developed will over estimate postsecondary participation compared to the true value of the estimate among the population.

The evaluation of Upward Bound used a multi-grade 18-month cohort comparison model, with random assignment into treatment and control groups. It is important to note that the design used was only able to implement a random assignment process from “waiting lists” generated specifically for study purposes. Projects were instructed in the study period to recruit participants to the *Horizons* study from students totaling at least double the expected number of openings. Interested students were asked to complete a baseline survey that would put them on a waiting list and give them a chance of being selected for the “Upward Bound Opportunity” in the study period. The study was not able to directly control the actual entering of the assigned study participants into the treatment which often happened a few months after the recruitment to the waiting list; nor did it control the delivery of the treatment per se. In fact the study sought to disturb the natural course of treatment as little as possible, except in encouraging the projects to try to recruit at least double the anticipated openings for participants in the study period. The study also made certain accommodations to projects allowing them to non-randomly select some “must serve” students from the applicants who were then removed from the study sample and their weights redistributed. The treatment model (voluntary academic and motivational supplemental pre-college high school services), is largely determined by the federal legislative and regulatory provision as implemented by UB grantees (largely postsecondary institutions) (see Appendix A).

MAJOR ASSUMPTIONS OF RANDOM ASSIGNMENT STUDIES

While the study did not control implementation of the intervention, there were certain standard assumptions that the study design sought to implement. These are:

1. Participants are representative of population generalized;
2. Treatment and control groups are equivalent on dimensions likely to be related to outcomes;
3. Treatment and control groups are treated equally except for the “treatment” (UB services) being evaluated; and
4. Treatment and control groups are mutually exclusive with respect to the intervention being studied.

There were a number of conceptual and operational difficulties related to fulfilling these assumptions which posed threats to the validity of implementing a random assignment study considering that the researchers did not have direct control over the implementation of the random assignment by the projects or the voluntary participant actual entrance into the program, especially as all the participants were minors. These have been identified by general discussions of experimental design (for example, Campbell and Stanley 1969; Cook and Campbell 1979; Shadish, Cook, and Campbell 2001), and by particular treatments of the Upward Bound study (Baker 1999). These include:

- History—specific events may occur between the study beginning and the various outcome measurements in addition to the experimental variable.
- Spillover school-wide effects—when treatment and control students are in the same school there may be spillover effects of the treatment to the control group.
- Reactive effects of experimental arrangements—it is difficult to generalize to non-experimental settings if the effect was attributable to the experimental arrangement of the research. Study requirements or conditions may change the treatment (for example, in this case UB recruitment processes were changed in study year).
- Study is not blind—the act of participating in the study may effect behavior of both treatment providers and participants and hence the outcomes.
- Equivalent treatment substitution bias—equivalent services may be offered and obtained by control group members.
- Dropout issues and fidelity of implementation of random assignment—participants in the treatment group may not be offered or be able to enter the treatment. Projects may fail to offer the services to those randomly assigned to treatment or a student may move away or be in alternative service by the time of random assignment.
- Attrition from the study—may result in non-response bias relative to outcome measurement.
- Baseline differences between treatment and comparison groups—may result in biases in outcome comparisons.
- Reactive or interaction effects of study participation and measurement itself—study participants may be influenced by study materials and the act of completing applications or repeated questionnaires or tests.
- Interaction effects—there may be interactions between selection and response biases and the experimental variable.
- Multiple treatment interference—as multiple treatments are given to the same subjects, it is difficult to control for the effects of prior treatments.

QUESTIONS EXAMINED IN THIS PAPER

It is beyond the scope of this paper to develop measures of “total study error” (Weisberg 2005; Groves, 1989; Groves, et. al 2004). Nor is this paper intended to be a general critique of random assignment methods. Many of the issues we discuss stem from the rather unique intersection of a random assignment study combined with a highly stratified sample weighted by the inverse of the probability of selection. In this paper we explore some of the threats to the assumptions and validity issues noted above using available data. Specifically we addressed the following questions:

1. **Sample Design, Weighting Issues.** To what extent are the study results sensitive to the unusual and flawed sample design that, with too few projects, attempted to combine a first-stage national probability sample representing many types of grantees with numerous strata, some with only one project member, and corresponding unequal weighting issues, with a second-stage highly-stratified random assignment of unequal numbers of applicants?
2. **Treatment and Control Group Equivalency.** Given that this was not a simple random assignment study, but a complex highly-stratified, multi-stage sample with limited sample size per random assignment strata, to what extent does the sample suffer from treatment and control group non-equivalency?
3. **Standardization of time-sensitive outcome variables.** Given, observed treatment-control-group non-equivalencies on expected high school graduation year, largely introduced by Project 69, what is the result of additional standardization to increase precision of measuring time-sensitive outcome variables?
4. **Survey Non-Response Bias and Attrition from the Study.** Do we obtain the same results as the results published in the third follow-up report relying only on survey responder data when we use a longitudinal file supplementing survey data with administrative record information for non-responders?
5. **Treatment Substitution and Drop-Out Issues.** What results do we obtain when we model actual participation in the program in addition to the ITT results of being given the opportunity to participate? How do outcomes for those participating in Upward Bound or Upward Bound Math-Science compare with those reporting participating only in some other pre-college service? What results do we obtain when we model the association of receipt of any pre-college support services having some academic focus, with postsecondary outcomes?

3. Review of Study Design, Implementation, and Analyses Methods

We use data from the baseline survey conducted in 1992-94 and five subsequent follow-up surveys as well as student transcripts, and federal Student Financial Aid (SFA) application and award data for ten academic years (from 1994-95 to 2003-04). Due to the lack of coverage in the period when the sample members were graduating from high school, we use ten years of National Student Clearinghouse (NSC) data cautiously only for degree estimates and not for postsecondary entrance outcome measures. Altogether, about 1,500 students nationwide were randomly assigned to the treatment group and about 1,300 were not selected to be offered the “UB opportunity” (were assigned to the control group) from 67 projects out of 395 projects that had been operating three years at the time of the study (in 2008 there were 964 projects). The surveys collected information on student background, high school experience, supplemental support services participation, postsecondary participation, and employment activities. The data collections were made more complex by the fact that the study collected information from applicants who could be in various grades from 8th to 11th over an 18 month period of applicant recruitment.⁹ Hence, in different rounds of the follow-up surveys, students were in different grades. The response rates for these surveys were 99 percent for the baseline survey—required for entrance onto the *Horizons* waiting list (1992-94); 97 percent for the First Follow-up (1994); 85 percent for the Second Follow-up, (1996); 81 percent for the Third Follow-up (1998); 76 percent for the Fourth Follow-up (2001); and 74 percent for the Fifth Follow-up (2003). In the later follow-ups, control group response rates were 4-5 percentage points less than the treatment group.

In this paper, we follow similar statistical procedures as followed in previous reports. However, instead of using a file made up only of responders to a given round of the survey follow-ups with non-response adjusted weights as was done for the published third follow-up report and the internal fourth follow-up report, we constructed a longitudinal file containing all cases in the sample. The fifth follow-up report was the first of the Mathematica reports to use a longitudinal file of all sample members and the first to use administrative records; however, the approach taken in the fifth follow-up report differs significantly from that taken in this paper. The fifth-follow-up report does not standardize outcomes to expected high school graduation year; and it does not present the data weighted and unweighted and with and without the outlier Project 69. The fifth-follow-up report also uses National Student Clearinghouse (NSC) data for enrollment estimation when coverage was only 25 percent and there is evidence of biased coverage.

As was done in published reports, we conducted regression analyses that allow inclusion of some additional variables from the baseline survey designed to correct for some of the differences between the treatment and control groups. Standard errors for multi-stage weighted data were tabulated using STATA software taking into account the complex sample design used in the study. For reasons noted above and discussed in more detail below, we include analyses of both weighted and unweighted data. The tables presenting results give the model estimated expected rates for the treatment and control group for the dependent variables of interest, the difference between treatment and control, and the significance levels. Examples of complete model results are presented in appendices B and D. In text discussion for logistic regression results we also provide the odds ratio that can be used as a measure of effect size for the dichotomous variables of interest to this study, and this may be calculated with the information given in the tables.¹⁰

In the next section we present the rationale for each of the re-analyses decisions made in this paper.

⁹ As study entrance was over an 18-month period, some students completed the baseline surveys after completing the 1991-92 school year instead of the 1992-93 year printed on the survey form adding to the complexity of the time referencing. A few students were in grade 11 in the reference year.

¹⁰ The odds ratio is a measure of effect size. It is defined as the ratio of the odds of an event occurring in one group to the odds of it occurring in another group, or to a sample-based estimate of that ratio. If the probabilities of the event in each of the groups are T (treatment group) and C (control/comparison group), then the odds ratio may be tabulated as follows: $T(1-c)/C(1-T)$. An odds ratio of 1 indicates that the condition or event under study is equally likely in both groups. An odds ratio greater than 1 indicates that the condition or event is more likely in the first group. And an odds ratio less than 1 indicates that the condition or event is less likely in the first group.

STUDY REPRESENTATION: SAMPLE DESIGN AND UNEQUAL WEIGHTING

As noted, the Upward Bound study is rather unique in that it attempted the difficult task of national representation with a stratified probability multi-stage sample design combined with a project-based random assignment. The sample design was highly stratified and attempted allowing disaggregating of fairly unusual sub-groups. Appendix table C-1 taken from the published third follow-up report shows the defined strata. The strata were formed based on project number served (large, medium, or small); on location (rural/urban); on type of grantee institution (four-year public, four-year private, and two-year); and on various race/ethnicity rates among project participants. As a result there were 46 strata, and several had only one project within them. Attrition of a few projects from the original 70 further reduced the number in some of the cells.

The study weighted the responses relative to the number of applicants (defined as those completing the baseline survey to get onto a waiting list for a possible UB opportunity), not the number of openings. Projects were also allowed to further stratify their applicants based on different criteria for each project—such as sex, target school, or entry round so there were actually 339 total strata—an average of only about 8 members to be randomly assigned per strata. Projects differed in the ratio of applicants to openings, with some sites, perhaps those that recruited through assemblies or classes, having very large numbers, and others smaller numbers relative to openings. As a result, as was presented in Figure I in the Executive Summary of this report, one project contributes 26 percent of the weight, three projects 35 percent of the weight, and eight projects 50 percent of the weight. Due to the fact that several strata have only one member no variances for these strata can be computed and for standard error estimation almost half the strata need to be combined. Thus, there are serious unequal weighting issues and corresponding very large design effects.¹¹ As will be discussed in more detail below there is also serious treatment-control group bias in favor of the control group.

Weighting to the number of applicants (number of baseline surveys received to be put on a “waiting” list) rather than openings made the unequal weighting of the sample design more problematic. As noted, there were substantial differences in the number of applicants submitted per project and these differences were not necessarily related to differences in the measures of size used in the first-stage sampling or the actual number of openings per year which have less variation per project. Hence there are substantial differences in the number of treatment and control group members in the sample per project. The total study participants per project range from four to 100 (see Appendix Table C-2 for listing of the unweighted and weighted totals per project). The smallest project has only two members in the treatment or control group. Generally the treatment/control cell sizes are too small per project to compute meaningful statistics on a per project basis. Unlike a common procedure in random assignment studies where for each slot both a treatment and control group member are randomly selected, a procedure was followed in which all study applicants were put on a “waiting list,” and, in rounds of randomization to fill openings, some members from pre-defined project strata were randomly selected to be given “the opportunity” and others stayed on the “waiting list.” This entire remnant “waiting list” was then considered to constitute the control group.

Poststratification adjustment to the weights was done taking into account the 339 sub-strata and the differences in probability of selection between cases in a given project they introduced. Treatment and control group numbers were also adjusted to equalize weights so that per project totals were equal (see Appendix Table C-2). However, it appears the adjustments to the weights to equalize treatment and control group numbers per project by these 339 strata introduced more unequal weighting or design effects that reduced the effective sample size and the power to detect differences. Unfortunately published reports through the third follow-up for this study, did not present information on the extent of the unequal weighting issues in their documentation. Given that this was an abnormal recruitment period dictated by the study requirements, this application process is probably not one that has ever been repeated; nor can we use other existing data to assess accuracy with regard to the impact estimates which are of interest to this study.

¹¹ For example the differences between treatment and control group in percent expecting an advance degree at baseline—a 12 percent difference with 43 percent of controls expecting an advanced degree and 31 percent of treatment group so expecting—has a design effect of 18. A design effect is the difference between what one would expect from a simple random sample which has a design effect of 1 and the decline in sample efficiency introduced by the stratified sample design.

Project 69 Issues

In this next section, we provide more information about the project (69) with 26 percent of the weight. We observe that the intersection of this project's extremely large weight with treatment-control group non-equivalencies, and certain project characteristics, have combined to make it a source of error in the estimates of impact. These issues are discussed below in terms of three topics: 1) Representation of its stratum; 2) Treatment-control group non-equivalencies; and 3) Sensitivity of impact estimates and sub-group issues.

Project 69 as a Representative of Its Stratum

Project 69 with 26 percent of the weight is the only project selected from its defined strata (other, medium project size, four-year public, not-rural location). It falls into an “other race/ethnicity category” that in this sub-stratum was defined by not being designated as Asian, Native American, or Latino. This “other” frame stratum has 56 other projects in it—and was the largest of the 46 defined project frame strata. A review of the project's current website indicates that the grantee is a branch campus of a city university. The college began as a two-year college and was taken over by a public university system. The downtown campus has no on-campus housing. The UB project at this campus is unusual in a four-year grantee in that it has a non-residential rather than residential summer program. There is also a Talent Search program. Target schools include schools that have special science and technology and engineering magnets, one of which also has a large Career and Technical Education Program (CTE). The UB project also partners with a job training program in service provision. Given these characteristics, there are a number of serious issues with Project 69's adequacy to represent the largest group of four-year public UB projects with 26 percent of the total weight for the sample. These include:

- The fact that Project 69 is a former two-year college selected to represent the largest four-year public stratum is very problematic. The fact that it has largely career and technical programs, partners with a job-training program, and has no residence halls makes it an unlikely sole representative of the largest defined stratum made up of public four-year grantees. The stratum includes main campuses of major research universities that were UB grantees at the time—such as University (U) of Illinois in Champaign-Urbana, U of Wisconsin-Madison, U of North Carolina-Chapel Hill, U of Massachusetts-Amherst, and U of Minnesota, to name a few, that have average-sized UB programs and are not classified as Asian, Native American, or Latino and are non-rural. The stratum also includes a large number of state colleges located in areas of the country where there are not large minority populations, as well as public institutions with historically majority black students. It is questionable whether this one mainly two-year program project can be considered to adequately represent the large and diverse four-year stratum defined for this study sample.
- As noted, Project 69's current website indicates that they do not have the hallmark, UB summer six- or eight-week residential program on the grantee campus. Assuming this was also true in the 1990s (and we expect that it was so given that the college has no on-campus housing), this project would be atypical for the four-year public stratum for which it is the sole representative. Residential programs have been considered a major feature of UB programs since its inception, which partly account for UB's larger cost per student relative to other programs such as Talent Search. Recent UB performance reports in 2003-04 indicate that about 90 percent of four-year public grantees had residential summer programs in 2003-04. The use of non-residential programs has been growing, especially among two-year grantees; however, Project 69 is representing a four-year, not a two-year public stratum. This observation is in no way intended to imply that residential programs are more successful than non-residential programs, but only that there are serious representational issues given that 90 percent of 4-year grantees have a residential program.
- Project 69 is the representative of a study defined “other” race/ethnicity stratum in which projects that had majority white participants or those that had majority black participants were placed together. The composition of the Project 69 sample is 60 percent Black, 38 percent Hispanic, and 2 percent Asian or other. There were no white participants from Project 69 in the UB sample.

The fact that it is the only project selected from this very large “other” stratum means that we are unable to calculate a variance to test for its adequacy as the sole representative of the stratum that resulted in the largest weight (26 percent of the total) in the sample. It should be noted that Project 69, as indicated in Table C-1, is not the only project selected to be the sole representative of its stratum in this highly-flawed sample design. However, it is the only one with such an extreme weight. These sample design issues are another reason for presenting the results weighted and unweighted.

TREATMENT AND CONTROL GROUP NON-EQUIVALENCIES

Apart from the issue of representation, a primary issue for this study is that this project, with an outlier weight, also has large apparent non-equivalencies between the treatment and control group introducing bias in favor of the control group on key variables found to be related to outcomes. Table 1 (and Figure II in the Executive Summary) show weighted estimates for baseline and academic attributes for the treatment and control groups for Project 69, and for all other projects without Project 69.

TABLE 1 Percent of treatment and control group sample members having various attributes reported on baseline survey and 9th grade transcripts: Project 69, all other projects, and all projects
National Evaluation of Upward Bound study conducted 1992-93 to 2003-04

Variable	Project 69			All others		All projects	
	Treatment	Control	Diff.	Treatment	Control	Treatment	Control
Expect at least BA	73	84	11	76	81	75	82
Low expectations	27	16	-11	24	19	25	18
Expect MA or higher	15	56	41	37	38	31	43
Expect MA	0	20	20	13	14	10	15
Expect Ph.D.	15	35	20	24	24	23	27
Expect less BA	27	16	-11	24	19	25	18
Expect two-year	13	10	-3	14	11	13	11
Expect high school only	3	3	-	3	3	3	3
Expect less two year degree	10	2	-8	5	4	7	3
Male	24	14	-10	35	34	32	29
Not native speaker	32	19	-13	10	11	16	13
Participate services before	31	17	-14	29	31	29	30
Took algebra in 9th grade	79	98	19	58	58	64	70
High academic risk	33	8	-25	23	21	24	19
Lower academic risk	67	92	25	77	79	81	76
GPA below 2.5	76	55	-21	53	54	59	54
Percent of all grade 9 sample members based on 1993-94 grade	74.2	25.8	-48.4	51.3	48.7	55.9	44.1
Percent of all grade 10 sample members based on 1993-94 grade	34.3	65.7	31.4	48.3	51.7	44.7	55.3
White	0	0	-	30	28	20	22
Hispanic	38	44	6	13	17	21	23
Black	60	56	-4	48	48	50	51
Other race	0	2	2	9	8	6	6
Grade 8 or below reported on base	60	42	-18	59	60	59	55
First generation college only	27	20	-7	14	15	17	17
Low-income and first- generation	73	78	4	81	79	79	79

NOTE: Weighted data for Project 69 based on 85 sample cases (52 controls and 33 treatment cases poststratified weighted to 11,536 cases—5,768 treatment group members and 5,768 control group members). Using simple tests, weighted differences over 4 percentage points between treatment and control group for Project 69 presented above were statistically significant, but are not designated as significant here because large weighted Ns make significance very easy to obtain in simple tests. Tests of significance were also done on the unweighted data for Project 69 (n= 85) and differences 12 percentage points and over were found to be significant. Complex standard errors using the individual project level strata were not done.

SOURCE: Data tabulated December 2007 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; and federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

As can be seen, from Table 1 (and highlighted in Figure II, in the Executive Summary) the weighted sample without Project 69 is apparently well matched with regard to treatment and control group attributes on the baseline and academic variables of interest to the study. Project 69 shows indications of non-equivalency between the treatment and control groups on several key variables also found to be positively associated with differences in the major outcome variables— all in favor of the control group. These include:

- Educational expectation—among controls, 56 percent expected to complete an advanced degree (MA or higher), while among the treatment group, 15 percent so expected—a 40 percent spread.
- Taking algebra or above in 9th grade—among the controls, 98 percent had algebra or above, while among the treatment group the comparable figure was 79 percent—a 19 percentage spread.
- Classified as high academic risk—among the controls 8 percent were classified as high academic risk, while 33 percent of the treatment group was so classified—a 25 percent spread.
- Higher 9th grade GPA—among the controls 55 percent had a GPA of below 2.5 while among the treatment group 75 percent had a GPA of below 2.5—a 20 percent spread
- Males—among the controls 14 percent were male while in the treatment 24 percent were male
- Higher grade at baseline—among the controls 42 percent were in 8th grade or below as reported on the baseline survey in variable B1 and among the treatment group 60 percent were in 8th grade or below.

The weighted differences between treatment and control group noted above are statistically significant using simple tests, but are not designated as significant here because the large weighted “Ns” make significance very easy to obtain in simple tests. Tests of significance were also done on the unweighted data (n=85) and also found to be significant. However, tests for the weighted differences noted above were not done taking into account the individual project level stratifications for which limited information is available. The primary issue in this case, however, is not the probability that these differences might have happened by chance as tests of statistical significance tell us, but rather the role they may be playing in biasing the impact estimates.

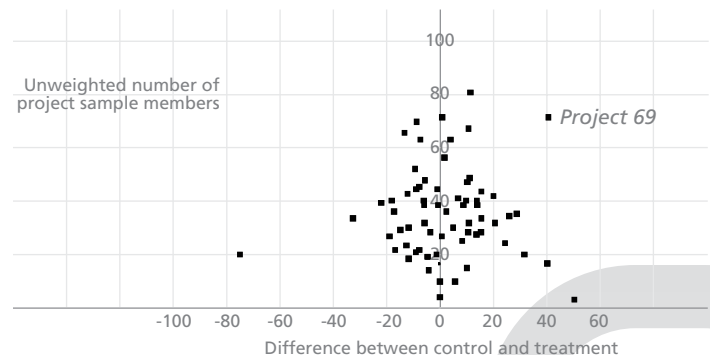
The conductors of the study, Mathematica Policy Research, have done an outlier analyses in which they concluded that “Project 69 is not an outlier.” They based their conclusions on analyses that showed that the differences noted above were not unique when individual project level treatment and control differences were considered, and that the overall differences between treatment and control group did not reach statistical significance. For example, there is a 41 point spread between treatment and control in the percent expecting an advanced degree (MA or above) at baseline in Project 69; and there is a 12 percent difference in favor of the controls on this variable in the overall sample when Project 69 is included (not statistically significant with a design effect of 18)

As Figure 1 illustrates, Project 69 is not unique in having so large (41 percent) a spread between treatment and control group on this item; however, as can also be seen, it is unique in having such a large difference among projects having at least 30 cases per cell. The more important factor to consider, however, is the role of this difference given the high weights of Project 69 members. Figure 2 plots the same information using the study weights, and figure 3 plots the differences multiplied by the weights. The outlier quality comes from the combination of the seemingly large differences with the large weight, whether these differences are the result of chance or some other factor.

FIGURE 1. Plot of the differences between treatment and control group in percent expecting an advanced degree (MA or above) at baseline by unweighted sample number (n) for the 67 projects making up the sample
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

NOTE: The Y axis (0-100) represents the number of unweighted cases and the X axis the weighted percentage point difference between treatment and control group. Squares to the right represent positive differences for the control group and to the left of the line negative differences for the control group. This chart shows that Project 69 is the only project with 30 or more cases per cell to have a 40 percentage point spread and that the other large differences come from those with insufficient cases per cell to make comparisons.

SOURCE: Data tabulated May 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; and federal Student Financial Aid (SFA) files 1994-95 to 2003-04.



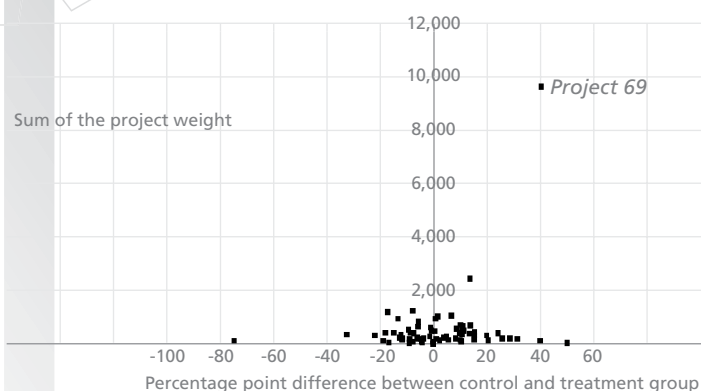


FIGURE 2. Plot of the differences between control and treatment group in percent expecting an advanced degree (MA or above) at baseline by sum of the weights by project
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

NOTE: The Y axis (0-12,000) represents the sum of the weights and the X axis the weighted percentage point difference between treatment and control group. Squares to the right represent positive differences for the control group and to the left of the line negative differences for the control group. This chart shows that Project 69 stands alone considering the difference multiplied by the sum of the weights.

SOURCE: Data tabulated May 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; and federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

Examination of the differences between the treatment and control group (table 1) suggests that in Project 69 the treatment group was more likely to have younger and more at-risk students who had received prior services—perhaps recruited from Talent Search and the target school CTE program; and the control group was more likely to have a higher proportion of students who resemble the Upward Bound Math-Science population. This project had an unusually large number of applicants and may have, for example, recruited from a whole math or science class in the Science and Math or Engineering target school magnets, and more from Talent Search and the CTE program vocational school for another round (there is a relatively high proportion of students expecting a less than two-year degree in the treatment group). There were apparently two sub-strata for random assignment of unknown definition in the documentation for the study, and there were at least six “must serves” in the treatment group excluded from the study. In one of the Project 69 sub-strata the number of treatment and control group members was roughly equal. However, in the other sub-strata, it appears there were far fewer openings relative to the numbers on the waiting list and this introduced unequal weighting within this project itself. The weights were 95 for controls in the one sub-stratum and 185 for treatments in that same sub-stratum. The other sub-stratum had weights of 159 for both treatment and controls. There were also UBMS participants among both controls and treatments. These factors plus the poststratifications and the large base weight may have combined in some way to unbalance the treatment and control groups (There were 52 control members and 33 treatment members unweighted). However these weighted non-equivalencies came into the study, they seem to be introducing some bias in favor of the control group into the overall UB sample, such that the study requirement of equivalency of treatment and control group that the random assignment study is meant to ensure appears to have been compromised.

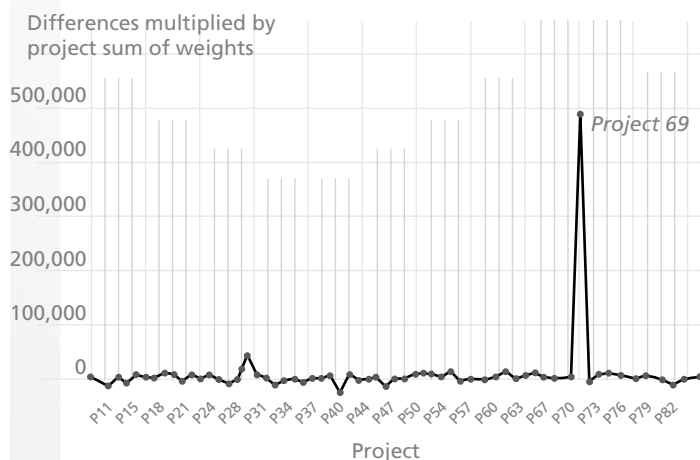


FIGURE 3. Plot of the differences between control and treatment group in percent expecting an advanced degree (MA or above) at baseline multiplied by the sum of the project weights by project
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

NOTE: The line chart for each sample project plots the difference between control and treatment multiplied by the sum of the weights for the project.

SOURCE: Data tabulated May 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education, study conducted 1992-93 to 2003-04; and federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

PERCENTAGE DISTRIBUTIONS OF TREATMENT AND CONTROL GROUP

Another way to look at these issues is to observe the percentage distributions between treatment and control group. In any randomized control trial, there should be an equal distribution (50/50) between treatment and control group in the percent having various attributes related to the major outcomes of interest. Indeed this is what the randomization is meant to ensure. Figures 4-6 below show the imbalance between treatment and control group in Project 69, the balance among the 66 other projects when combined, and the bias in the overall sample when Project 69 is included. The items examined are: academic risk, grade level at a fixed time, and educational expectations at baseline.

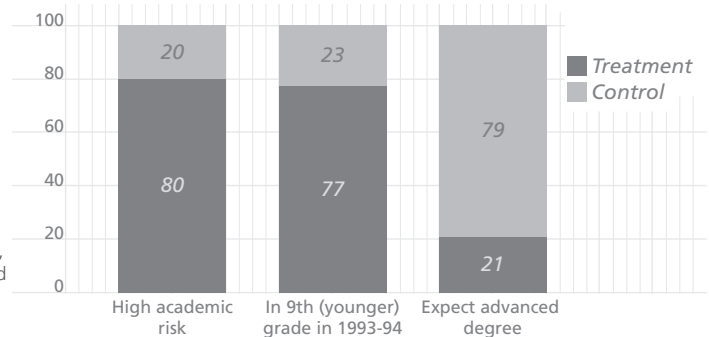
As can be seen from figure 4, Project 69 has severe departures from the 50-50 desirable split with 80 percent of the sample that were deemed as being higher academic risks being in the treatment group and 20 percent in the control group. Conversely, 79 percent of those with advanced degree expectations were in the control group and 21 percent in the treatment group; and 77 percent of the younger grade sample members were in the treatment group and 23 percent were in the control group. Figure 5 gives the distribution for the 66 other projects taken together, and there is almost a 50-50 split as one expects in a random assignment study.

Note large imbalance in Project 69 distribution. Figure is read as follows: For example, among those who were classified as higher academic risk, 80 percent were in the treatment group and 20 percent in the control group. In a random assignment study distribution should be 50-50 between treatment and control group; figure shows imbalance in Project 69.

FIGURE 4. Percentage distributions for Project 69 between treatment and control groups among those sample members who were a higher academic risk, in 9th (earlier) grade in 1993-94, and who expected an advanced degree at baseline
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

NOTE: High academic risk includes those sample members in the bottom 20 percent of the sample on 9th grade GPA and other academic indicators.

SOURCE: Data tabulated April 2009 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education; study conducted 1992-93 to 2003-04.



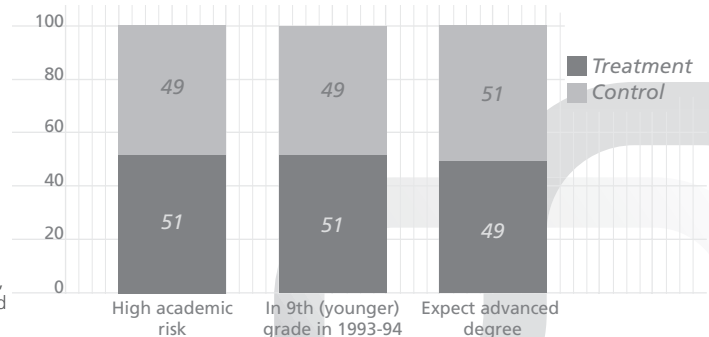
Bias in Overall Sample. Given that Project 69 carries 26 percent of the weight, as seen in figure 6, there is a clear bias introduced into the overall sample. Instead of the expected close to 50-50 split, when Project 69 is included the overall sample has some important non-equivalencies. There is a difference of 16 percentage points between the percent of the high risk students who are in the treatment and control groups with 58 percent of the high risk students in the treatment group and 42 percent of the high risk students in the control group. Looking at grade level at a fixed academic year, 56 percent of the younger students were in the treatment group and 44 percent in the control group. Fifty-eight percent of the students with expectations of an advanced degree were in the control group and 42 percent in the treatment group. These are serious sources of bias that are not adequately controlled for in the models in the published reports.

Note without Project 69 there is a balance between treatment and control group as expected in random assignment study. Figure is read as follows: For example, among those who were classified as higher academic risk, 51 percent were in the treatment group and 49 percent in the control group. In a random assignment study distribution should be about 50-50 between treatment and control group.

FIGURE 5. Percentage distributions for 66 of 67 sampled projects (excluding Project 69) between treatment and control groups among those sample members who were a higher academic risk, in 9th (earlier) grade in 1993-94, and who expected an advanced degree at baseline
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

NOTE: High academic risk includes those sample members in the bottom 20 percent of the sample on 9th grade GPA and other academic indicators.

SOURCE: Data tabulated April 2009 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education; study conducted 1992-93 to 2003-04.



The very important academic risk variable, (or any of the academic indicators), are not included in any of the models as controls (in this paper or Mathematica's reports) because they are based on 9th grade transcripts that for some students occurred after randomization. The grade level variable Mathematica used is the grade on the *Student Selection Form* which is not keyed to a specific point in time as recruitment spanned was over two school years (see appendix table E-1). This paper attempts to mitigate this source of bias by using an expected high school graduation year (EHSGY). Both the Mathematica paper and this paper have the education expectations at baseline variable in the models; however, it should be noted that as the students were in different grades from 8 to 10 when they completed the baseline, this variable is not a measure of education expectations at the same grade for everyone. For the treatment group it more frequently was a younger expectation-further away from the point of postsecondary entrance or non-entrance. As noted above, despite the controls used, results have been found to be consistently sensitive to the inclusion or not of Project 69 in all of the models presented in the Mathematica reports and in this paper.

Figure is read as follows: For example, among those who were classified as higher academic risk, 58 percent were in the treatment group and 42 percent in the control group. In a random assignment study distribution should be about 50-50 between treatment and control group; figure shows imbalance in overall sample with Project 69 included.

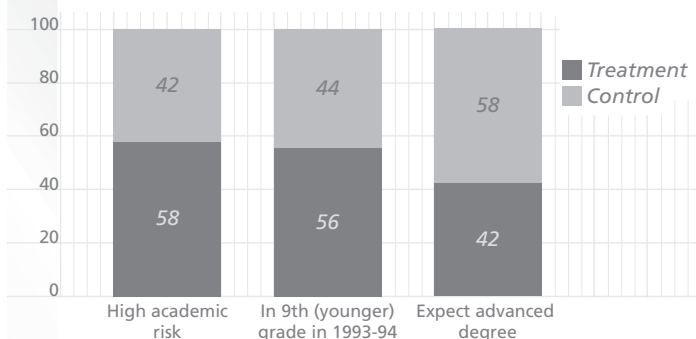


FIGURE 6. Percentage distributions for all 67 sampled projects (including Project 69) between treatment and control groups among those sample members who were a higher academic risk, in the 9th (younger) grade in 1993-94, and who expected an advanced degree at baseline National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

NOTE: High academic risk includes those sample members in the bottom 20 percent of the sample on 9th grade GPA and other academic indicators.

SOURCE: Data tabulated April 2009 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education; study conducted 1992-93 to 2003-04.

These difficulties may point out why most random assignment studies that are interested primarily in relationships between a treatment and an outcome do not attempt the complicated dual task of producing precise national point estimates while obtaining an understanding of the relationship of a particular type of treatment to outcomes. The data were weighted to application totals that were always an artifact of this particular study and always had little external validity in that project recruitment methods were altered in the study year.¹² The small cell sizes for the 339 project level strata, averaging 8 sample members per individualized strata did not offer the protection from bias that a simple random assignment study of 3000 students would offer.

Impact Estimates Sensitivity to Project 69

This paper attempts to deal statistically with some of the Project 69 bias issues through using a longitudinal file, standardizing outcomes to a specific EHSGY year, and avoiding sources of data for which there was not coverage for Project 69 in the applicable years such as the NSC for postsecondary enrollment in 1995 to 1997. When these procedures are followed, we find statistically significant results with and without Project 69 for evidence of postsecondary entrance, for receipt of financial aid using the SFA files, and for evidence of any postsecondary degree or credential. However, evidence of a BA degree is not significant with Project 69 but is highly significant and shows substantial effects for the 74 percent of the sample not represented by this project. It is also significant with and without 69 for unweighted estimates.

¹² It does not appear that even when one has a reasonable sample design (which this study does not) that there is unanimity in the field about using weights in regression-based complex effect estimation with weights that reflect multi-stage samples (McLaughlin, Drori, and Ross 2000; Chambers 2003; Little 2003; Phiffermann et al., 1998, 2004). In the context of HLM work, a recent NCES report notes..." there is no unanimity in the field with respect to this question, even as to whether weights should be used at all" (Braun, Jenkins, Grigg 2006).

Appendix D presents a series of models examining the sensitivity of results to the inclusion or exclusion of Project 69. The results demonstrate that the Mathematica procedures followed in the published third follow-up report (and the internal fourth follow-up report) of basing results only on survey responders, not standardizing for EHSYG, and not using SFA data are sensitive to the inclusion or exclusion of Project 69 (see appendix D)¹³. Results are consistently significant without Project 69 and insignificant with the inclusion of Project 69. Appendix table E-4 presenting model results from the fifth follow-up survey combined with Pell data and National Student Clearinghouse data for postsecondary entrance by the end of the study period, and unstandardized by EHSYG also show sensitivity to Project 69.

For these reasons, in this paper, unlike previous published reports for this study, we present the data with and without the problematic Project 69 and we include both weighted and unweighted estimates. As Project 69 was the only project in its stratum, we acknowledge that the estimates without 69 represent only 74 percent of the estimated weights or persons completing the Baseline Survey. However, it would seem that it is better to not have representation for this stratum at all than to represent it in a manner that is not robust and is questionable both in terms of Project 69's capacity to represent its four-year stratum and, most importantly, because it confounds the overall impact estimates due to treatment control non-equivalencies combined with its large weight.

STANDARDIZATION OF OUTCOME MEASURES KEYED TO EXPECTED HIGH SCHOOL GRADUATION YEAR (EHSYG)

One of the problems with the Mathematica analyses is that there were not adequate controls for differences in student grades at fixed points in time. The grades reported on the baseline survey (Question B1) ranged from grade 7 to a few in 11, with 57 percent being coded in 8th grade or below with reference to the last completed grade. Working on the assumption that the random assignment procedure would assure the treatment and control group were about equal in grades, the analysts for the study prepared impact estimates that included some controls for grade listed on the *Student Selection Form*,¹⁴ (see appendix table E-1 for distribution of this variable), but did not standardize outcomes to take into account differences in student grades at fixed points in time. The Student Selection Forms, completed by the project directors, were not keyed to a specific date and the recruitment period went over two school years. There is also some confusion stemming from the fact that the same grade classifications included both those who were rising grade entrants and those already in the specific grade—(e.g. 8th grade rising 9th graders and those already in the 9th grade are coded as 9th graders). This factor, in combination with the unequal weighting issues, appears to have helped confound the results published.

For example, as can be seen in table 2, reflecting the grade distribution at the time of the first follow-up, a larger proportion of the control group was in grade 10 than was true for the treatment group. As discussed in more detail below, this difference is pronounced in Project 69, in which 11 percent of the control group and 34 percent of the treatment group were in grade 9 (the youngest group). Another way of looking at this is to note that among Project 69's grade 9 sample, 74 percent were in the treatment group and 26 percent were in the controls. In the overall sample, 56 percent of the grade 9 (younger portion) of the sample were in the treatment group and 44 percent in the control group (table 1 and figure 6).

To address the range of grades present in the sample and some observed treatment-control non-equivalencies in grades in favor of the control group it is necessary to standardize outcome measures to a fixed time point. Table 3 shows the distribution of expected high school graduation year based on survey responses to relevant questions on the baseline survey, the first follow-up survey, and the third follow-up survey. As can be seen there are some data inconsistencies in the EHSYG estimates across these different questions. Mathematica has indicated that a portion of the baseline surveys was completed with reference to the 1991-92 school year instead of the 1992-93 year referenced on the survey form. The first follow-up survey form with a reference period of 1993-94 did not allow for a grade lower than 9th grade, and as the third follow-up survey response distribution indicates, there are some sample members who reported entering high school in 1994 and would have graduated in 1998. The third follow-up survey information is the most straightforward, and was initially considered as the best information to use for the standardization but it is present for only 80 percent of the total. For this reason, we chose to standardize using the baseline survey data present for 99 percent of the sample and to include a correction applicable to those who answered for the 1991-

¹³ The fifth follow-up report models, presenting outcomes for grades 7 to 9 after scheduled high school graduation, are also sensitive to Project 69. Unlike the third and fourth follow-up reports, the fifth follow-up report uses a longitudinal file and administrative records; however, it does not standardize outcomes to EHSYG, and for conclusion estimates does not use multiple rounds of surveys. Appendix E includes results using fifth follow-up survey data plus PELL receipt data and National Student Clearinghouse data for postsecondary entrance (the major outcome measure for postsecondary entrance used in the fifth follow-up report). In these models, estimates with Project 69 are not significant and those without Project 69 are significant.

¹⁴ This form was completed by the UB project Director for each *Horizons* study applicant who completed the baseline survey and entered the sample.

92 year. In deriving the outcome variable we included those who had evidence of first postsecondary entrance from -1 to +1 (or +4) of the EHSYG based on the baseline survey grade reported. To check this procedure, we also calculated EHSYG based on the first follow-up survey question A1 and derived outcome variables based on this EHSYG. We include the results of these checks in Appendix B. We found that the effect sizes and significance levels were very similar when the two different survey questions were used as the base for standardization.

TABLE 2. Percentage distribution of grade in 1993-94 as reported on the First Follow-up Survey, total sample and Project 69: National Evaluation of Upward Bound (UB), study conducted 1992-93 to 2003-04

First Follow-up grade in 1993-94	Total sample		Project 69 sample	
	Treatment	Control	Treatment	Control
9	32.4	25.6	33.7	11.4
10	37.7	46.9	29.3	54.6
11	22.2	21.8	20.4	25.5
12	4.1	4.0	6.8	8.5
Missing	3.6	1.7	9.8	--

NOTE: Weights are the poststratified weight used analyses. A portion of those coded as grade 9 (about 9 percent of the total) may have been just entering grade 9 in 1994. See table 3, data from the third follow-up question B1YY.

SOURCE: Data tabulated May 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04.

TABLE 3. Percentage distributions of expected high school graduation year (EHSYG) as tabulated from the baseline survey, the first follow-up survey, and the third follow-up survey
National Evaluation of Upward Bound (UB), study conducted 1992-93 to 2003-04

EHSYG	Baseline survey question B1 (form references 1992-93 grade; some completed with 1991-92 grade reference; 100 percent response)	First follow-up survey question A1 (form references 1993-94 grade; did not allow for grade 8—97 percent response)	Third follow-up survey question B1YY (student report of year of high school entrance—80 percent response)
1994		4	5
1995	10	22	19
1996	33	42	34
1997	44	29	30
1998 and after	13	0	10

NOTE: Note detail may not sum to 100 percent due to missing data. Expected High School Graduation Year (EHSYG) as tabulated based on the following questions from the various surveys

COLUMN 2: Baseline survey question B1: What grade were you in during the LAST SCHOOL YEAR (1992-93 school year)? (note some students reportedly answered for the 1991-92 school year)

COLUMN 3: First follow-up survey question A1: What grade (are you in/were you in during the 1993-94 school year) or (are/were) you not attending junior high or high school (now/then)?

COLUMN 4: Third follow-up question B1YY: What month and year did you first enter high school?

SOURCE: Data tabulated May 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04.

We also note that the students were in different grades at the time they completed the baseline survey, which means that some of the variables reflect different grade measures. For example, for the question on educational expectations, some students answered before they entered high school and others after they had completed one or two years of high school.

It should also be noted that overall those who completed the baseline survey in earlier grades were less likely to be found on the aid files. Examination of the SFA files from 1994-95 to 2003-04 indicate that there is a 9 point spread between grade 8 and grade 9 baseline reported grades in the proportion being found on the aid applicant file between 1994 and 2003 (66 percent for grade 8 and 75 percent for grade 9 reported on the baseline) (data not shown). This may be due to the older students having more years of opportunity, or it may also be due to the fact that those applying for the program at later grades had already made it through the transition to high school, were closer to the event of interest, and hence more likely to enter postsecondary.

SURVEY ATTRITION AND NON-RESPONSE BIAS ISSUES

For a study such as the Upward Bound evaluation, spanning over a decade, survey attrition can be a major threat to validity of the results. This is especially true if there is reason to suspect that responding to the survey may be associated with whether or not the study participant had positive outcomes. It is also more of a problem when a study has some cases with very large weights relative to others. When the Upward Bound study was begun, as part of the recruitment of applicants, informational brochures were prepared inviting students to apply for the opportunity to participate in a college preparatory program, by participating in the *Horizons* Study. The brochure clearly communicated that college was a “desirable outcome.” The surveys, while neutrally worded, by focusing on college application and attendance, reinforced that college was the desired outcome. Finally, the general climate of schools and society throughout the 1990s and beyond encouraged high school students to go on to postsecondary. Hence, it may be that those who did not enroll in postsecondary would be less likely to respond to the survey if they did not perceive they had the most desirable outcomes to report.

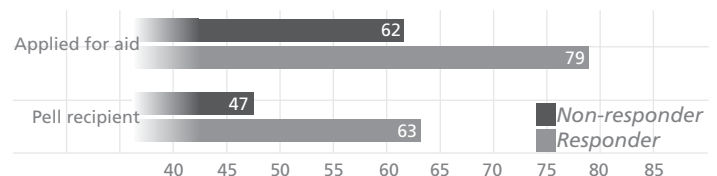
It may also be true that persons who have not gone to postsecondary would be harder to locate, lacking school affiliations that provide strong clues to respondent whereabouts. The Upward Bound follow-ups have had very high response rates for studies of low-income, largely minority-population students over more than ten years. However, response has declined with each data collection. Mathematica’s procedure for analyses and reporting of each of the respective follow-ups through the unpublished fourth follow-up report included cases only from those who responded to a given wave of the survey with weights adjusted for non-response based on statistical models of baseline characteristics. As noted, treatment and control groups have had four to five point differences in response rates in follow-ups, with treatment group members responding in higher proportions. The study adjusted the weights for certain characteristics from the baseline survey. However, if there were interactions between certain groups that went in different directions, the non-response adjustments might not correct adequately. For example, males were less likely to respond to surveys and also less likely to attend postsecondary. However, males with positive outcomes might be more likely to respond than those with non-positive outcomes—so increasing the weights of males who were responders might not correct for this bias adequately.

Use of the Federal Student Financial Aid (SFA) Data

The federal Student Financial Aid (SFA) application and award files are helpful in understanding this bias and correcting for it. While they cannot give us a complete indication of postsecondary attendance, they can give us an indicator of the extent to which attendance may be different among those who respond and do not respond to the surveys. They can also be used to impute postsecondary attendance for those who did not respond. Figure 7 provides information on the percent of sample members found on the SFA files by their response status to the fourth follow-up survey.

There is a statistically significant difference between the percent of survey responders and non-responders found on the SFA file, or those who indicated they had a Pell award. Among survey responders (unweighted data), 79 percent were on the applicant file and 63 percent were Pell recipients, while among survey non-responders, 62 percent were on the applicant file and 47 percent were Pell recipients—differences of 17 percentage points. Fourth follow-up survey response rates for those on the aid file were 80 percent, while for those not on the SFA file rates were 63 percent (data not shown in table). Similar differences were found observing differences in rates for the third follow-up responders.

FIGURE 7. Percent of total study participants found on the federal student financial aid (SFA) files as applicants and as Pell recipients, classified by fourth follow-up survey response status: National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04



NOTE: Unweighted data based on 2,845 Upward Bound sample members from both treatment and control groups.

SOURCE: Data tabulated October 2006 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; and federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

This information would seem to indicate that using only information from those who respond to the surveys, even with non-response adjustments, may result in overestimates of the percent of students who attended and achieved postsecondary credentials; and that, as the control group responded at lower rates, it may also indicate that the differences between treatment and control groups using only survey data may underestimate the effect of the Upward Bound program.¹⁵ This paper used the applied for aid indicator from the FSA files in imputing for evidence of

¹⁵ Checks were done on the differences between the treatment and control groups in rates of differences between responders and non-responders frequency of being found on the federal aid files. These checks did not indicate that control group members who were non-responders were found on the aid file at different rates than treatment non-responders; this has been interpreted as indicating that the lower response rate for controls may indeed reflect a lower participation rate.

postsecondary among non-responders. It is also possible to use the PELL award indicator. The PELL indicator means that there is definite proof that the respondent was enrolled. However, this indicator is income dependent and would also exclude those who did not take enough credits to qualify for an award. For these reasons we used the “applied for aid” indicator. Table E-2 presents a comparison of the difference using the PELL award variable instead of the “applied for aid” variable in impact estimates using the fourth-follow-up data unstandardized for the postsecondary entrance outcome. As can be seen in this case the impacts of UB are slightly larger using the PELL data.

Use of the National Student Clearinghouse (NSC) Data

The National Student Clearinghouse (NSC) provides an additional source of administrative data that can potentially be used to obtain information on enrollment and degree awards. However, there are serious coverage issues with using this data especially in the period from 1994-1997 when 95 percent of the UB sample was graduating from high school, and when most of the postsecondary attendees would have entered into postsecondary. The NSC was begun in 1994 and reports on their website that they only reached about 25 percent of total U.S. enrollment coverage by 1996 (www.studentclearinghouse.org/data).

Moreover, checks of coverage claims have found that actual NSC coverage is often sporadic, even after the date of first coverage listed on the website. Project 69, with 26 percent of the UB weight, notably, is not listed as having begun any participation until after the period in which its UB sample members would have graduated from high school. These coverage issues are especially important with regard to the Upward Bound evaluation, due to the fact that a substantial percentage of UB participants who enter postsecondary choose to attend the project grantee host institution of the project in which they were a participant. For example, 45 percent of UB participants who enrolled in postsecondary from two-year grantee hosts, and 41 percent from four-year public grantee hosts attended the grantee host grantee institution (Cahalan and Curtin 2004). For this reason any NSC lack of coverage or sporadic coverage of the grantee institutions could create coverage bias, as presumably UB participants would be more likely to attend these institutions than the control group.¹⁶ Thus, because of the lack of coverage in the period and the potential for bias due to UB clustering of attendance at grantee institutions, we do not use NSC data to supplement the surveys and SFA data for looking at enrollment in the first years after graduation. However, with caution comparing results to survey responder only based results, we do present some models that combine survey data with NSC data for observing degree or certificate attainment as the SFA files have very limited information on degrees or awards. We recognize that these estimates underreport degree or certificate awards for non-responders. Although the NSC data for bachelor's degree receipt would have been several years later when coverage was higher, we note that there continue to be issues with NSC data when used comparatively. The NSC continues to have incomplete coverage of less-than-four-year and sometimes sporadic coverage of four-year and above enrollments and awards (Cunningham et. al. 2004; Roderick et. al. 2006)¹⁷.

The use of NSC data for postsecondary enrollment estimates is one of the issues with the Mathematica fifth follow-up report. Unlike the published third follow-up and the unpublished fourth follow-up report, the fifth follow-up report for the first time does incorporate use of administrative records and uses a longitudinal file. However, we would argue that the fifth follow-up report inappropriately uses the NSC data for postsecondary enrollment when coverage was too low, as indicated barely 25 percent by 1996 and when there are indications of bias coverage with regard to the Upward Bound project grantee institutions.

ISSUES OF MUTUAL EXCLUSIVITY OF TREATMENT

One of the most difficult challenges of random assignment studies, especially of voluntary support service federal programs, concerns establishing and maintaining clearly distinguished treatment and control groups. This issue has been repeatedly raised by stakeholders concerning the Upward Bound evaluation and formed the basis of the arguments made in Congress against the new UB evaluation study begun in late 2006, which was cancelled by ED in 2007. It was argued that it would be unethical to purposively increase recruitment, and then to deny services to half of those recruited. If services were not denied and alternative services were provided, then the results might be confounded by control group substitution and treatment group dropping out.

¹⁶ *The Profile of the Upward Bound Program: 2000-2001* reported that overall 31 percent of UB participants who enrolled attended the grantee/host institution. Among two-year grantee/hosts 46 percent of UB students who enrolled attended the grantee institution; among four-year public grantees/hosts 41 percent of UB students who enrolled attended the grantee/host institution; and among four-year private 17 percent attended the grantee/host institution (Cahalan and Curtin 2004).

¹⁷ In 2006, the Consortium on Chicago School Research published graduation rates for public school graduates in Chicago based on NSC data by institution. Several of the institutions questioned the results. Closer investigation revealed that some institutions had submitted incomplete graduation data to NSC. The resulting revisions resulted in considerably higher rates for Chicago public school graduates at these institutions and overall. Update to From High School to the Future, October 2006.

The Upward Bound baseline and follow-up surveys contained questions (sometimes quite detailed) about other pre-college support or supplemental service participation, although these questions were somewhat different in each of the applicable rounds and suffer from the fact that the students were also in different grades at the time they completed the various survey rounds. They also suffer from the fact that the control group was not asked directly about any regular UB participation.¹⁸ However, sufficient information was collected to classify whether the student reported any other pre-college support or supplemental services with an academic component and whether the study participant participated in UBMS.¹⁹ This information can be used to gain some understanding of how much of an issue equivalent or similar service receipt was for this study. Using quasi-experimental design and instrumental variables regression this data also provides an opportunity to look at the association between UB service receipt and postsecondary outcomes relative to receipt of other services (presumably less intensive).

The study conductors worked with each individual project to ensure implementation of the random assignment opportunity to each person they selected from the *Horizons* waiting list. However, their work, and that of the UB projects in the study, was made more difficult by certain factors over which they did not have control. These included: 1) the rolling nature of the admissions process from spring/summer/fall over almost a two-year period (18 months); 2) the presence of the Upward Bound Math-Science Initiative begun at about the same time as the study period; 3) student mobility and voluntary/parent permission issues; and 4) the lack of control over the offering and participation in other substitute services.

Equivalent Treatment

Equivalent Treatment—Upward Bound Math-Science. Upward Bound Math-Science (UBMS), an initiative of the TRIO programs begun in 1991 (considered a form of Upward Bound, equivalent in intensity) was just getting started at the time of the UB national evaluation. Often, early UBMS initiative grants were awarded to the experienced grantee institutions that already had a well-established regular UB program—the same type of program eligible for the study sample.²⁰ It may be that in some cases those students completing the baseline survey that put them on the UB study waiting list were also being recruited into and applying for the UBMS program in the same study year. Thus they may have been recruited and accepted or not accepted into the UBMS program at the same time they were being randomly assigned in or out of the UB study treatment group.

The TOT/CACE participation analyses published in the third follow-up report chose to ignore UBMS participation, noting that about 14 percent of the treatment group as well as the control group also reported UBMS services. In the light of the fact that UBMS is a form of Upward Bound, equally intensive and typically serving more academically-prepared students than regular UB, not taking into account that 12-14 percent of those assigned to the control group were then given the UBMS opportunity and service confounds the random assignment requirement of mutually exclusive treatment and control group with regard to the treatment. The fifth-follow-up report TOT/CACE analyses does recognize UBMS as an equivalent service.

Equivalent Treatment—Regular Upward Bound. The reported percentages for control group crossover into regular UB (about two percent) apparently come from project directors and may be underestimates. Although there were detailed questions about other supplemental services received on the student follow-up surveys, there were not clear questions on the surveys designed to measure Upward Bound participation by the control group, as they were skipped out of questions about regular UB services that were given to those in the treatment group.

¹⁸ Control group members were given a list of specific and general programs that did not contain the name “regular UB program” and could indicate in an “other specify” space that they were in UB. They were asked about UBMS participation.

¹⁹ Information was collected on the surveys about length of participation and type of programs on the various surveys that could be analyzed in more detail than we are able to do in this paper.

²⁰ The Mathematica project sample frame included projects that had at least three years of grant participation at the time of sample selection and excluded projects that were first-time grantees in the competition immediately preceding the study.

Study Sample Dropout Issues

Another factor related to implementation of random assignment “on the ground” is that students may have completed their baseline surveys that served as applications to the *Horizons* waiting list and random assignment sample frame several months before they were eligible to enter the program (entrance is usually in the summer or the fall start of the academic year). By the time entrance into the program was a possibility (e.g., they got out of middle school), they may have moved away from the area. This is especially significant as about 56 percent of the sample reported grade 8 or below as the last grade completed on the baseline survey. Mobility among low-income students is high. The national evaluation of GEAR UP middle school report (Standing et al. 2008) found that 17 percent of students sampled in the 7th grade had moved out of the target school by the time they were re-surveyed in the 8th grade. While every attempt was made to ensure that the person randomly selected for UB was given the “opportunity” by being invited to participate, the study conductors could not control student mobility or parent permission issues that may have made it impossible to contact the student and give them the opportunity or ensure participation in the treatment.

Due to these factors, about 26 percent of those randomly assigned to the treatment group were reported on the randomization file as being dropouts from the *Horizons* waiting list. All of these cases have been maintained in the ITT grouping as “opportunity” or “intent to treat” cases. The first follow-up survey found that 40 percent of the treatment sample were not participating in UB at that time (1994) and about 18-20 percent indicated they had never participated in any UB activities since the study began. A portion of the non-participants reported that they could not remember ever being given the opportunity to participate. Others indicated that the reasons for not participating were their family moved away, they went into another program, or parents would not let them participate. We cannot tell from this study what the typical “no show” or “early dropout” rate was for UB at the time due to the fact that study requirements changed the normal recruitment process to ensure twice the number of openings with an earlier broader recruitment. Another factor that should be noted is that those on the *Horizons* waiting list, the projects most wanted to serve, and who were considered as “must serves” were eliminated from the study (193 *Horizons* applicants were selected with certainty and were removed from the random assignment study with their weights redistributed).²¹

Other Pre-College Support or Supplemental Services (Non UB or Non-UBMS Services)

Participants who completed the baseline surveys to get on the *Horizons* waiting list may also have previously participated in pre-college programs. About 30 percent of the sample indicated on the baseline survey that they had pre-college support services prior to random assignment. With regard to participation after random assignment, some TRIO project directors who participated in the study have argued that in some cases applicants not selected for random assignment into UB were put into alternative services precisely because of their not being randomly selected into Upward Bound. Altogether, about 76 percent of the total sample (treatment and control group combined) reported they had pre-college support or supplemental services with some academic focus before or after their baseline survey. The third follow-up report indicated that about 56 percent of the *Horizons* UB study control group was reported to have received other (non-UB) services after random assignment compared to 41 percent of the UB group (Myers et al. 2004). With regard to TRIO specific services, about 29 percent reported some other TRIO services that may have included UBMS and Talent Search (TS) on the follow-up surveys. However, this figure may underestimate the extent of other TRIO services, as study participants were not asked on the baseline survey about TRIO specific services, only as whether they had any pre-college support or supplemental services. These questions were only asked on the follow-up surveys covering the period after random assignment.

²¹ This group of applicants presumably had no chance of selection into the study—while a portion of project staff resources was spent serving these students, their effect was removed from the study of impact. It is unknown what impact, if any, this may have had on the overall treatment effect. As might be expected, initial examination of these cases (included in data collections through the third follow-up) indicated that they had higher postsecondary participation rates than the randomly-assigned cases. At the start of the study applicant base weights were adjusted upward based on this exclusion.

Reported Service Receipt Levels

Table 4 summarizes information on reported participation in Upward Bound or Upward Bound Math-Science, and information on whether a study participant who did not report UB or UBMS reported any other pre-college support or supplemental service program participation.²² As shown, being randomized into the treatment group for the UB study is associated with having higher rates of reporting some form of service. There is a 32 percentage point difference in whether the student reported having ever participating in a pre-college support or supplemental voluntary service between the treatment and control group (92 percent of treatment group had some form of service reported, compared with 60 percent of controls). As noted above, at least 12 percent of the controls reported or were reported as having participated in regular UB or UBMS. Another 47 percent of the control group reported they had some other type of non-UB/non-UBMS service either before or after randomization. All together about 60 percent of the control group reported or were reported to have received/participated in some pre-college support or supplemental service program that had an academic component.

TABLE 4. Number and percent of study sample participating in UB or UBMS and other pre-college support or supplemental service programs with academic components, by treatment and control group status
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

	Random Assigned Treatment		Random Assigned Control		Total Horizons Study	
	Unweighted	Poststratified Weighted	Unweighted	Poststratified Weighted	Unweighted	Poststratified Weighted
Total	1,524 (100%)	21,866 (100%)	1,320 (100%)	21,866 (100%)	2,844 (100%)	43,732 (100%)
Reported participated in UB or UBMS service	1,247 (82%)	17,843 (82%)	180 (14%)	2,702 (12%)	1,427 (50%)	20,545 (47%)
Reported participated in “another” not UB and not UBMS pre-college support or supplemental service program only	128 (8%)	2,332 (11%)	618 (47%)	10,513 (48%)	746 (26%)	12,845 (29%)
Did not report participation in any type of (UB, UBMS, or other) pre-college support or supplemental service program	149 (10%)	1,690 (8%)	522 (40%)	8,651 (40%)	671 (24%)	10,342 (24%)
Reported participated in any type (UB, UBMS, or other) of pre-college support or supplemental service program	1,375 (90%)	20,176 (92%)	798 (61%)	13,215 (60%)	2,173 (76%)	33,390 (76%)

NOTE: Percents given in parentheses. UB = Upward Bound; UBMS = Upward Bound Math-Science. Weighted data use poststratified weights for longitudinal file.

SOURCE: Data tabulated January 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; and federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

To supplement the ITT analysis which focused on a narrow definition of being given the “UB opportunity,” and the TOT/CACE analyses of those participating or given equivalent UBMS services, we include some observational quasi-experimental analyses exploring the association of participating in “any type of service” compared to no service reported participation. We also compare participation in UB/UBMS services with participation in another non-UB/non-UBMS service only (presumably less intensive).

Our consideration of these issues was influenced by Heckman, Hohman, Smith, and Khoo’s (2000) reanalysis of the Job Training Partnership Act (JTPA) studies in which they considered the interpretation of evidence from social experiments when persons randomized out of a program being evaluated have good substitutes for it, and when persons randomized into a program do not enter the program or drop out. Using data from an experimental evaluation of JTPA classroom-training programs, they documented the empirical importance of control group substitution and treatment group dropping out. They note that “evidence that one program is ineffective relative to close substitutes is not evidence that the type of service provided by all of the programs is ineffective, although that is the way experimental evidence is often interpreted” (Heckman et al. 2000).

²² Additional information from the participant surveys is available on grades/years of participation and whether the program was academic or summer. Some limited information is also available on frequency of services. The information is limited in that students were in different grades at the time of the various rounds of the surveys, so the same information is not necessarily there for each student. Nevertheless, it is possible to use the information to estimate whether the student reported participation or not.

Our approach in this paper is to try to present as much observational information on the extent of equivalent or similar services receipt, and the extent of non-participation, as is available and to include additional modeling of the associations between services and outcomes to complement the Intent to Treat (ITT) analyses of those randomly assigned to be given the UB opportunity. Although instrumental variables regression controls for selection effects among the variables present in the models, it should be noted that these estimates remain subject to unobserved selection effects among factors not represented in our models.

SUMMARY OF STUDY ISSUES AND ALTERNATIVE ANALYSES

In summary, the major analyses decisions manifest in this report are:

- **Use of a complete longitudinal file.** To correct for survey non-response bias, except where noted, we do the analyses on a longitudinal file consisting of all cases and not one that is based only on those who responded to various survey rounds.
- **We use administrative data primarily from the federal student financial aid (SFA) file matching to supplement the survey data and provide data on missing survey non-respondents.** National Student Clearinghouse data is used cautiously for degree information, but not for enrollment as the most applicable period for postsecondary entrance was 1995-97 and NSC coverage was reported to be 25 percent by 1996. NSC data on postsecondary degree information was not collected until later and has been sporadic especially for less than four-year degrees.
- **Standardization on expected high school graduation dates in deriving the outcome variables.** We derived expected high school graduation year (EHSGY) using baseline survey data with a correction for early responders to the baseline, and we constructed dependent variables that are standardized to this date.
- **Sensitivity analysis of weighting and outlier issues.** In light of sample design flaws, and bias in favor of the control group issues, we present weighted and unweighted results; and results with and without the inclusion of Project 69—considered an outlier based on the combination of the large weight (26 percent of total) and the treatment-control non-equivalencies on educational expectations and academic factors that introduce bias into the overall sample.
- **Additional quasi-experimental design.** We use observational analyses that explore substitution and study dropout issues using instrumental variable regression with groupings that include recognition of UBMS participation and also examine effects of any other pre-college support or supplemental services participation.

MODEL DESCRIPTION

Control Variables Used in Models

The models we use control for sex, race/ethnicity, low-income and first-generation status, educational expectations, grade on baseline file, grade on the student selection form, and whether the participant reported he had participated in pre-college supplemental services prior to random assignment. These variables are quite similar to those used in the Mathematica analyses except for additional controls for grade on baseline file rather than only the grade on the student selection (SS) form which has less variation in grade and reflects completion over an 18-month period. We also include a control for reported participation in pre-college supplemental services prior to random assignment. It should be noted that educational expectations as reported on the baseline survey reflect measures at different points in time and this limits its utility as a control variable. This is also true for the variable reflecting past participation in pre-college support or supplemental services. Additional work is needed to determine the extent to which this is a source of confounding. Like Mathematica, we did not include variables on academic performance in the 9th grade due to the fact that UB participation often starts in the 9th grade. This leaves the non-equivalencies between treatment and control group on academic indicators introduced by Project 69 uncontrolled for in the models presented. It is another reason why the estimates without Project 69 are deemed to be less biased than those for the total sample. It should also be noted with regard to the sub-group analyses that the poststratification done to make the sum of the weights for the treatment and control group equal per project would no longer be intact in the subgroup analyses. Appendices B and D contain selected examples of complete model results, and give a complete list of the control variables used in the models.

Dependent Variables Used in the Analyses

In the analyses to follow in the body of this paper we present results for the following outcome variables:

- **Evidence of postsecondary attendance within +1 (18 months) and +4 of expected high school graduation year (EHSGY).** Two measures were constructed—one for evidence of attendance by -1 to +1 of EHSGY (for example, expected high school graduation year is 1996, and first evidence of enrollment is in 1996 or 1997) and another for evidence by +4 of EHSGY.²³ Sample members were defined as having evidence of postsecondary within +1 or +4 of EHSGY if they reported first postsecondary attendance on any one of the applicable follow-up surveys (first through fourth) within the time frames, or were on the federal student financial aid (SFA) files as an applicant within the time frames.²⁴ Expected high school graduation year was tabulated based on information from the baseline survey (QB1) with a correction for early baseline completion.
- **Applied for financial aid.** Two measures were constructed—one for being on the federal student financial aid file by -1 to +1 of EHSGY and one for +4 of EHSGY. SFA data from 1994-95 to 2003-04 were used.
- **Degrees or credentials.** Five measures are analyzed. 1) evidence of any degree or credential as reported by the fourth follow-up survey responders with non-response adjusted weights; 2) evidence of any degree or credential using the fifth follow-up survey responders only with a non-response adjusted weight; 3) evidence of an degree or credential using a longitudinal file with fifth follow-up survey responses combined with NSC information; 4) evidence of a bachelor's (BA) degree within +6 of EHSGY as reported on any one of the applicable follow-up surveys, the NSC data, or a Pell award file variable giving indication of BA graduation expected in the year; and 5) evidence of a BA in +8 years using same sources as for +6 years; but using first follow-up data for the standardization by EHSGY. All of these measures have some coverage and non-response bias issues that are noted in discussion of the model results.

²³ Due to the fact that some sample members used a 1991-92 reference for the baseline survey grade rather than the 1992-93 reference a correction was added to the derived variable that included those who had evidence of enrollment from -1 to +1 of the EHSGY.

²⁴ For postsecondary attendance, the aid applicant status was used as indication of enrollment rather than the Pell Award file due to the income requirement for Pell Award. However, models were also run using Pell Award criteria with similar results (see appendix table E-2 and E-3). In tabulation of this variable, we excluded information from the National Student Clearinghouse as coverage was deemed to be too low in the years of most interest (1995-1997).

Treatment and Control Groups Used in Analyses

In the series of models presented below we make four sets of comparisons. These are defined as follows:

1. **ITT—original random assignment grouping.** The variable obtained from the random assignment file (FFUTC). It is the same as that used in each report published from the study. By way of transparency, we note that 26 percent of the treatment group were reported by the projects to have “dropped out” of the *Horizons* waiting list at the time of random assignment or shortly thereafter. About 18 percent of the treatment group reported on the first follow-up that they had not participated in any activities of UB. It should also be noted that on the first follow-up, at least 70 cases reported that they had never been given or could not remember being given the opportunity to participate. This ITT group is known as “having the UB opportunity.”
2. **TOT—UB/UBMS participation compared to no UB and no UBMS participation.** This grouping is used in instrumental variables two-stage regression models that observe outcomes for those for whom we have some evidence that they received at least some UB or UBMS treatment. We have evidence that about 12 percent of those assigned to the random assignment control group entered UBMS or UB and that about 18 percent of the random assignment treatment group did not get any UB or UBMS.
3. **UB/UBMS participation compared to non-UB/non-UBMS “other” pre-college support or supplemental service program participation.** Using instrumental variables two-stage regression, this observational model compares those participating in UB/UBMS with those reporting participation in other non-UB/UBMS pre-college support or supplemental service. This comparison deletes those not reporting any service receipt from the analyses and focuses on comparing UB/UBMS services with “other pre-college support services” that may have been received by those not participating in UB/UBMS.
4. **Any pre-college program participation compared to no reported supplemental service participation.** This model compares those reporting getting some pre-college support or supplemental services with those not reporting any service. Some 92 percent of the treatment and 60 percent of the controls reported some pre-college support services, and 76 percent overall reported some pre-college support services.

4. Results

Tables 5 to 14 present model-based results from the logistic and instrumental variables regressions. Summary tables show weighted and unweighted results with and without the outlier project (69). Selected complete model results are also provided in Appendices B and D. Given the historical use of weighted data with the outlier project included to make published estimates for this study, this is the default for results discussed in the text. However, a careful review of the data suggests that the estimates without Project 69 are less subject to the effects of the large relative weights and more importantly to treatment and control group bias in favor of the control group and in this sense can be considered to be more robust.

EVIDENCE OF POSTSECONDARY ATTENDANCE

Table 5 shows the results of the ITT logistic and TOT instrumental variables regression models for weighted and unweighted models for the outcome variables indicating evidence of postsecondary entrance within +1 (about 18 months) and +4 of expected high school graduation year (EHSGY). As noted for these outcome variable calculations, we used all applicable follow-up surveys and the federal student financial aid (SFA) files.

Overall about 68 percent of the study sample showed evidence of entering postsecondary within +1 (within two fall starts of the academic year or about 18 months following a June high school graduation) and about 70 percent within +4 of EHSGY. Estimated postsecondary entry rates were at about 78 percent by the end of the study period in 2003-04. We note for context purposes that the rates of college going among the *Horizons* study sample are not typical of rates for the US in general and especially for low-income students in the period. For example, the National Center for Higher Education Management Systems (NCHEMS) national estimate across the total U.S. population (all income groups) of the “chance for entering postsecondary by age 19” was 39.7 percent in 1996, 38.8 in 1998, and 38.0 in 2004.²⁵ Census Bureau Current Population Survey (CPS) estimates for the percent of high school *graduates* (excludes high school dropout population) who entered postsecondary by October following high school graduation was 63 percent in 1995 for the total U.S. population and was 41 percent for low-income population (U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys, 1972–2000). The National Educational Longitudinal Study (NELS:88) following a nationally- representative cohort of 8th grade students found that by the year 2000 -- eight years after expected high school graduation date -- about 76 percent of the cohort reported some postsecondary attendance and among low SES students the percentage was 52.1 percent (Ingles et al. 2002). We note this only to establish that college going rates for those applying to the *Horizons* waiting list (treatment and control group) were generally higher than those reported for the U.S. population as a whole in the period and were seemingly much higher than for the low-income population.²⁶

ITT Estimates. All model-based estimates (weighted and unweighted and with and without the outlier Project 69) of differences in the probability of having evidence of postsecondary entrance for those randomly assigned to be given the “UB opportunity” compared to those not given the opportunity (Intent To Treat or ITT estimates) were statistically significant (table 5). The weighted ITT estimated probability (pr) was 6.9 percentage points higher for those given the UB opportunity compared to those not given the UB opportunity—an estimated increase from 66.0 to 72.9 for having evidence of entering postsecondary within +1 year of EHSGY. Appendix table B1 provides a detail of model results for this ITT estimate. Using an odds ratio to convey effect size this indicates that the odds of postsecondary were 1.48 times what they would have been without being given the “UB opportunity.” Removing the bias introducing outlier Project 69, there was a 9.1 percentage point difference (64.3 to 73.3) between treatment and control group for the ITT estimates (odds ratio of 1.68 times what they would have been without the “opportunity”). ITT effects for the outcome variable evidence of entering postsecondary within +4 of EHSGY were 6.1 for the entire sample and 8.3 without Project 69.

²⁵ The third follow-up UB report using data from survey responders only with a non-response adjustment to the weights estimated that 72 percent of the total sample reported entering postsecondary by 1998-99. Estimates based on “survey responders only” are slightly higher than those based on a longitudinal file of all sample members rather than only survey responders.

²⁶ It should also be noted that the number served by UB/UBMS per year (about 63,000) is about 1.7 percent of the number of 9-12 graders reported eligible for free lunch per year in the period (3.6 million) (U.S. Department of Education, Federal TRIO Programs, Upward Bound performance reports, 2000–01).

TOT/CACE Estimates. For the instrumental variables regressions, estimating the effect of actual participation in UB or UBMS, the difference (10.9 percentage points) between participants and non-participants for evidence of postsecondary entrance within +1 of EHSYG was significant (62.5 to 73.5) for the complete weighted sample. Differences were 14.2 percentage points for the estimates without Project 69 (60.4 to 74.6).

TABLE 5. Evidence of entering postsecondary within +1 (18 months) and within +4 of expected high school graduation year (EHSYG) for ITT and TOT models:

National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

All sampling strata		One outlier project removed (the remainder represents 74 percent of Horizons waiting list)	
Given Opportunity (ITT)	Participated in UB/UBMS (TOT/CACE)	Given Opportunity (ITT)	Participated in UB/UBMS (TOT/CACE)
Evidence of postsecondary entrance within +1 (18 months) of EHSYG			
pr-T = 72.9, pr-C = 66.0 Difference = 6.9**** (pr T = 74.7, pr C = 67.9 Difference = 6.8****)	xb T = 73.5, xb C = 62.5 Difference = 10.9**** (xb T = 75.7, xb C = 64.6 Difference = 11.1****)	pr T = 73.3, pr C = 64.3 Difference = 9.1*** (pr T = 74.8, pr C = 67.6 Difference = 7.2****)	xb T = 74.6, xb C = 60.4 Difference = 14.2**** (xb T = 75.8, xb C = 64.2 Difference = 11.6****)
Evidence of postsecondary entrance within +4 of EHSYG			
pr-T = 74.5, pr-C = 68.3 Difference = 6.1*** (pr T = 76.8, pr C = 70.3 Difference = 6.5****)	xb T = 74.7, xb C = 64.6 Difference = 10.1*** (xb T = 77.6, xb C = 66.7 Difference = 10.8****)	pr T = 75.4, pr C = 67.0 Difference = 8.3*** (pr T = 77.0, pr C = 70.1 Difference = 6.9****)	xb T = 76.2, xb C = 62.7 Difference = 13.5*** (xb T = 77.8, xb C = 66.4 Difference = 11.4****)

*/**/***/**** Significant at 0.10/0.05/0.01/0.00 level; NS = not significant at the .10 level or below. UB = regular Upward Bound; UBMS = Upward Bound Math-Science; ITT = intent to treat; TOT = treated on treated; CACE = complier average causal effect; T = treatment; C = control or comparison; pr = estimated probability from STATA logit regression; xb = linear prediction from STATA ivreg (instrumental variables regression).

NOTE: Unweighted results are given in parentheses. Weights used in these analyses were poststratified to equalize treatment and control group per project and to reflect different probabilities of selection within projects. Unequal weighting in this study leads to large design effects and reduces the effective sample size. There were 46 first-stage strata, several of which were represented by only one project, including one project that represented 26 percent of the total weight. In addition, there were substrata within projects so that there were 339 total strata. Sensitivity analysis of the one-project stratum with the unusually large weight (Project 69) revealed that there were also treatment-control group non-equivalencies in favor of the control group on variables known to be related to the outcomes of interest to the study. For these reasons model results are presented with and without Project 69 considered to be a bias introducing outlier. All models use STATA software taking into account the complex sample design. The models also attempt to control for baseline treatment/control group differences by including baseline variables including sex, grade at baseline, educational expectations, race/ethnicity, eligibility status, low income or first generation only, participation prior to random assignment, and grade at entrance into program. Appendix B gives examples of actual model results for weighted results. ITT (Intent to Treat)—logistic regression is based on the original random assignment grouping and represents those randomly assigned to be given or not given the UB opportunity by projects. Note about 26 percent of the treatment sample were coded as having dropped out of the study waiting list at the time of being given the UB opportunity. Based on first follow-up survey data, about 18 percent of the weighted treatment group reported not ever having participated in any UB activity, and about 12-14 percent of the control group had evidence of UB or UBMS participation. TOT (Treatment on Treated)—sometimes referred to as Complier Average Causal Effect (CACE) tabulated using STATA, software (svy: ivreg—procedure). To control for participation selection effects, this two-stage regression first models participation using the random assignment variable as an instrument and then in the second stage models the effect of participation. Evidence of postsecondary calculated based on reported year of first postsecondary entry as reported on any of the UB applicable follow-up surveys or for non-responders to all surveys being found on the student aid files as having applied for aid within +1 year (about 18 months) and within +4 years of expected high school graduation year (EHSYG). Odds ratio for logistic regression results may be tabulated by prT (1-prC)/prC(1-prT).

SOURCE: Data tabulated December 2007 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; and federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

COMPARISON RELATIVE TO THIRD FOLLOW-UP CONCLUSIONS

The third follow-up report (Myers et al 2004, Table III.1) estimated that enrollment in any postsecondary school, based on follow-up (conducted in 1998-99) survey data alone adjusted for non-response, was 71 percent for the control group and 74 percent for the treatment group. The difference was not statistically significant. Their analyses differs from the one presented in this paper in table 5 in that the third follow-up report models used only third follow-up survey data, used a file made up only of responders to the survey with a non-response adjustment, did not use administrative records, and did not standardize the outcome variable by expected high school graduation year (EHSGY).

It is legitimate to ask if Mathematica had included their same analyses based on only third follow-up survey responders, without the bias introducing Project 69, would they still have arrived at different conclusions or at least seriously qualified conclusions in that report. The indications are that the answer is yes. Table 6 below presents a number of weighted relevant comparisons for postsecondary entrance with and without Project 69 using a similar but not identical model to the one forming the basis of the third follow-up report. The first three rows are based on third follow-up responders with the weights adjusted for non-response as was done in the published report. The first row does not include any standardization for EHSGY and also does not use any other survey rounds of information or administrative records. The second row adds standardization to 18 months but relies only on responders to the third follow-up with the non-response adjusted weight. The third row, also based on third follow-up responders only, adds use of other surveys (not all sample members had 18 months after EHSGY by the time of the follow-up) and aid file information. The last row includes the complete longitudinal sample file of responders and non-responders to the survey, includes information from all applicable surveys, uses the aid files, and also standardizes the outcome measures to arrive at the same result as in table 5 and figure I in the Executive Summary. The first thing to notice is that all models in the table are significant when Project 69 is excluded. Effect sizes and significance levels become seemingly larger as more information and precision is added to the tabulation of the outcome measures, and as the estimates are based on both responders and non-responders to the surveys. Appendix D gives more detail on some of the actual model results.

TABLE 6. Various model results using third follow-up survey responders only and using full longitudinal sample for evidence of entering postsecondary for ITT and TOT models
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

All sampling strata		One project with bias removed (the remainder represents 74 percent of Horizons waiting list)	
Given Opportunity (ITT)	Participated in UB/UBMS (TOT/CACE)	Given Opportunity (ITT)	Participated in UB/UBMS (TOT/CACE)
Third follow-up survey responders only with no administrative records and no standardization of outcome to expected high school graduation year (EHSGY); uses non-response adjusted weight			
pr-T = 76.4, pr-C = 75.4 Difference = 1.0 NS	xb T = 75.4, xb C = 71.7 Difference = 3.7 NS	pr T = 77.8, Pr C = 72.2 Difference = 5.7**	xb T = 77.6, xb C = 67.7 Difference = 9.9*
Third follow-up survey responders only with no administrative records or other applicable surveys, but with standardization to +1 (18 months) of expected high school graduation year; uses non-response adjusted weight			
pr-T = 71.2, pr-C = 68.2 Difference = 3.0 NS	xb T = 71.4, xb C = 65.2 Difference = 6.1 NS	pr T = 73.3, Pr C = 65.8 Difference = 7.5***	xb T = 74.0, xb C = 61.9 Difference = 12.1***
Third follow-up survey responders only – standardized to +1 (18months) of EHSGY and uses all applicable surveys and Student Financial Aid (SFA) records; uses non-response adjusted weight			
pr-T = 75.9, pr-C = 71.4 Difference = 4.6*	xb T = 76.0, xb C = 67.8 Difference = 8.2 NS.11	pr T = 77.8, Pr C = 70.0 Difference = 7.8***	xb T = 78.2, xb C = 65.6 Difference = 12.6***
Includes all sample members, standardized to +1 (18months) of EHSGY and uses all applicable surveys and SFA records; uses poststratified adjusted weight			
pr-T = 72.9, pr-C = 66.0 Difference = 6.9****	xb T = 73.5, xb C = 62.5 Difference = 10.9****	pr T = 73.3, Pr C = 64.3 Difference = 9.1***	xb T = 74.6, xb C = 60.4 Difference = 14.2****

*/**/***/**** Significant at 0.10/0.05/0.01/0.00 level; NS = not significant at the .10 level or below. UB = regular Upward Bound; UBMS = Upward Bound Math-Science; ITT = intent to treat; TOT = treated on treated; CACE = complier average causal effect; T = treatment; C = control or comparison; pr = estimated probability from STATA logit regression; xb = linear prediction from STATA ivreg (instrumental variables regression).

NOTE: Please see Table 5 for detailed notes.

SOURCE: Data tabulated December 2007 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; and federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

OBSERVATIONAL MODELS OF UB/UBMS COMPARED TO OTHER SERVICES

Comparing UB/UBMS participants with those sample members receiving another (presumably less intensive) non-UB/non-UBMS service, there is a significant 9.1 percentage point difference for +1 of EHSYG entrance in the weighted instrumental variables regression estimates with Project 69, and a 13.3 percentage point difference without Project 69 using the same controls as used in the previous models (Table 7).

TABLE 7. Evidence of Postsecondary Entrance within +1 (18 months) and within +4 of expected high school graduation year (EHSYG for observational models comparing types of service receipt National Evaluation of Upward Bound, study conducted 1992-93 to 2003-2004

All sampling strata		One outlier project removed (remainder represents 74 percent of Horizons waiting list)	
Participated in UB/UBMS compared with participated in other non-UB/non-UBMS pre-college support or supplemental services only (observational –instrumental variables regression)	Any pre-college support or supplemental services reported compared with no services reported (observational –instrumental variables regression)	Participated in UB/UBMS compared with participated in other non-UB/non-UBMS pre-college support or supplemental services only (observational –instrumental variables regression)	Any pre-college support or supplemental services reported compared with no services reported (observational –instrumental variables regression)
Evidence of postsecondary entrance within +1 of EHSYG			
xb T = 74.4, xb C = 65.3 Difference = 9.1*** (xb T = 76.2, xb C = 66.8 Difference = 9.3****)	xb-T = 73.5, xbC = 48.6 Difference = 25.0**** (xb T = 75.8, xb C = 51.7 Difference = 24.1****)	xb T = 75.0, xb C = 61.7 Difference = 13.3**** (xb T = 76.3, xb C = 66.3 Difference = 10.1****)	xb T = 74.3, xb C = 44.6 Difference = 29.8**** (xb T = 75.9, xb C = 51.1 Difference = 24.7****)
Evidence of postsecondary entrance within +4 EHSYG			
xb T = 75.6, xb C = 67.5 Difference = 8.2*** (xb T = 78.2, xb C = 68.7 Difference = 9.5****)	xb-T = 74.8, xb-C = 51.4 Difference = 23.5*** (xb T = 77.7, xb C = 54.1 Difference = 23.6****)	xb T = 76.5, xb C = 64.4 Difference = 12.1**** (xb T = 78.4, xb C = 68.2 Difference = 10.2****)	xb T = 75.9, xb C = 47.8 Difference = 28.1**** (xb T = 77.8, xb C = 53.7 Difference = 24.1****)

*/**/****/***** Significant at 0.10/0.05/0.01/0.00 level; UB = regular Upward Bound; UBMS = Upward Bound Math-Science; T = treatment; C = control or comparison; xb = linear prediction from STATA ivreg (instrumental variables regression). Odds ratio = $\text{prT}(1-\text{prC})/\text{prC}(1-\text{prT})$.

NOTE: Unweighted data given in parentheses. Please see table 5 for detailed notes.

SOURCE: Data tabulated January 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; and federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

Models estimating the association between reporting any pre-college support or supplemental services and entering postsecondary within +1 were highly significant and showed large differences of 25 percentage points for the total sample and 30 percentage points for the sample without the outlier project (Table 7). It should be noted that the later estimates would seem to be especially subject to selection bias related to seeking services.

PRESENCE ON THE FEDERAL AID APPLICATION FILES

Overall, 57 percent of the entire sample (treatment and control) were found on the federal student financial aid (SFA) files as applicants within +1 of the EHSYG and 63 percent were found on the file within +4 of the EHSYG (data not shown in tables). Tables 8 and 9, and Figure 8, give model results using only presence on the SFA files as the outcome variable. The “applied for aid” outcome variable, while not a measure of postsecondary entrance itself, in addition to being an important outcome for the program, is of considerable value to the study. Among the study measures we have available to us, it is the least subject to the non-response bias that is a factor with regard to the survey responder data; or to the non-coverage bias that is a serious concern with using the National Student Clearinghouse (NSC) data especially for these years. As such it provides some validation for the results presented above in Table 5, which remain subject to response bias. This measure is also of interest as an outcome measure in itself, as it pertains to one of the major legislative goals of the TRIO programs. TRIO programs are authorized under the same legislation as the federal aid provisions to help make low-income students aware of and better prepared to use the federal aid program.

ITT and TOT/CACE Estimates. Evidence in Table 8 indicates that the UB program was effective in increasing the rates at which low-income students applied for federal aid. Being given the UB opportunity (ITT estimate) resulted in about a 5.7 percentage point increase in the likelihood of being found on the aid files within +1 of EHSYG and a 6.7 percentage point increase in being found within +4 of EHSYG. When Project 69 is removed the effects were 8.1 and 7.3 percentage points respectively. The effects of TOT UB/UBMS participation estimates were 9.3 and 10.6 percentage points for being found on the aid files within +1 and +4 of EHSYG respectively. Without the outlier project, differences were 12.6 and 11.9 percentage points respectively (Table 8).

TABLE 8. Appearance on the federal student financial aid (SFA) files within +1 (18 months) and within +4 of expected high school graduation year (EHSYG) for ITT and TOT models
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

All sampling strata		One outlier project removed (remainder represents 74 percent of Horizons waiting list)	
Given UB Opportunity (ITT)	Participated in UB/UBMS (TOT/CACE)	Given UB Opportunity (ITT)	Participated in UB/UBMS (TOT/CACE)
On federal Student Financial Aid (SFA) file as applicant within +1 of EHSYG			
pr-T = 61.6, pr-C = 55.9 Difference = 5.7*** (pr T = 65.6, pr C = 59.6 Difference = 6.1****)	xb T = 62.9, xb C = 53.6 Difference = 9.3**** (xb T = 67.0, xb C = 57.2 Difference = 9.8****)	pr T = 64.5, pr C = 56.4 Difference = 8.1**** (pr T = 66.0, pr C = 59.7 Difference = 6.3****)	xb T = 66.2, xb C = 53.6 Difference = 12.6**** (xb T = 67.3, xb C = 57.2 Difference = 10.1****)
On federal Student Financial Aid (SFA) file as applicant within +4 of EHSYG			
pr-T = 65.4, pr-C = 58.7 Difference = 6.7**** (pr T = 69.1, pr C = 63.3 Difference = 5.8****)	xb T = 66.7, xb C = 56.1 Difference = 10.6**** (xb T = 70.2, xb C = 60.5 Difference = 9.7****)	pr T = 67.7, pr C = 60.4 Difference = 7.3*** (pr T = 69.4, pr C = 63.6 Difference = 5.8****)	xb T = 69.1, xb C = 57.1 Difference = 11.9*** (xb T = 70.4, xb C = 60.7 Difference = 9.7****)

*/**/***/**** Significant at 0.10/0.05/.01/0.00 level; NS = not significant at the .10 level or below.

NOTE: Unweighted data given in parentheses. Please see table 5 for detailed notes. UB = regular Upward Bound; UBMS = Upward Bound Math-Science; ITT = intent to treat; TOT = treated on treated; CACE = complier average causal effect; T = treatment; C = control or comparison; pr = estimated probability from STATA logit regression; xb = linear prediction from STATA ivreg (instrumental variables regression).

SOURCE: Data tabulated January 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to - 2003-04; and federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

Table 9 shows results of instrumental variables regression modeling the observational comparison between outcomes for those reporting UB/UBMS participation and those reporting only some other non-UB/non-UBMS pre-college support or supplemental services receipt. All comparisons in Table 9 are significant and positive for UB/UBMS participation. Rates of being found on the aid file within +1 of EHSYG were 8.2 percentage points higher for those with UB/UBMS participation compared to those with another type of non-UB/non-UBMS service. When the outlier project is removed there was a difference of 11.7 percentage points for predicted rates of evidence of postsecondary entry within +1 year.

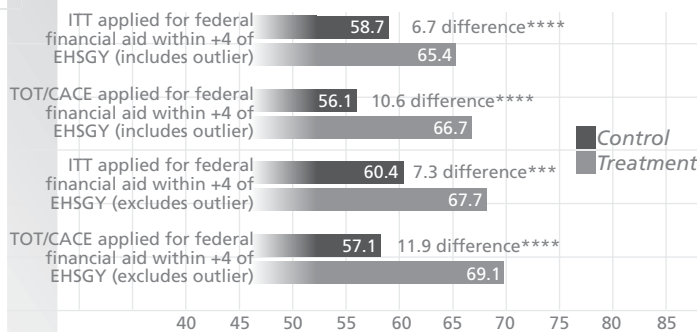


FIGURE 8. Estimated rates of application for federal student financial aid (SFA) within +4 of expected high school graduation year (EHSYG) for Upward Bound Opportunity (ITT) and Upward Bound/Upward Bound Math-Science Participation (TOT/CACE): National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

*/**/**** Significant at 0.10/0.05/.01/00 level; UB = regular Upward Bound; UBMS = Upward Bound Math-Science; ITT = intent to treat; TOT = treatment on treated; CACE = complier average causal effect.

NOTE: Estimated rates from STATA logistic and instrumental variables regression taking into account the complex sample design. Weighted data use poststratified weights. See table 5 in body of the report for detailed notes.

SOURCE: Data tabulated January 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; and federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

TABLE 9. Appearance on the federal financial student aid (SFA) files within +1 (18 months) and within +4 of expected high school graduation year (EHSYG) for observational models comparing types of service receipt National Evaluation of Upward Bound, study conducted 1992-93 to 2003-2004

All sampling strata		One outlier project removed (remainder represents 74 percent of Horizons waiting list)	
Participated in UB/UBMS compared with participated in non-UB/non-UBMS other pre-college supplemental services only (observational-instrumental variables regression)	Any pre-college supplemental services reported compared with no services reported (observational-instrumental variables regression)	Participated in UB/UBMS compared with participated in other non-UB/non-UBMS pre-college supplemental services only (observational-instrumental variables regression)	Any pre-college supplemental services reported compared with no services reported (observational-instrumental variables regression)
On federal student aid file as applicant within +1 of EHSYG			
xb T = 64.1, xb C = 55.9 Difference = 8.2**** (xb T = 67.2, xb C = 59.0 Difference = 8.2****)	xb-T = 63.2, xb-C = 41.2 Difference = 22.0*** (xb T = 67.2, xb C = 45.4 Difference = 21.8****)	xb T = 66.6, xb C = 54.9 Difference = 11.7*** (xb T = 67.6, xb C = 59.2 Difference = 8.4****)	xb T = 66.0, xb C = 39.7 Difference = 26.3**** (xb T = 67.4, xb C = 45.6 Difference = 21.9****)
On federal student aid file as applicant within +4 of EHSYG			
xb T = 67.8, xb C = 58.6 Difference = 9.2**** (xb T = 70.1, xb C = 62.9 Difference = 7.7****)	xb-T = 66.7, xb-C = 42.4 Difference = 24.3**** (xb T = 70.4, xb C = 49.0 Difference = 21.5****)	xb T = 69.6, xb C = 59.3 Difference = 10.3*** (xb T = 70.8, xb C = 63.2 Difference = 7.6****)	xb T = 68.9, xb C = 43.8 Difference = 25.1**** (xb T = 70.6, xb C = 49.5 Difference = 21.1****)

*/**/**** Significant at 0.10/0.05/.01/00 level; NS = not significant at the .10 level or below; UB = regular Upward Bound; UBMS = Upward Bound Math-Science; T = treatment; C = control; xb = linear prediction from STATA ivreg (two-stage instrumental variables regression modeling section effects).

NOTE: Unweighted data given in parentheses. Please see table 5 for detailed notes.

SOURCE: Data tabulated January 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; and federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

DEGREE OR CREDENTIAL ATTAINMENT

Table 10 presents model results containing five postsecondary degree- or certificate-related measures: 1) evidence of any degree or credential as based on fourth follow-up survey responders only with non-response adjusted weights; 2) evidence of any degree or credential based on fifth follow-up survey responders only with a non-response adjusted weight; 3) evidence of an degree or credential based on a longitudinal file made up of all sample members using fifth follow-up survey responses combined with NSC information for non-responders; and 4) and 5) evidence of a bachelor's (BA) degree within +6 and +8 of EHSYG respectively, as reported on any one of the applicable follow-up surveys, the NSC data, or a Pell award file variable giving indication of BA graduation expected in the year.

Comparing these measures is helpful in understanding some of the coverage, survey non-response issues, and weighting issues from this sample. It should also be noted that the first three measures in Table 10 are not standardized by expected high school graduation year (EHSYG). By the end of the study period (2003-04) the sample was distributed as follows in terms of years since EHSYG. By the time of the fifth follow-up about 10 percent of the sample had reached 6 years; 30 percent 7 years; 34 percent 8 years; 19 percent 9 years; and 5 percent had reached 10 years after EHSYG. For this reason we thought it especially important to standardize the Bachelor's degree receipt at the +6 year mark (Table 10). As not all of the sample had reached +8 by the time of the end of the study; the last row in table 10 may under-report BA receipt for the 40 percent that did not have +8 years since high school graduation.

Coverage, Non-Response Bias, and High Weight Issues— for the Estimates of Any Degree or Certificate

Estimates for obtaining any degree or certificate vary depending on the evidence used, and in this area we see further indication of positive survey non-response bias, unequal weighting and NSC coverage issues. Basing the estimate on only responders to the fifth follow-up survey with weights adjusted for non-response, the ITT estimate with Project 69 included for obtaining any degree or certificate is 51.9 percent for the treatment group and 41.4 for the control group—an estimated 10.6 percentage point difference. The TOT estimate is 54.4 for the treatment group and 39.3 for the control group—a difference of 15.2 percentage points. However, when we observe the estimates using a longitudinal file made up of all sample members and we use NSC data for non-responder imputation, we find estimates that are considerably less than those based on only survey results. The estimate using a complete longitudinal file is 35.0 for the treatment group and 30.8 for the control group. It is probable that the estimates based on only fifth follow-up survey responders, overestimates both the percentages having postsecondary credentials, and also the size of the UB positive impact—treatment-control group differences. Conversely, the estimate using fifth follow-up survey plus NSC almost certainly underestimates the percentage of non-responders having degrees or certificates due to NSC lack of coverage for less than 4-year awards. Both sets of estimates show significant effects for Upward Bound, however, the large weights for Project 69 with its emphasis on less than four-year awards is manifest in fifth follow-up survey data estimates which seem to show exaggerated large impacts for UB. The smaller impact estimates without Project 69 would seem be more robust.

Evidence of Attainment of a Bachelor's (BA) Degree within +6 and within +8 years of Expected High School Graduation Year (EHSGY)

For this measure we used a longitudinal file with data from all of the applicable follow-up surveys (second through fifth), a Pell award file variable for “expecting a bachelor's degree within the year,” and the National Student Clearinghouse (NSC) data. Those having evidence of BA attainment from any one of these sources were considered to have evidence and those with no evidence were considered “no's.” Somewhat more confidence can be placed in the NSC data for bachelor's degree due to its higher coverage among four year and above institutions, although caution is still warranted. Descriptively (not comparing treatment and control groups), as noted above, we found that just under 20 percent of the entire UB sample had evidence of a BA in +6 of EHSGY.

Considering the BA within +6 of EHSGY outcome measure, we see the role that the non-equivalencies in educational expectations and academic preparation and large weights introduced by Project 69 may be playing. Weighted estimates with Project 69 are not significant. All unweighted comparisons are significant and weighted estimates without Project 69 are significant and show substantial impacts. For the 74 percent of the sample weight not represented by Project 69, the estimated probability was 17 percent for the treatment group and 13.3 percent for the control group for the ITT comparison (a 28 percent increase); and for the TOT the estimated probability was 21 for the treatment and 14 for the control group (a 50 percent increase) (Table 10). Impact estimates for the BA in +8 of EHSGY variable are quite similar to those for +6.

As can be observed in Table 10 the differences between treatment and control group on educational expectations and academic risk and other variables introduced by Project 69 and unequal weighting are manifest in these results. They also reflect the fact that those who have chosen to work on a bachelor's degree, taking at least four years, would not have completed this degree as quickly as those seeking a lesser degree or certificate. The fact that Project 69 focused on less than four year degrees is manifest in that there is less difference between the impact estimates with and without 69 for award of any degree; while for award of the bachelor's degree weighted results with 69 are insignificant and those without 69 show significant and substantial differences in favor of the treatment group. It should be kept in mind that the Project 69 control group had substantially higher educational expectations than did the treatment group (56 percent expected an advanced degree compared with 15 percent of the treatment group); and that overall there was a 12 percentage point difference between the treatment and control group in favor of the controls expecting an advanced degree at baseline.

NATIONAL RATES FOR COMPARISON

For context purposes we note that the National Center for Higher Education Management Systems (NCHEMS) 1998 national estimate across the total (all income groups) U.S. population of 9th graders was 17 percent for degree completion within 150 percent of program time for those going directly into college from high school.²⁷ The National Educational Longitudinal Study (NELS: 88) following a nationally-representative cohort of 8th grade students found that by the year 2000—eight years after expected high school graduation date—about 26 percent of the cohort reported obtaining a bachelor's degree. However, among the lowest SES quartile, those students most like UB eligible students in family income, the percentage obtaining a BA degree was estimated to be 6.9 percent. Among the NELS: 88 students, whose parents had no college, 11 percent had attained a BA degree (Ingles et al. 2002) after 8 years.

EXPECTATIONS AND ATTAINMENT DIFFERENCES

While the national comparisons indicate that the UB sample degree attainment results are comparable with the national averages and far above those found among low-income students in the period; they are far below the aspirations manifest by the UB sample on their baseline surveys. Additional research is needed to observe what factors contributed to a sizable portion of the UB sample (treatment and control group) not reaching their postsecondary goals. About 97 percent of the sample reported on the baseline survey that they intended to obtain some form of postsecondary credential, about 72 percent indicated they wished to obtain a BA or higher, and over 70 percent had evidence of postsecondary entrance. The follow ups indicate that considerably smaller percentages had evidence of obtaining these postsecondary credentials 6 to 9 years after high school (33 to 47 percent had any postsecondary degree or credential and about 20-24 percent had a bachelor's degree) by the end of the study period (2003-04).

OBSERVATIONAL ANALYSES COMPARING TYPES OF SERVICES

Observational analyses using instrumental variables regression comparing those receiving UB/UBMS with those receiving only some other type of services and comparing those receiving any services with those with no reported services for the BA in +6 are also sensitive to weighting and to inclusion of the outlier project (table 11). All unweighted results are significant. Weighted results with the outlier project comparing UB/UBMS with those getting other services only are not statistically significant; while weighted results without the outlier are significant. For the 74 percent of *Horizons* applicants not represented by Project 69, there is a significant difference of 5.8 percentage points (21 percent compared with 15.2) or a 37 percent increase in the likelihood of obtaining a bachelor's degree in +6 of EHSGY when comparing those who participated in UB/UBMS with those who participated in some other non-UB/non-UBMS service only.

Also, using instrumental variables regression and comparing those who reported receiving any type of pre-college support services with those who have no pre-college support or supplemental services reported before or after randomization (excluding the outlier project), we find significant effects for the weighted and unweighted comparisons. For example, for attainment of a BA in +6 of EHSGY we find that there was a 14 percentage point difference (20.9 percent for pre-college support service receivers compared to 6.5 percent for those who had no services reported). Weighted results with the outlier project are not statistically significant.

²⁷ The National Center for Higher Education Management Systems (NCHEMS) Information Center, using NCES Common Core Data, NESC IPEDS Residency and Migration Survey, and NCES IPEDS Graduation Rate Survey, estimates that the percentage of 9th graders who graduate from high school on time, go directly to college, return for second year, and graduate within 150 percent of program time was 17 percent in 1998; and 18.4 in 2004.

TABLE 10. Evidence of attainment of any postsecondary degree or certificate and attainment of a BA within +6 of expected high school graduation year (EHSGY) for ITT and TOT models
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

All study sampling strata		One outlier project removed (remainder represents 74 percent of Horizons waiting list)	
Given Opportunity (ITT)	Participated in UB/UBMS (TOT/CACE)	Given Opportunity (ITT)	Participated in UB/UBMS (TOT/CACE)
Evidence of attainment of any postsecondary degree or credential by end of study period—fourth follow-up survey data only with non-response adjustment			
Fourth follow-up survey responders only—evidence of any degree; weighted data uses non-response adjusted weight			
pr-T = 31.2, pr-C = 26.9 Difference = 4.3* (pr T 33.0, pr C = 28.3 Difference = 4.7**)	prT = 33.1, pr C = 26.4 Difference = 6.7* (pr T = 35.1, pr C = 27.7 Difference = 7.4*)	pr T = 30.3, pr C = 25.9 Difference = 4.4 NS.12 (pr T = 32.9, pr C = 27.9 Difference = 4.0**)	xb T = 32.8, xb C = 25.7 Difference = 7.1 NS.14 (xbT = 35.1, xb C = 27.3 Difference = 7.8**)
Evidence of attainment of any postsecondary degree or credential by end of study period—fifth follow-up survey data only with non-response adjustment			
Fifth follow-up survey responders only			
pr-T = 51.9, pr-C = 41.4. Difference = 10.6** (pr-T = 49.0, pr-C = 44.6 Difference = 4.4**)	xb T = 54.4, xb C = 39.3 Difference = 15.2** (xb T = 50.4, xb C = 43.5 Difference = 6.9**)	pr T = 47.5, pr C = 42.6. Difference = 4.9** (pr T = 48.6, pr C = 44.6 Difference = 3.9**)	xb T = 49.3, xb C = 41.5 Difference = 7.8** (xb T = 50.0, xb C = 43.6 Difference = 6.4*)
Evidence of attainment of any postsecondary degree or credential by end of study period—fifth follow-up survey and NSC data			
Fifth follow-up survey and NSC data used			
pr-T = 35.0, pr-C = 30.8 Difference = 4.6*** (pr T = 36.3, pr C = 33.4 Difference = 2.9**)	xb T = 37.4, xb C = 30.7 Difference = 6.7*** (xb T = 38.3, xb C = 33.2 Difference = 5.1**)	pr T = 34.4, pr C = 30.7 Difference = 3.7*** (pr T = 36.2, pr C = 33.3 Difference = 3.0**)	xb T = 37.0, xb C = 30.9 Difference = 6.1*** (xb T = 38.3, xb C = 33.1 Difference = 5.2**)
Evidence of BA in +6 of EHSGY—All applicable follow-up surveys, Pell Award Files, NSC—responders and non-responders included—longitudinal file			
Uses all applicable follow-up surveys, NSC, and Pell graduation variable; standardized to EHSGY; longitudinal file poststratified weight.			
pr-T = 16.9, pr-C = 16.0 Difference = .9 NS (pr T = 18.4, pr C = 16.1 Difference = 2.3**)	xb T = 19.7, xb C = 17.4 Difference = 1.7 NS (xb T = 21.4, xb C = 16.6 Difference = 4.8**)	pr T = 17.0, pr C = 13.3 Difference = 3.7*** (pr T = 18.3, pr C = 15.6 Difference = 2.7**)	Xb T = 21.1, xb C = 14.1 Difference = 7.0*** (xb T = 21.6, xb C = 16.1 Difference = 5.5**)
Evidence of BA in +8 of EHSGY—All applicable follow-up surveys, Pell Award Files, NSC—responders and non-responders included—longitudinal file			
Uses all applicable follow-up surveys, NSC, and Pell graduation variable; standardized to EHSGY using first followup variable; longitudinal file poststratified weight.			
pr-T = 16.6, pr-C = 16.3 Difference = .3 NS (pr T 18.9, pr C = 16.6 Difference = 2.3**)	xb T = 19.1, xb C = 18.0 Difference = 1.1 NS (xb T = 22.0, xb C = 18.2 Difference = 4.8**)	pr T = 17.5, pr C = 13.7 Difference = 3.8*** (pr T = 18.9, pr C = 16.1 Difference = 2.8**)	Xb T = 21.7, xb C = 14.6 Difference = 7.1*** (xb T = 22.3, xb C = 16.6 Difference = 5.7**)

*/**/***/**** Significant at 0.10/0.05/0.01/0.00 level; NS = not significant at the .10 level or below; UB = regular Upward Bound; UBMS = Upward Bound Math-Science; BA = bachelor's degree; ITT = intent to treat; TOT = treated on treated; CACE = complier average causal effect; T = treatment; C = control or comparison; NSC = National Student Clearinghouse; pr = estimated probability from STATA logit regression; xb = linear prediction from STATA ivreg instrumental variables regression.

NOTE: Unweighted data in parentheses. Please see table 5 for detailed notes. Unweighted estimates for survey only estimates do not have a non-response adjustment. Fourth follow-up survey conducted in 2001.

SOURCE: Data tabulated January 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education; study conducted 1992-93 to -2003-04; federal Student Financial Aid (SFA) files 1994-95 to 2003-04; and National Student Clearinghouse Data 1995-2004.

TABLE 11. Evidence of attainment of a BA within +6 of expected high school graduation year (EHSYG) for observational models comparing types of service receipt
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-2004

All sampling strata		One outlier project removed (remainder represents 74 percent of Horizons waiting list)	
Participated in UB/UBMS compared to participating in other non-UB/non-UBMS pre-college supplemental services only (observational –instrumental variables regression)	Any pre-college supplemental services reported compared with no services reported (observational –instrumental variables regression)	Participated in UB/UBMS compared to participating in other non-UB/non-UBSM pre-college supplemental services only (observational –instrumental variables regression)	Any pre-college supplemental services reported compared with no services reported (observational –instrumental variables regression)
Evidence of BA in +6 of EHSYG—All applicable follow-up surveys, NSC, and Pell Award Files, NSC			
Uses all applicable follow-up surveys, NSC, and Pell graduation variable			
xb T = 20.1, xb C = 19.6 Difference = -.5 NS (xb T 21.5, xb C = 17.7 Difference = 3.8*)	xb T = 19.7, xb C = 14.7 Difference = 5.0 NS (xb T = 21.6, xb C = 10.7 Difference = 10.9**)	xb T = 21.0, xb C = 15.2 Difference = 5.8*** (xb T = 21.6, xb C = 16.8 Difference = 4.8**)	xb T = 20.9, xb C = 6.5 Difference = 14.4*** (xb T = 21.7, xb C = 9.5 Difference = 13.2***)

*/**/***/**** Significant at 0.10/0.05/0.01/0.00 level; NS = not significant at the .10 level or below; UB = regular Upward Bound; UBMS = Upward Bound Math-Science; BA = bachelor's degree; ITT = intent to treat; TOT = treated on treated; CACE = complier average causal effect (CACE); T = treatment; C = control or comparison; NSC = National Student Clearinghouse; pr = estimated probability from STATA logit regression; xb = linear prediction from STATA ivreg instrumental variables regression.

NOTE: Estimates for award of the bachelor's degree in +6 are standardized to Expected High School Graduation Year (EHSYG). Unweighted data in parentheses. Please see table 5 for detailed notes.

SOURCE: Data tabulated January 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; federal Student Financial Aid (SFA) files 1994-95 to 2003-04; and National Student Clearinghouse Data 1995-2004.

SELECTED SUB-GROUP RESULTS

One of the key findings discussed in the third follow-up report was that the program demonstrated significant and substantial effects for those participants who were in the bottom 20 percent of the sample on 9th grade academic achievement as well as for those reporting on the baseline survey that they did not expect to obtain a bachelor's degree. In this paper, we also discuss these same groupings as they were used for the analyses presented in previously published reports that have influenced ED policy development.

Some Special Limitations with Regard to the Sub-Group Analyses Based on Academic Risk and Educational Expectations

There are a number of additional cautions that should be mentioned in reviewing results with regard to these subgroups that are more subject than the total sample to the uneven weights and the design effects of the sample. Sample sizes for the sub-groups are substantially smaller. The estimates for those in the bottom 20 percent on academic risk are based on unweighted n's of 521 cases and those not expecting at least a BA degree are based on 718 unweighted cases (in the total sample, 28 percent of weighted cases did not report they expected at least a BA at baseline). We also note that the ITT treatment and control groups no longer have equal weighted totals per project, but reflect differences (some introduced by the poststratification weight adjustments) between treatment and control on these variables. Using the study weights, 24 percent of the treatment group and 19 percent of the control group were in the high-academic-risk group; and 32 percent of the treatment group and 25 percent of the controls were in the lower education expectation sub-group.

Another factor to keep in mind in looking at the data on sub-groups based on expectations is that, as has been noted, the students were in different grades in the "last academic year" (7 to 10) before they completed the baseline survey—so the models suffer from the fact that these expectations were expressed at different grades for different students. It should also be noted that almost all of the *Horizons* applicants expected some type of postsecondary credential at the time of completion of the baseline. Overall about 72 percent of the sample reported they intended to obtain at least a bachelor's (BA) degree on the baseline survey, and most of the 28 percent with below BA expectations, expected some form of less than BA postsecondary degree. On the baseline survey, three percent of the entire sample indicated that high school completion was as far as they expected to go in school. The academic risk measure from student transcripts is keyed to a specific 9th grade, but students differed in whether they had been randomized before or after the 9th grade. This measure also suffers from missing data, as it is available only on those students for whom high school transcripts were obtained.

Sub-Group Results for Evidence of Entering Postsecondary

Tables 12 and 13 and Figure 9 give significance and difference levels for ITT and TOT predicted rates for evidence of postsecondary within +1 of EHSYG for those deemed to be at higher academic risk (in the bottom 20 percent of the sample in 9th grade on academic indicators) and those of lower risk (in the top 80 percent of the sample in 9th grade) and for those expecting and not expecting to complete a bachelor's degree at the time of their baseline survey completion.

Academic Risk. Keeping in mind the limitations noted above, the results in Table 12 suggest confirmation of the published results in the third follow-up report that there were significant and substantial effects on the postsecondary outcomes for those in the bottom 20 percent on academic risk indicators. There were, however, also significant and moderate results for those in the top 80 percent on the indicators.

Educational Expectations. Among those expecting at least a BA degree, there was evidence of significant effects in postsecondary entrance in +1 year of expected high school graduation with and without Project 69. For those not expecting a BA degree, results were significant without Project 69 but did not reach significance with Project 69 included (Table 13).

Sub-Group Results for Evidence for a Bachelor's (BA) in +6 of Expected High School Graduation Year (EHSYG)

Table 14 gives results for the academic risk sub-groups for evidence of bachelor's degree. It should be noted that too few—three percent of the total, or 25 cases unweighted—of the high academic risk students in the sample obtained a BA within +6 of EHSYG to make comparisons between treatment and control group. However, for the 80 percent of the sample classified as in the lower academic risk group, significant and substantial positive effects were found for the models when run weighted and unweighted, and with and without Project 69.

TABLE 12. Evidence of entering postsecondary within +1 (18 months) of expected high school graduation year (EHSYG) for sample members with higher academic risk (bottom 20 percent) and lower academic risk (top 80 percent) for ITT and TOT models
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

All sampling strata		One outlier project removed (remainder represents 74 percent of Horizons waiting list)	
Given UB Opportunity (ITT)	Participated in UB/UBMS (TOT/CACE)	Given UB Opportunity (ITT)	Participated in UB/UBMS (TOT/CACE)
Evidence of postsecondary entrance within +1 of EHSYG			
Among students with higher risk (bottom 20 percent of academic achievement in 9th grade)			
pr-T = 60.1, pr-C = 41.0 Difference = 19.1*** (pr T = 62.1, pr C = 46.5 Difference 15.6****)	xb T = 65.8, xb C = 39.7 Difference = 26.3*** (xb T = 65.8, xb C = 44.3 Difference = 21.5****)	pr T = 58.0, pr C = 44.1 Difference = 13.8**** (pr T = 61.8, pr C = 46.7 Difference = 15.1****)	xb T = 60.6, xb C = 43.0 Difference = 17.6*** (xb T = 65.4, xb C = 44.6 Difference = 20.9****)
Among students with lower risk (top 80 percent of academic achievement in 9th grade)			
pr-T = 80.1, pr-C = 73.9 Difference = 6.2**** (pr T = 80.1, pr C = 75.2 Difference = 5.6****)	xb T = 79.9, xb C = 70.3 Difference = 9.5*** (xb T = 81.1, xb C = 72.1 Difference = 9.0****)	pr T = 80.5, pr C = 71.9 Difference = 8.6**** (pr T = 80.9, pr C = 74.8 Difference = 6.1****)	xb T = 80.1, xb C = 67.7 Difference = 13.2**** (xb T = 77.3, xb C = 66.5 Difference = 10.8****)

*/**/***/**** Significant at 0.10/0.05/0.01/0.00 level; NS = not significant at the .10 level or below; UB = regular Upward Bound; UBMS = Upward Bound Math-Science; BA = bachelor's degree; ITT = intent to treat; TOT = treated on treated; CACE = complier average causal effect, T = treatment; C = control or comparison; pr = estimated probability from STATA logit regression; xb = linear prediction from STATA ivreg instrumental variables regression.

NOTE: Students with higher risk were in the bottom 20 percent of academic achievement in 9th grade; Students with lower risk were in the top 80 percent of academic achievement in 9th grade based on student transcript information. See Table 5 for detailed general notes. Appendix B tables give examples of actual model results.

SOURCE: Data tabulated January 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; federal Student Financial Aid (SFA) files 1994-95 to 2003-04; and National Student Clearinghouse Data 1995-2004.

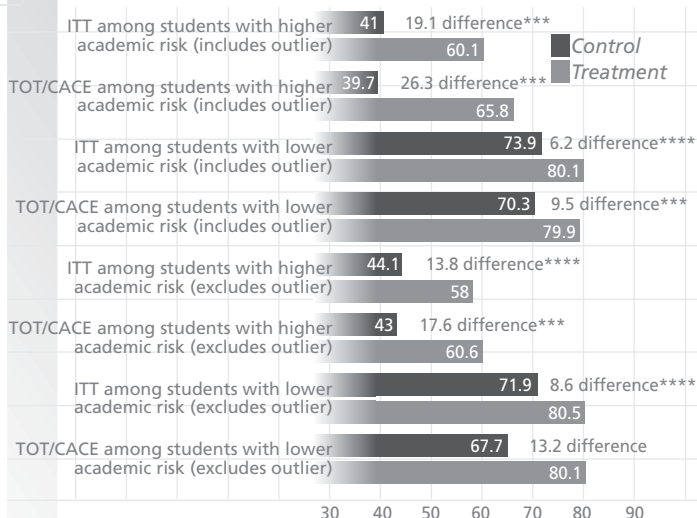


FIGURE 9. Evidence of entering postsecondary within +1 (18 months) of expected high school graduation year (EHSGY) for sample members with higher academic risk (bottom 20 percent) and lower academic risk (top 80 percent) for ITT and TOT models: National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

*/**/***/**** Significant at 0.10/0.05/.01/0.00 level; NS = not significant at the .10 level or below; UB = regular Upward Bound; UBMS = Upward Bound Math-Science; BA = bachelor's degree; ITT = intent to treat; TOT = treated on treated; CACE = complier average causal effect; T = treatment; C = control or comparison; pr = estimated probability from STATA logit regression; xb = linear prediction from STATA ivreg instrumental variables regression.

NOTE: Students with higher risk were in the bottom 20 percent of academic achievement in 9th grade; Students with lower risk were in the top 80 percent of academic achievement in 9th grade based on student transcript information. See table 5 for detailed general notes. Appendix B tables give examples of actual model results.

SOURCE: Data tabulated January 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; federal Student Financial Aid (SFA) files 1994-95 to 2003-04; and National Student Clearinghouse (NSC) Data 1995-2004.

TABLE 13. Evidence of entering postsecondary within +1 (18 months) of expected high school graduation year (EHSGY) for sample members with lower and higher educational expectations for ITT and TOT models National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

All sampling strata		One outlier project removed (remainder represents 74 percent of Horizons waiting list)	
Given UB Opportunity (ITT)	Participated in UB/UBMS (TOT)	Given UB Opportunity (ITT)	Participated in UB/UBMS (TOT)
Evidence of postsecondary entrance within +1 EHSGY			
Lower expectations (expect less than a BA degree at baseline)			
pr-T = 54.2, pr-C = 49.0 Difference = 5.2 NS .11 (pr T = 64.5, pr C = 55.2 Difference = 9.3 NS .14)	xb T = 59.0, xb C = 47.1 Difference = 11.9 * (xb T = 61.2, xb C = 50.2 Difference = 11.0 NS .13)	pr T = 55.5, pr C = 42.9 Difference = 12.6*** (pr T = 57.8, pr C = 50.4 Difference = 7.5*)	xb T = 59.4, xb C = 41.7 Difference = 17.7*** (xb T = 61.6, xb C = 49.4 Difference = 12.2*)
Higher expectations (expect at least a BA degree at baseline)			
pr-T = 79.0, pr-C = 71.4 Difference = 7.6*** (pr T = 79.8, pr C = 72.3 Difference = 7.6****)	xb T = 79.1, xb C = 67.8 Difference = 11.3**** (xb T = 80.1, xb C = 69.5 Difference = 11.3****)	xb T = 78.4, xb C = 70.0 Difference = 8.4**** (xb T = 78.8, xb C = 71.0 Difference = 7.8****)	xb T = 80.0, xb C = 67.0 Difference = 13.0**** (xb T = 80.8, xb C = 69.2 Difference = 11.6****)

*/**/***/**** Significant at 0.10/0.05/.01/0.00 level; NS = not significant at the .10 level or below; UB = regular Upward Bound; UBMS = Upward Bound Math-Science; BA = bachelor's degree; ITT = intent to treat; TOT = treated on treated; CACE = complier average causal effect; T = treatment; C = control or comparison; pr = estimated probability from STATA logit regression; xb = linear prediction from STATA ivreg instrumental variables regression.

NOTE: Unweighted results are given in parentheses. Lower expectation students are defined as those expecting less than a bachelor's degree at baseline (about 28 percent of the sample); Higher expectations are those expecting at least a bachelor's degree of higher at baseline (about 72 percent). See Table 5 for detailed general notes. Appendix B tables give examples of actual model results.

SOURCE: Data tabulated January 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; federal Student Financial Aid (SFA) files 1994-95 to 2003-04; and National Student Clearinghouse (NSC) Data 1995-2004.

TABLE 14. Evidence of attainment of a BA within +6 of expected high school graduation year (EHSYG) for academic risk and educational expectation sub-groups for ITT and TOT models
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

All sampling strata		One outlier project removed (remainder represents 74 percent of Horizons waiting list)	
Given Opportunity (ITT)	Participated in UB/UBMS (TOT/CACE)	Given Opportunity (ITT)	Participated in UB/UBMS (TOT/CACE)
Academic Risk Sub-Groups—Evidence of BA in +6 of EHSYG— All applicable follow-up surveys, Pell Award Files, NSC			
<i>Among students with higher risk (bottom 20 percent of academic achievement in 9th grade)</i>			
Insufficient cases to tabulate—25 cases unweighted in this subgroup had BA in +6 evidence. Note 4 percent of the BA's in +6 years were in this subgroup.			
<i>Among students with lower risk (top 80 percent of academic achievement in 9th grade)</i>			
pr-T = 23.7, pr-C = 20.4 Effect = 3.3** (pr T = 24.2, pr C = 20.6 Effect = 3.6***)	xb T = 25.8, xb C = 20.7 Effect = 5.1** (xb T = 26.4, xb C = 20.4 Effect = 6.1**)	pr T = 22.6, pr C = 17.8 Effect = 4.8**** (pr T = 24.0, pr C = 20.0 Effect = 4.0***)	xb T = 25.8, xb C = 18.0 Effect = 7.8**** (xb T = 25.1, xb C = 21.1 Effect = 3.9***)
Educational Expectation Sub-Groups— Evidence of BA in +6 of EHSYG— All applicable follow-up surveys, Pell Award Files, NSC data			
<i>Among students with lower expectations—(expected less than a BA at baseline)</i>			
pr-T = 11.7, pr-C = 6.0 Effect = 5.7*** (pr T = 9.0, pr C = 7.4 Effect = 1.6 NS)	xb T = 16.5, xb C = 9.9 Effect = 6.6** (xb T = 11.2, xb C = 8.3 Effect = 2.8 NS)	pr T = 7.1, pr C = 3.7 Effect = 3.3*** (pr T = 8.5, pr C = 6.7 Effect = 1.8 NS)	xb T = 10.3, xb C = 5.1 Effect = 5.3*** (xb T = 10.7, xb C = 7.6 Effect = 3.1 NS)
<i>Among students with higher expectations—(expected at least a BA at baseline)</i>			
pr-T = 19.0, pr-C = 19.4 Effect = -4 NS (pr T = 22.3, pr C = 18.9 Effect = 3.3**)	xb T = 20.5, xb C = 20.7 Effect = -2 NS (xb T = 24.9, xb C = 19.4 Effect = 5.5**)	pr T = 19.6, pr C = 15.7 Effect = 4.0*** (pr T = 20.2, pr C = 16.6 Effect = 3.6***)	xb T = 24.9, xb C = 17.4 Effect = 7.4*** (xb T = 25.3, xb C = 19.0 Effect = 6.3***)

*/**/***/**** Significant at 0.10/0.05/0.01/0.00 level; NS = not significant at the .10 level or below; UB = regular Upward Bound; UBMS = Upward Bound Math-Science; BA = bachelor's degree; ITT = intent to treat; TOT = treated on treated; CACE = complier average causal effect; T = treatment; C = control or comparison; NSC = National Student Clearinghouse; pr = estimated probability from STATA logit regression; xb = linear prediction from STATA ivreg instrumental variables regression.

NOTE: Unweighted data are in parentheses. See table 5 for detailed notes. Estimates for award of the bachelor's degree in +6 are standardized to EHSYG.

SOURCE: Data tabulated January 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; federal Student Financial Aid (SFA) files 1994-95 to 2003-04; and National Student Clearinghouse Data 1995-2004.

These results, reflect the fact that Project 69 contributed a high proportion of the high academic risk weight for the treatment group (one third of the treatment group in Project 69 were classified as high risk, while only 8 percent of the control group in Project 69 were so classified). Removing the high risk sub-group from the overall sample models also removes some of the non-equivalencies introduced by Project 69.

Table 14 also gives results for BA in +6 of EHSYG for those with lower and higher educational expectations. Weighted results for the evidence of a BA in +6 of EHSYG are significant for those with lower expectations; however, unweighted results are not significant. Among those with higher expectations, all unweighted models and all models without Project 69 show significant results.

Our overall conclusion from looking at the weighting and Project 69 sensitivity analyses for the postsecondary credential related variables for the sub-groups is that they are subject to low n's, unequal weighting, treatment control group expectation issues, and survey response bias.

However, they do reflect a consistent story, that the high weighted Project 69, with shorter term degrees or certificate programs, for unknown reasons had a high proportion of ITT cases in its treatment group who were academically at risk and motivationally appropriate for its less than BA programs and the project was successful in getting these students into postsecondary and getting them awarded certificates. However, Project 69's control group on average were on a track to getting MA or above degrees, and this is also reflected in their higher incidence of such degrees relative to the Project 69 treatment group.

5. Conclusions and Lessons Learned

This paper has demonstrated the potential importance of study design, implementation, and analyses choices relative to study conclusions and identified several sources of error relative to the major assumptions upon which any experimental design rests—sample representation, treatment and control group baseline equivalency, equal treatment of control and treatment groups except for the treatment of interest, and mutually exclusive treatment and control groups vis-à-vis the treatment. Below we summarize the major conclusions, and discuss some lessons learned in the context of national evaluation of Upward Bound analyses and in the context of future study designs.

- The key conclusion that the Upward Bound program has “no detectable effect on postsecondary enrollment” should be reconsidered in the context of the PART process. The results in this paper indicate that the program demonstrated statistically significant effects on the key goals of the program: postsecondary entrance, application for financial aid, and the attainment of postsecondary credentials.
- The experience of this UB evaluation suggests that even in rigorous random assignment studies, attention must be paid to study design and implementation error issues and small differences between treatment and control groups that may bias the conclusions.
- Additional analysis is possible and needed to make use of a rich data set that contains detailed information collected over six surveys as well as project and target schools surveys. ED expects to release the data files under restricted license to interested researchers in the near future. In future longitudinal studies, data should be released in a timely manner and disseminated to the interested research community as each round of follow-ups is completed.
- This study confirms that additional policy emphasis needs to be placed on increasing student postsecondary retention and completion. This study has shown that even among low-income and first-generation college students who have high expectations and who are highly served (76 percent had pre-college services), few were able to attain their goal of a BA degree as measured by six years after high school. While more than 70 percent expected to attain a BA when sampled in middle or early high school, and more than 75 percent had evidence of entering postsecondary, only about 20 percent had attained such a degree by six years out of high school.
- The experience of this UB evaluation suggests that it is very difficult within the resources generally available for national studies to attempt national probability of selection estimation with planned disaggregating and coverage of special sub-groups of interest in the context of a random assignment study. Additional work is also needed to understand the implications of using complex weighted data in the context of random assignment studies.

- The four-year applicant grade/age-group-span (7-10), combined with the probability of selection weights, greatly increased the complexity of this study and makes it very important to use adequate controls for EHSGY in modeling results. The issues this introduced into the study suggests that where possible multi-grade cohorts should be avoided in any new study design.
- The study was very carefully implemented and is an exceptionally rich source of information on the paths of a certain segment of low-income and first-generation college students spanning—for over half of the students—from middle school to young adulthood. However, it needs to be kept in mind that the study is not representative of the low-income and first-generation college population in general. The students were already college bound (most of the students expected to go to college at the time of application) and relatively highly motivated to seek pre-college supplemental services (76 percent of the total sample reported they had some form of pre-college supplemental services either before or after random assignment).
- The study analyses would have benefited from some inclusion of school and project variables in the analyses. These data were collected and might help inform understanding of the results.
- While the re-analyses demonstrate the importance of attention to study sampling and non-sampling errors even with gold-standard, random-assignment designs, this complex study was conducted with great care under difficult circumstances and is unique in the information it provides.

The length and seriousness of these UB study evaluation methods and policy debates is a testimony to the complexity of the issues. As we look to the future in the light of the new HEOA evaluation language, it is clear that a new generation of TRIO evaluations must be designed that will involve working in partnership with stakeholders in developing designs and procedures that are feasible, useful, accurate, and ethical. Caution needs to be taken making sure the conclusions are warranted and that the results reported are transparent. The concept of having clusters of projects working together utilizing their institutional research resources to engage in rigorous self and external evaluation work focused on program improvement seems to have the most promise for the future. The challenge will be to develop and implement a rigorous protocol that will ultimately answer questions for practitioners concerning how best to use resources, how best to serve different types of students, and how to adapt programs to the ever changing secondary/postsecondary landscape.

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Appendix A

Upward Bound Authorization at the Time of the Study

HIGHER EDUCATION ACT OF 1965,
1998 HIGHER EDUCATION ACT AMENDMENTS

Subpart 2—Federal Early Outreach and Student Services Programs

CHAPTER 1—FEDERAL TRIO PROGRAMS SEC. 402A. 20 U.S.C. 1070a–11 The Secretary shall, in accordance with the provisions of this chapter, carry out a program of making grants and contracts designed to identify qualified individuals from disadvantaged backgrounds, to prepare them for a program of postsecondary education, to provide support services for such students who are pursuing programs of postsecondary education, to motivate and prepare students for doctoral programs, and to train individuals serving or preparing for service in programs and projects so designed.

- (a) **PROGRAM AUTHORITY.**—The Secretary shall carry out a program to be known as Upward Bound which shall be designed to generate skills and motivation necessary for success in education beyond secondary school.
- (b) **PERMISSIBLE SERVICES.**—Any Upward Bound project assisted under this chapter may provide services such as—
 - (1) *Instruction in reading, writing, study skills, mathematics, and other subjects necessary for success beyond secondary school;*
 - (2) *Counseling and workshops;*
 - (3) *Academic advice and assistance in secondary school course selection;*
 - (4) *Tutorial services;*
 - (5) *Exposure to cultural events, academic programs, and other activities not usually available to disadvantaged youth;*
 - (6) *Activities designed to acquaint youths participating in the project with the range of career options available to them;*
 - (7) *Instruction designed to prepare youths participating in the project for careers in which persons from disadvantaged backgrounds are particularly underrepresented;*
 - (8) *On-campus residential programs;*
 - (9) *Mentoring programs involving elementary or secondary school teachers or counselors, faculty members at institutions of higher education, students, or any combination of such persons;*
 - (10) *Work-study positions where youth participating in the project are exposed to careers requiring a postsecondary degree.*

Sections Giving 2008 Amendments to HEOA Language on TRIO Evaluations

HIGHER EDUCATION OPPORTUNITY ACT (HEOA- HR4137)

IMPROVEMENT AND DISSEMINATION—Section 402H
(20 U.S.C. 1070a-18) is amended—

- (1) by striking the section heading and inserting “REPORTS, EVALUATIONS, AND GRANTS FOR PROJECT IMPROVEMENT AND DISSEMINATION.”;
 - (2) by redesignating subsections (a) through (c) as subsections (b) through (d), respectively;
 - (3) by inserting before subsection (b) (as redesignated by paragraph (2)) the following:
 - (a) *REPORTS TO THE AUTHORIZING COMMITTEES*—
 - (i) *IN GENERAL*—The Secretary shall submit annually, to the authorizing committees, a report that documents the performance of all programs funded under this chapter. Such report shall—
- PUBLIC LAW 110-315—AUG. 14, 2008 122 STAT. 3205
- (A) be submitted not later than 12 months after the eligible entities receiving funds under this chapter are required to report their performance to the Secretary;
 - (B) focus on the programs’ performance on the relevant outcome criteria determined under section 402A(f) (4);
 - (C) aggregate individual project performance data on the outcome criteria in order to provide national performance data for each program;
 - (D) include, when appropriate, descriptive data, multiyear data, and multi-cohort data; and
 - (E) include comparable data on the performance nationally of low-income students, first-generation students, and students with disabilities.
- (2) *INFORMATION*—*The Secretary shall provide, with each report submitted under paragraph (1), information on the impact of the secondary review process described in section 402A(c)(8)(C)(iv), including the number and type of secondary reviews, the disposition of the secondary reviews, the effect on timing of awards, and any other information the Secretary determines is necessary.”; and (4) in subsection (b) (as redesignated by paragraph (2)), by striking paragraphs (1) and (2) and inserting the following:*
- (1) *IN GENERAL*—
 - (a) *AUTHORIZATION OF GRANTS AND CONTRACTS*—*For the purpose of improving the effectiveness of the programs and projects assisted under this chapter, the Secretary shall make grants to, or enter into contracts with, institutions of higher education and other public and private institutions and organizations to rigorously evaluate the effectiveness of the programs and projects assisted under this chapter, including a rigorous evaluation of the programs and projects assisted under section 402C. The evaluation of the programs and projects assisted under section 402C shall be implemented not later than June 30, 2010.*
 - (b) *CONTENT OF UPWARD BOUND EVALUATION*—*The evaluation of the programs and projects assisted under section 402C that is described in subparagraph (A) shall examine the characteristics of the students who benefit most from the Upward Bound program under section 402C and the characteristics of the programs and projects that most benefit students.*
 - (c) *IMPLEMENTATION*—*Each evaluation described in this paragraph shall be implemented in accordance with the requirements of this section.*
 - (2) *PRACTICES*.—
 - (a) *IN GENERAL*—*The evaluations described in paragraph (1) shall identify institutional, community, and program or project practices that are effective in—*
 - (i) enhancing the access of low-income individuals and first-generation college students to postsecondary education;
 - (ii) the preparation of such individuals and students for postsecondary education; and
 - (iii) fostering the success of the individuals and students in postsecondary education.

Deadline.

122 STAT. 3206 PUBLIC LAW 110-315—AUG. 14, 2008

- (B) PRIMARY PURPOSE—Any evaluation conducted under this chapter shall have as the evaluation's primary purpose the identification of particular practices that further the achievement of the outcome criteria determined under section 402A(f)(4).
- (C) DISSEMINATION AND USE OF EVALUATION FINDINGS—The Secretary shall disseminate to eligible entities and make available to the public the practices identified under subparagraph (B). The practices may be used by eligible entities that receive assistance under this chapter after the dissemination.
 - (3) *SPECIAL RULE RELATED TO EVALUATION PARTICIPATION—The Secretary shall not require an eligible entity, as a condition for receiving, or that receives, assistance under any program or project under this chapter to participate in an evaluation under this section that—*
 - (A) requires the eligible entity to recruit additional students beyond those the program or project would normally recruit; or
 - (B) results in the denial of services for an eligible student under the program or project.
- (4) CONSIDERATION—When designing an evaluation under this subsection, the Secretary shall continue to consider—
 - (A) *the burden placed on the program participants or the eligible entity; and*
 - (B) *whether the evaluation meets generally accepted standards of institutional review boards."*

Appendix B

Examples of Detailed Model Results for Tables in the Body of Report

COMPARISON OF RESULTS WHEN AN ALTERNATIVE VARIABLE IS USED FOR STANDARDIZATION BY EHSGY

Appendix Tables B1-B6 provide examples of the complete model results for the statistics reported in the body of the report. We also include some model results (labeled B1a to B4a) for an alternative variable used for establishing a “grade-year” reference for standardization by expected high school graduation year (EHSGY).

As observed in Table 2 of the body of the report, treatment and control group non-equivalencies in grades reported on the study surveys indicated that there was a need to standardize outcomes relative to fixed time frames. Model results reported in the body of this paper are based on a standardization of Expected High School Graduation Year (EHSGY) based on a baseline survey variable (B1) present for 99 percent of the sample that read:

“What grade were you in during the LAST SCHOOL YEAR (1992-93 school year)?”

Because some students reportedly answered the question with reference to the 1991-92 school year instead of 1992-93, we included a correction in the tabulation that provided for a range going from -1 to +1 (or +4) of the year that was established on the basis of the grade reported on the baseline data file which ranged from grade 7 to a few in 11. As discussed in the body of the report and indicated in Tables 2 and 3, estimates of EHSGY using different variables on the data files are not entirely consistent with each other when the baseline survey, first follow-up survey and the third follow-up survey data files are compared. For this reason, to check the models reported in the body of the text based on the baseline variable (B1) with the correction for the 1991-92 responders, we also calculated an alternate EHSGY based on the results to the first follow-up survey in which sample members were asked the following question (QA1):

“What grade (are you in/were you in during the 1993-94 school year) or (are/were) you not attending junior high or high school (now/then)?”

The models presented in Appendix Tables B1 to B4a show comparative results using the two alternative variables for tabulation of EHSGY. As can be observed in the tables, the two alternative bases for standardization yield much the same impact estimates and significance test results. For example, Table B1 and B1a present the same model with the two alternative variables used to standardize for the outcome of postsecondary entrance evidence by +1 of EHSGY. The impact estimate reported in Table B-1 shows a 6.9 effect significant at the .004 level. These estimates are used in the body of the report. The alternative variable presented in table B1a shows a 6.7 effect significant at the .000 level for the same model. Results in Tables B2 and B2a are for the same models as in B1 and B1a but exclude Project 69. We see that the estimate of effect in B2 (and reported in Table 5 in the body of the report) is 9.1 significant at the .000 level and the estimate in B2a using the alternative first follow-up variable for standardization shows an effect size of 12.7 and significance of .001. Tables B3 and B3a show instrumental variables two stage regression results for modeling TOT with the dependent variable of appearance on the aid file and show effect size of 9.3 significant at the .002 level for the baseline variable standardization; and show an effect size of 10.4 significant at the .001 level for the first follow-up variable used for standardization. Results in B4 and B4a for bachelor's degree receipt without Project 69 show similar effects and significance levels when +7 instead of +6 is used with the baseline.

TABLE B-1 Intent to Treat (ITT) logistic regression results for dependent variable of having evidence of postsecondary from any applicable survey or from SFA files by +1 (18 months) of expected high school graduation year (EHSGY): National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04 (estimate reported in Table 5 and 6)

pr-T = 72.9, pr-C = 66.0 Difference = 6.9**** kenye2							
	Variable name	Coef.	Linearized Std. Err.	t	P> t	95% Confidence Interval	
FFUTC (random assigned to treatment)	Ffutc	0.395308	0.130178	3.04	0.004	0.131997	0.658619
Gr79293 (Grade 7 on baseline ref grade 9)	gr79293	0.165761	0.668542	0.25	0.805	-1.18649	1.518015
Gr89293 (Grade 8 on baseline ref grade 9)	gr89293	-0.80596	0.446533	-1.8	0.079	-1.70916	0.097236
Gr109293 (Grade 10 on baseline ref grade 9)	gr109293	0.223571	0.848204	0.26	0.793	-1.49208	1.939225
Gr119293 (Grade 11 on baseline ref grade 9)	gr119293	-1.2639	1.263728	-1	0.323	-3.82003	1.292227
Clowoy (Low income only)	Clowoy	0.189757	0.257292	0.74	0.465	-0.33066	0.710179
Cfgenoy (First generation only)	Cfgenoy	0.346913	0.212268	1.63	0.11	-0.08244	0.776266
C11gssf (Grade was 11 on student selection form—ref grade 9)	c11gssf	-0.96561	1.159979	-0.83	0.41	-3.31189	1.380672
C10gssf (Grade was 10 on student selection form—ref grade 9)	c10gssf	-0.36939	0.391458	-0.94	0.351	-1.16119	0.422409
C8gssfm (Grade was 8 on student selection form—ref grade 9)	c8gssfm	-1.117	0.638178	-1.75	0.088	-2.40784	0.173837
Cexdk (Baseline educational expectation was “don’t know”—ref BA)	Cexdk	-0.7174	0.136398	-5.26	0	-0.99329	-0.44151
Cexhs (Baseline educational expectation was high school only—ref BA)	Cexhs	-1.15535	0.263932	-4.38	0	-1.68921	-0.6215
Cex13v (Baseline educational expectation was vocational—ref BA)	cex13v	-1.08164	0.159795	-6.77	0	-1.40485	-0.75842
cex14aa (Baseline educational expectation was two-year—ref BA)	cex14aa	-0.62101	0.096702	-6.42	0	-0.81661	-0.42541
Cexma (Baseline educational expectation was Masters Degree—ref BA)	Cexma	0.130731	0.127043	1.03	0.31	-0.12624	0.387699
Cexphd (Baseline educational expectation was Ph.D.—ref BA)	Cexphd	0.260035	0.125456	2.07	0.045	0.006277	0.513794
Cothrac (Race was not Hispanic, Black, or White—ref Black)	Cothrac	-0.11733	0.298544	-0.39	0.696	-0.72119	0.486535
Chisp (Hispanic—ref Black)	Chisp	-0.3342	0.21233	-1.57	0.124	-0.76368	0.095275
Cwhite (Race was White, not Hispanic—ref Black)	Cwhite	-0.50434	0.164489	-3.07	0.004	-0.83705	-0.17163
Cfemale (Female)	Cfemale	0.655618	0.074893	8.75	0	0.504132	0.807103
Parbefor (Reported participated in other pre-college supplemental services before random assignment)	Parbefor	0.404186	0.15019	2.69	0.01	0.100399	0.707974
_cons	_cons	0.983643	0.520775	1.89	0.066	-0.06972	2.03701

*/**/****/***** Significant at 0.10/0.05/0.01/0.00 level; NS = not significant at the .10 level or below.

NOTE: Results of this table appear in Figure 1 and in Table 5 and Table 6. Standardized based on baseline survey question B1 with correction for 1991-92 responders. SFA = Student Financial Aid files. Ref = left out reference in dummy variable sequence. See Table 5 for additional note information. See also Table B-1a for results using an alternative variable for EHSGY estimation. Number of strata (wprstco)= 28; Number of PSU (wprojid) = 67; uses postratified longitudinal baseline weight (v5bwgtp1).

SOURCE: Data tabulated January 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; and federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

TABLE B-1A Intent to Treat (ITT) logistic regression results for dependent variable of having evidence of postsecondary from any applicable survey or from SFA files by +1 (18 months) of expected high school graduation year (EHSGY): National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04
(Uses alternative grade variable for standardization of EHSGY)

pr-T = 72.7, pr-C = 66.0 Difference = 6.7**** npse18		Variable name	Coef.	Linearized Std. Err.	t	P> t	95% Confidence Interval	
FFUTC (random assigned to treatment)		ffutc	0.371381	0.092769	4	0	0.183739	0.559023
Ffgr9 (grade 10 ref)		ffgr9	0.00818	0.329167	0.02	0.98	-0.65762	0.673983
Ffgr11 (grade 10 ref)		ffgr11	-0.16084	0.164541	-0.98	0.334	-0.49366	0.17197
Ffgr12 (grade 10 ref)		ffgr12	-1.62816	0.395105	-4.12	0	-2.42734	-0.82898
Clowoy (Low income only)		clowoy	0.274296	0.247483	1.11	0.275	-0.22629	0.774878
Cfgenoy (First generation only)		cfgenoy	0.375038	0.193827	1.93	0.06	-0.01701	0.76709
C11gssf (Grade was 11 on student selection form—ref grade 9)		c11gssf	0.783521	0.301535	2.6	0.013	0.17361	1.393432
C10gssf (Grade was 10 on student selection form—ref grade 9)		c10gssf	0.427427	0.226795	1.88	0.067	-0.03131	0.886164
C8gssfm (Grade was 8 on student selection form—ref grade 9)		c8gssfm	-0.31887	0.207559	-1.54	0.133	-0.7387	0.100957
Cexdk (Baseline educational expectation was “don’t know”—ref BA)		cexdk	-0.79806	0.145596	-5.48	0	-1.09256	-0.50357
Cexhs (Baseline educational expectation was high school only—ref BA)		cexhs	-1.28867	0.286644	-4.5	0	-1.86846	-0.70888
Cex13v (Baseline educational expectation was vocational—ref BA)		cex13v	-0.96014	0.163404	-5.88	0	-1.29065	-0.62962
cex14aa (Baseline educational expectation was two-year—ref BA)		cex14aa	-0.62401	0.119286	-5.23	0	-0.86529	-0.38273
Cexma (Baseline educational expectation was Masters Degree—refer BA)		cexma	0.035613	0.11215	0.32	0.753	-0.19123	0.262458
Cexphd (Baseline educational expectation was Ph.D.—ref BA)		cexphd	0.223459	0.101548	2.2	0.034	0.01806	0.428859
Cothrac (Race was not Hispanic, Black, or White—ref Black)		cothrac	-0.0687	0.285566	-0.24	0.811	-0.64631	0.50891
Chisp (Hispanic—ref Black)		chisp	-0.26647	0.196386	-1.36	0.183	-0.6637	0.130757
Cwhite (Race was White, not Hispanic—ref Black)		cwhite	-0.5774	0.210339	-2.75	0.009	-1.00285	-0.15195
Cfemale (Female)		cfemale	0.578733	0.077784	7.44	0	0.421399	0.736067
Parbefor (Reported participated in other pre-college supplemental services before random assignment)		parbefor	0.400858	0.131542	3.05	0.004	0.134789	0.666926
_cons		_cons						

*/**/***/**** Significant at 0.10/0.05/.01/00 level; NS = not significant at the .10 level or below.

NOTE: Model uses an alternative variable from the First Follow-up (A3) instead of variable B1 from the Baseline Survey on which to standardize EHSGY (See Table B-1). SFA = Student Financial Aid files. Ref = left out reference in dummy variable sequence. See Table 5 in body of text for additional note information. Number of strata (wprstco) = 28; Number of PSU (wprojid) = 67; uses postratified longitudinal baseline weight (v5bwgtp1).

SOURCE: Data tabulated June 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; and federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

TABLE B-2 Intent to Treat (ITT), excludes Project 69, logistic regression results for dependent variable of having evidence of postsecondary from any applicable survey or from SFA files by +1 (18 months) of expected high school graduation year (EHSGY): National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04 (estimate reported in Table 5 and Table 6)

pr-T = 73.4, pr-C = 64.3 Difference = 9.1**** kenye2		Variable name	Coef.	Linearized Std. Err.	t	P> t 	95% Confidence Interval	
FFUTC (random assigned to treatment)		ffutc	0.489536	0.128311	3.82	0	0.230002	0.74907
Gr79293 (Grade 7 on baseline ref grade 9)		gr79293	0.521967	0.625101	0.84	0.409	-0.74242	1.786352
Gr89293 (Grade 8 on baseline ref grade 9)		gr89293	-0.39121	0.286428	-1.37	0.18	-0.97057	0.188144
Gr109293 (Grade 10 on baseline ref grade 9)		gr109293	-0.45553	0.563581	-0.81	0.424	-1.59548	0.68442
Gr119293 (Grade 11 on baseline ref grade 9)		gr119293	-2.12228	0.983931	-2.16	0.037	-4.11247	-0.1321
Clowoy (Low income only)		clowoy	0.346651	0.249567	1.39	0.173	-0.15815	0.851449
Cfgenoy (First generation only)		cfgenoy	0.456902	0.247804	1.84	0.073	-0.04433	0.958132
C11gssf (Grade was 11 on student selection form— ref grade 9)		c11gssf	0.152517	0.657632	0.23	0.818	-1.17767	1.482704
C10gssf (Grade was 10 on student selection form— ref grade 9)		c10gssf	-0.10336	0.320505	-0.32	0.749	-0.75164	0.544922
C8gssfm (Grade was 8 on student selection form— ref grade 9)		c8gssfm	-1.08313	0.627791	-1.73	0.092	-2.35296	0.186695
Cexdk (Baseline educational expectation was “don’t know”—ref BA)		cexdk	-0.79163	0.149155	-5.31	0	-1.09333	-0.48994
Cexhs (Baseline educational expectation was high school only—ref BA)		cexhs	-1.24988	0.364853	-3.43	0.001	-1.98787	-0.5119
Cex13v (Baseline educational expectation was vocational— ref BA)		cex13v	-0.96619	0.175638	-5.5	0	-1.32145	-0.61092
cex14aa (Baseline educational expectation was two-year— ref BA)		cex14aa	-0.65279	0.123614	-5.28	0	-0.90282	-0.40276
Cexma (Baseline educational expectation was Masters Degree—refer BA)		cexma	0.162114	0.149791	1.08	0.286	-0.14087	0.465095
Cexphd (Baseline educational expectation was Ph.D.— ref BA)		cexphd	0.346946	0.121938	2.85	0.007	0.100304	0.593588
Cothrac (Race was not Hispanic, Black, or White—ref Black)		cothrac	0.062038	0.279237	0.22	0.825	-0.50277	0.626848
Chisp (Hispanic—ref Black)		chisp	-0.28652	0.3381	-0.85	0.402	-0.97039	0.397353
Cwhite (Race was White, not Hispanic—ref Black)		cwhite	-0.45507	0.167869	-2.71	0.01	-0.79462	-0.11552
Cfemale (Female)		cfemale	0.651833	0.088637	7.35	0	0.472549	0.831118
Parbefor (Reported participated in other pre-college supplemental services before random assignment)		parbefor	0.288657	0.175721	1.64	0.108	-0.06677	0.644085
_cons		_cons	0.519335	0.33867	1.53	0.133	-0.16569	1.20436

****/****/**** Significant at 0.10/0.05/0.01/0.00 level; NS = not significant at the .10 level or below.

NOTE: Results of this table appear in Figure 1 and in Table 5 and Table 6. Standardized based on Baseline Survey question B1 with correction for 1991-92 responders. SFA = Student Financial Aid files; Ref = left out reference in dummy variable sequence. See Table 5 for additional note information. See also Table B-2a for results using an alternative variable for EHSGY estimation. Number of strata (v5no69st) = 27; Number of PSU (wprojid) = 66; postratified longitudinal baseline weight (v5bwgtp1).

SOURCE: Data tabulated June 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; and federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

TABLE B-2A Intent to Treat (ITT), excludes Project 69, logistic regression results for dependent variable of having evidence of postsecondary from any applicable survey or from SFA files by +1 (18 months) of expected high school graduation year (EHSGY): National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04 (uses alternative grade variable for EHSGY standardization)

pr-T = 73.3, pr-C = 60.6 Difference = 12.7**** npse18		Variable name	Coef.	Linear- ized Std. Err.	t	P> t	95% Confidence Interval	
FFUTC (random assigned to treatment)		ffutc	0.404011	0.113939	3.55	0.001	0.173547	0.634475
Ffgr9 (grade 10 ref)		ffgr9	0.37182	0.280346	1.33	0.192	-0.19523	0.938873
Ffgr11 (grade 10 ref)		ffgr11	-0.02695	0.159631	-0.17	0.867	-0.34983	0.295939
Ffgr12 (grade 10 ref)		ffgr12	-1.32323	0.547936	-2.41	0.021	-2.43154	-0.21493
Clowoy (Low income only)		clowoy	0.465974	0.202402	2.3	0.027	0.056577	0.87537
Cfgenoy (First generation only)		cfgenoy	0.46034	0.253056	1.82	0.077	-0.05151	0.972195
C11gssf (Grade was 11 on student selection form—ref grade 9)		c11gssf	0.663936	0.314424	2.11	0.041	0.027953	1.299919
C10gssf (Grade was 10 on student selection form—ref grade 9)		c10gssf	0.358413	0.261897	1.37	0.179	-0.17132	0.888151
C8gssfm (Grade was 8 on student selection form—ref grade 9)		c8gssfm	-0.4937	0.208163	-2.37	0.023	-0.91475	-0.07265
Cexdk (Baseline educational expectation was don't know—ref BA)		cexdk	-0.853	0.158962	-5.37	0	-1.17454	-0.53147
Cexhs (Baseline educational expectation was high school only—ref BA)		cexhs	-1.38008	0.38735	-3.56	0.001	-2.16357	-0.59659
Cex13v (Baseline educational expectation was vocational—ref BA)		cex13v	-0.89794	0.182897	-4.91	0	-1.26788	-0.528
cex14aa (Baseline educational expectation was two-year—ref BA)		cex14aa	-0.67054	0.141661	-4.73	0	-0.95708	-0.38401
Cexma (Baseline educational expectation was Masters Degree—refer BA)		cexma	0.028171	0.146501	0.19	0.849	-0.26816	0.324498
Cexphd (Baseline educational expectation was Ph.D.—ref BA)		cexphd	0.28854	0.102476	2.82	0.008	0.081263	0.495816
Cothrac (Race was not Hispanic, Black, or White—ref Black)		cothrac	0.189738	0.214378	0.89	0.382	-0.24388	0.623358
Chisp (Hispanic—ref Black)		chisp	-0.20354	0.293326	-0.69	0.492	-0.79685	0.389766
Cwhite (Race was White, not Hispanic—ref Black)		cwhite	-0.44839	0.182601	-2.46	0.019	-0.81774	-0.07905
Cfemale (Female)		cfemale	0.583567	0.095933	6.08	0	0.389524	0.77761
Parbefor (Reported participated in other pre-college supplemental services before random assignment)		parbefor	0.273002	0.128501	2.12	0.04	0.013084	0.532919
_cons		_cons	0.099075	0.269472	0.37	0.715	-0.44598	0.644134

*/**/***/**** Significant at 0.10/0.05/0.01/0.00 level; NS = not significant at the .10 level or below.

NOTE: Model uses an alternative variable from the First Follow-up (A3) instead of variable B1 from the Baseline Survey on which to standardize EHSGY (See Table B-2). SFA = Student Financial Aid files; Ref = left out reference in dummy variable sequence. See Table 5 in text for additional note information; Number of strata (v5no69st) = 27; Number of PSU (wprojid) = 66; postratified longitudinal baseline weight (v5bwgtp1).

SOURCE: Data tabulated June 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; and federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

TABLE B-3 Instrumental variables regression for Treated on Treated (TOT) modeling dependent variable of appearing on the federal SFA files by +1 (18 months) of expected high school graduation year (EHSGY)
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04
(estimate reported in Table 8)

xb T = 62.9, xb C = 53.6 Difference = 9.3**** (Kaidhs)		Variable name	Coef.	Linearized Std. Err.	T	P> t 	95% Confidence Interval	
xnewgp (Participated in UB/UBMS)		xnewgp	0.123149	0.037028	3.33	0.002	0.048253	0.198045
Gr79293 (Grade 7 in 1992-93 ref grade 9)		gr79293	-0.01293	0.132541	-0.1	0.923	-0.28102	0.255162
Gr89293 (Grade 8 in 1992-93 ref grade 9)		gr89293	-0.12538	0.048361	-2.59	0.013	-0.2232	-0.02756
Gr109293 (Grade 10 in 1992-93 ref grade 9)		gr109293	0.008279	0.125262	0.07	0.948	-0.24509	0.261646
Gr119293 (Grade 11 in 1992-93 ref grade 9)		gr119293	-0.24429	0.168436	-1.45	0.155	-0.58498	0.096407
Clowoy (Low income only)		clowoy	0.017819	0.049742	0.36	0.722	-0.08279	0.118432
Cfgenoy (First generation only)		cfgenoy	0.051589	0.051158	1.01	0.319	-0.05189	0.155066
C11gssf (Grade was 11 on student selection form—ref grade 9)		c11gssf	-0.02485	0.141647	-0.18	0.862	-0.31135	0.261663
C10gssf (Grade was 10 on student selection form—ref grade 9)		c10gssf	-0.04074	0.055938	-0.73	0.471	-0.15389	0.072402
C8gssfm (Grade was 8 on student selection form—ref grade 9)		c8gssfm	-0.14285	0.118341	-1.21	0.235	-0.38222	0.096515
Cexdk (Baseline educational expectation was "don't know"—ref BA)		cexdk	-0.18389	0.040305	-4.56	0	-0.26541	-0.10236
Cexhs (Baseline educational expectation was high school only—ref BA)		cexhs	-0.26295	0.0628	-4.19	0	-0.38997	-0.13592
Cex13v (Baseline educational expectation was vocational—ref BA)		cex13v	-0.18834	0.035934	-5.24	0	-0.26103	-0.11566
cex14aa (Baseline educational expectation was 2-year—ref BA)		cex14aa	-0.17929	0.024134	-7.43	0	-0.22811	-0.13047
Cexma (Baseline educational expectation was Masters Degree—refer BA)		cexma	0.022336	0.025866	0.86	0.393	-0.02998	0.074655
Cexphd (Baseline educational expectation was Ph.D.—ref BA)		cexphd	0.042772	0.018322	2.33	0.025	0.005713	0.079831
Cothrac (Race was not Hispanic, Black, or White—ref Black)		cothrac	0.018877	0.046879	0.4	0.689	-0.07595	0.113699
Chisp (Hispanic—ref Black)		chisp	-0.06829	0.06105	-1.12	0.27	-0.19177	0.055199
Cwhite (Race was White, not Hispanic—ref Black)		cwhite	-0.10059	0.038615	-2.6	0.013	-0.17869	-0.02248
Cfemale (Female)		cfemale	0.139323	0.02847	4.89	0	0.081736	0.196909
Parbefor (Reported participated in other pre-college supplemental services before random assignment)		parbefor	0.032356	0.0231	1.4	0.169	-0.01437	0.07908
_cons		_cons	0.586899	0.075209	7.8	0	0.434774	0.739023

*/**/****/***** Significant at 0.10/0.05/0.01/0.00 level; NS = not significant at the .10 level or below.

NOTE: Results of this table appear in Table 8. Standardized based on baseline survey question B1 with correction for 1991-92 responders. SFA = Student Financial Aid files. Ref = left out reference in dummy variable sequence. See Table 5 for additional note information. See also Table B-3a for results using an alternative variable for EHSGY estimation. Number of strata (wprstco) = 28; Number of PSU (wprojid) = 67; uses poststratified longitudinal baseline weight (v5bwgtp1). Instrumented: xnewgp; Instruments: gr79293 gr89293 gr109293 gr119293 clowoy cfgenoy c11gssf c10gssf c8gssfm cexdk cex13v cexhs cex14aa cexma cexphd cothrac chisp cwhite cfemale parbefor ffutc.

SOURCE: Data tabulated January 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; and federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

TABLE B-3A Instrumental variables regression for Treated on Treated (TOT) modeling dependent variable of appearing on the federal SFA files by +1 (18 months) of expected high school graduation year (EHSGY)
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04
(uses alternative grade variable for standardization)

pr-T = 65.4, pr-C = 55.0 Difference = 10.4**** knaidh1							
	Variable name	Coef.	Linearized Std. Err.	t	P> t	95% Confidence Interval	
xnewgp (Participated in UB/UBMS)	xnewgp	0.098531	0.02724	3.62	0.001	0.043433	0.153629
Ffgr9 (grade 10 ref)	ffgr9	-0.00902	0.052581	-0.17	0.865	-0.11538	0.097332
Ffgr11 (grade 10 ref)	ffgr11	0.014367	0.027164	0.53	0.6	-0.04058	0.069311
Ffgr12 (grade 10 ref)	ffgr12	-0.24887	0.064124	-3.88	0	-0.37858	-0.11917
Clowoy (Low income only)	clowoy	0.057143	0.048196	1.19	0.243	-0.04034	0.154628
Cfgenoy (First generation only)	cfgenoy	0.029202	0.039698	0.74	0.466	-0.0511	0.109499
C11gssf (Grade was 11 on student selection form—ref grade 9)	c11gssf	0.178713	0.056336	3.17	0.003	0.064763	0.292663
C10gssf (Grade was 10 on student selection form—ref grade 9)	c10gssf	0.073839	0.037345	1.98	0.055	-0.0017	0.149376
C8gssfm (Grade was 8 on student selection form—ref grade 9)	c8gssfm	-0.01392	0.062567	-0.22	0.825	-0.14047	0.112637
Cexdk (Baseline educational expectation was "don't know"—ref BA)	cexdk	-0.17051	0.031567	-5.4	0	-0.23436	-0.10666
Cexhs (Baseline educational expectation was high school only—ref BA)	cexhs	-0.24205	0.060803	-3.98	0	-0.36504	-0.11907
Cex13v (Baseline educational expectation was vocational—ref BA)	cex13v	-0.1457	0.02996	-4.86	0	-0.2063	-0.0851
cex14aa (Baseline educational expectation was two-year—ref BA)	cex14aa	-0.17534	0.029116	-6.02	0	-0.23423	-0.11645
Cexma (Baseline educational expectation was Masters Degree—refer BA)	cexma	0.012577	0.023624	0.53	0.597	-0.03521	0.06036
Cexphd (Baseline educational expectation was Ph.D.—ref BA)	cexphd	0.014907	0.026489	0.56	0.577	-0.03867	0.068485
Cothrac (Race was not Hispanic, Black, or White—ref Black)	cothrac	0.038572	0.0459	0.84	0.406	-0.05427	0.131412
Chisp (Hispanic—ref Black)	chisp	-0.02733	0.036807	-0.74	0.462	-0.10178	0.047119
Cwhite (Race was White, not Hispanic—ref Black)	cwhite	-0.08829	0.03744	-2.36	0.023	-0.16402	-0.01256
Cfemale (Female)	cfemale	0.146096	0.026613	5.49	0	0.092267	0.199925
Parbefor (Reported participated in other pre-college supplemental services before random assignment)	parbefor	0.064862	0.021253	3.05	0.004	0.021875	0.10785
_cons	_cons	0.457948	0.040832	11.22	0	0.375358	0.540537

*/**/***/**** Significant at 0.10/0.05/0.01/0.00 level; NS = not significant at the .10 level or below.

NOTE: Model uses an alternative variable from the first follow-up survey (A3) instead of variable B1 from the Baseline Survey on which to standardize EHSGY (See Table B-3). SFA = Student Financial Aid files. Ref = left out reference in dummy variable sequence. See Table 5 in body of text for additional note information. Number of strata (wprstco) = 28; Number of PSU (wprojid) = 67; uses poststratified longitudinal baseline weight (v5bwgtp1). Instrumented: xnewgp; Instruments: gr79293 gr89293 gr109293 gr119293 clowoy cfgenoy c11gssf c10gssf c8gssfm cexdk cex13v cexhs cex14aa cexma cexphd cothrac chisp cwhite cfemale parbefor ffut.

SOURCE: Data tabulated June 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; and federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

TABLE B-4 Intent to Treat (ITT), excludes Project 69, logistic regression results for dependent variable of having evidence of attaining a BA degree in +6 of expected high school graduation year (EHSGY) from any applicable survey, SFA Files, or National Student Clearinghouse (NSC): National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04 (estimate in table 10)

pr-T = 17.0, pr-C = 13.3 Difference = 3.7**** kbahs6		Variable name	Coef.	Linear- ized Std. Err.	t	P> t 	95% Confidence Interval	
FFUTC (random assigned to treatment)		ffutc	0.362466	0.084166	4.31	0	0.192224	0.532708
Gr79293 (Grade 7 on baseline ref grade 9)		gr79293	0.092829	0.334572	0.28	0.783	-0.58391	0.769564
Gr89293 (Grade 8 on baseline ref grade 9)		gr99293	0.446231	0.304951	1.46	0.151	-0.17059	1.063053
Gr109293 (Grade 10 on baseline ref grade 9)		gr109293	0.474865	0.600971	0.79	0.434	-0.74071	1.690443
Gr119293 (Grade 11 on baseline ref grade 9)		gr119293	-1.46837	1.670039	-0.88	0.385	-4.84634	1.909606
Clowoy (Low income only)		clowoy	0.706581	0.265714	2.66	0.011	0.169123	1.244038
Cfgenoy (First generation only)		cfgenoy	0.534226	0.191623	2.79	0.008	0.146633	0.92182
C11gssf (Grade was 11 on student selection form— ref grade 9)		c11gssf	-0.40178	0.652044	-0.62	0.541	-1.72066	0.917103
C10gssf (Grade was 10 on student selection form— ref grade 9)		c10gssf	-0.38824	0.265334	-1.46	0.151	-0.92493	0.148449
C8gssfm (Grade was 8 on student selection form— ref grade 9)		c8gssfm	-0.53442	0.4097	-1.3	0.2	-1.36312	0.294275
Cexdk (Baseline educational expectation was “don’t know”— ref BA)		cexdk	-0.67588	0.215566	-3.14	0.003	-1.1119	-0.23985
Cexhs (Baseline educational expectation was high school only—ref BA)		cexhs	-2.17255	0.908448	-2.39	0.022	-4.01006	-0.33504
Cex13v (Baseline educational expectation was vocational— ref BA)		cex13v	-0.6227	0.277369	-2.25	0.031	-1.18374	-0.06167
cex14aa (Baseline educational expectation was two-year— ref BA)		cex14aa	-1.28374	0.274614	-4.67	0	-1.8392	-0.72828
Cexma (Baseline educational expectation was Masters Degree—refer BA)		cexma	0.250644	0.165068	1.52	0.137	-0.08324	0.584526
Cexphd (Baseline educational expectation was Ph.D.—ref BA)		cexphd	0.19915	0.158047	1.26	0.215	-0.12053	0.518831
Cothrac (Race was not Hispanic, Black, or White—ref Black)		cothrac	0.421884	0.268605	1.57	0.124	-0.12142	0.965189
Chisp (Hispanic—ref Black)		chisp	-0.15843	0.244249	-0.65	0.52	-0.65247	0.335611
Cwhite (Race was White, not Hispanic—ref Black)		cwhite	-0.25651	0.169433	-1.51	0.138	-0.59922	0.086198
Cfemale (Female)		cfemale	0.662424	0.125721	5.27	0	0.40813	0.916719
Parbefor (Reported participated in other pre-college supplemental services before random assignment)		parbefor	0.116322	0.110851	1.05	0.3	-0.10789	0.340539
_cons		_cons	-2.22556	0.185144	-12.02	0	-2.60005	-1.85107

//*/*/*/* Significant at 0.10/0.05/0.01/0.00 level; NS = not significant at the .10 level or below.

NOTE: Results of this table appear in table 10. Standardized based on baseline survey question B1 with correction for 1991-92 responders. SFA = Student Financial Aid files. Ref = left out reference in dummy variable sequence. See Table 5 for additional note information. See also Table B-4a for results using an alternative variable for EHSGY estimation. Number of strata (v5no69st) = 27; Number of PSU (wprojid) = 66; postratified longitudinal baseline weight (v5bwgtp1).

SOURCE: Data tabulated January 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; federal Student Financial Aid (SFA) files 1994-95 to 2003-04; and National Student Clearinghouse Data 1995-2004

TABLE B-4A Intent to Treat (ITT), excludes Project 69, logistic regression results for dependent variable of having evidence of attaining a BA degree in +7 of expected high school graduation year (EHSGY) from the any applicable survey, SFA Files, or National Student Clearinghouse (NSC): National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04 (uses alternative grade variable for standardization)

pr-T = 18.0, pr-C = 14.5 Difference = 3.5**** knba7		Variable name	Coef.	Linearized Std. Err.	t	P> t	95% Confidence Interval	
FFUTC (random assigned to treatment)		ffutc	0.330297	0.082796	3.99	0	0.162826	0.497767
Ffgr9 (grade 10 ref)		ffgr9	-0.22032	0.215644	-1.02	0.313	-0.6565	0.215859
Ffgr11 (grade 10 ref)		ffgr11	-0.00821	0.246862	-0.03	0.974	-0.50754	0.491114
Ffgr12 (grade 10 ref)		ffgr12	-1.20172	0.617098	-1.95	0.059	-2.44992	0.046477
Clowoy (Low income only)		clowoy	0.684771	0.264543	2.59	0.013	0.149683	1.219859
Cfgenoy (First generation only)		cfgenoy	0.577483	0.155877	3.7	0.001	0.262192	0.892773
C11gssf (Grade was 11 on student selection form—ref grade 9)		c11gssf	0.341965	0.384344	0.89	0.379	-0.43544	1.119374
C10gssf (Grade was 10 on student selection form—ref grade 9)		c10gssf	0.040414	0.169063	0.24	0.812	-0.30155	0.382376
C8gssfm (Grade was 8 on student selection form—ref grade 9)		c8gssfm	-0.28152	0.224888	-1.25	0.218	-0.7364	0.173358
Cexdk (Baseline educational expectation was “don’t know”—ref BA)		cexdk	-0.59992	0.208694	-2.87	0.007	-1.02204	-0.1778
Cexhs (Baseline educational expectation was high school only—ref BA)		cexhs	-2.19774	0.883071	-2.49	0.017	-3.98391	-0.41156
Cex13v (Baseline educational expectation was vocational—ref BA)		cex13v	-0.53217	0.287618	-1.85	0.072	-1.11393	0.049596
cex14aa (Baseline educational expectation was two-year—ref BA)		cex14aa	-1.26668	0.275738	-4.59	0	-1.82441	-0.70895
Cexma (Baseline educational expectation was Masters Degree—refer BA)		cexma	0.35107	0.197926	1.77	0.084	-0.04927	0.751413
Cexphd (Baseline educational expectation was Ph.D.—ref BA)		cexphd	0.213193	0.157779	1.35	0.184	-0.10595	0.532331
Cothrac (Race was not Hispanic, Black, or White—ref Black)		cothrac	0.382197	0.25811	1.48	0.147	-0.13988	0.904273
Chisp (Hispanic—ref Black)		chisp	-0.12792	0.225029	-0.57	0.573	-0.58309	0.327239
Cwhite (Race was White, not Hispanic—ref Black)		cwhite	-0.31609	0.154333	-2.05	0.047	-0.62826	-0.00392
Cfemale (Female)		cfemale	0.67513	0.117384	5.75	0	0.437698	0.912561
Parbefor (Reported participated in other pre-college supplemental services before random assignment)		parbefor	0.198067	0.097729	2.03	0.05	0.000391	0.395742
_cons		_cons	-2.10691	0.195875	-10.76	0	-2.50311	-1.71072

*/**/***/**** Significant at 0.10/0.05/0.01/0.00 level; NS = not significant at the .10 level or below.

NOTE: Model uses an alternative variable from the first follow up (A3) on which to standardize grade. Model uses an alternative variable from the First Follow-up Survey (A3) instead of variable B1 from the Baseline Survey on which to standardize EHSGY (See Table B-4). SFA = Student Financial Aid files; Ref = left out reference in dummy variable sequence. See Table 5 in body of report for additional note information; Number of strata (v5no69st) = 27; Number of PSU (wprojid) = 66; poststratified longitudinal baseline weight (v5bwgtp1).

SOURCE: Data tabulated January 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; federal Student Financial Aid (SFA) files 1994-95 to 2003-04; and National Student Clearinghouse Data 1995-2004.

TABLE B-5 Intent to Treat (ITT) logistic regression results for higher academic risk subgroup (bottom 20 percent on 9th grade academic indicators) modeling dependent variable of having evidence of entering postsecondary within +1 (18 months) of expected high school graduation year (EHSGY)
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-2004
(estimate in table 12 in text)

Pr—Treatment- 60.1, Control- 41.0 Difference- 19.1*** n3ar20h== 1) 521 cases-- kenye2	Variable name	Coef.	Linearized Std. Err.	T	P> t	95% Confidence Interval	
Ffutc (random assignment to treatment)	ffutc	0.68927	0.243843	2.83	0.007	0.196051	1.182489
Gr79293 (Grade 7 in 1992-93 ref grade 9)	gr79293	2.221241	1.032169	2.15	0.038	0.133482	4.308999
Gr89293 (Grade 8 in 1992-93 ref grade 9)	gr89293	-0.25723	0.640009	-0.4	0.69	-1.55177	1.037314
Gr109293 (Grade 10 in 1992-93 ref grade 9)	gr109293	0.870869	0.988209	0.88	0.384	-1.12797	2.869711
Gr119293 (Grade 11 in 1992-93 ref grade 9)							
Clowoy (Low income only)	clowoy	0.677017	0.435089	1.56	0.128	-0.20303	1.557068
Cfgenoy (First generation only)	cfgenoy	0.543434	0.497777	1.09	0.282	-0.46342	1.550283
C11gssf (Grade was 11 on student selection form—ref grade 9)	c11gssf	-1.34637	1.380078	-0.98	0.335	-4.13784	1.445102
C10gssf (Grade was 10 on student selection form—ref grade 9)	c10gssf	0.06583	0.682602	0.1	0.924	-1.31486	1.446522
C8gssfm (Grade was 8 on student selection form—ref grade 9)	c8gssfm	-2.55885	1.08985	-2.35	0.024	-4.76328	-0.35442
Cexdk (Baseline educational expectation was “don’t know”—ref BA)	cexdk	-0.65612	0.522212	-1.26	0.216	-1.71239	0.400155
Cexhs (Baseline educational expectation was high school only—ref BA)	cexhs	-2.14998	1.264569	-1.7	0.097	-4.70782	0.407849
Cex13v (Baseline educational expectation was vocational—ref BA)	cex13v	-0.98	0.453137	-2.16	0.037	-1.89656	-0.06345
cex14aa (Baseline educational expectation was two-year—ref BA)	cex14aa	-0.50108	0.412805	-1.21	0.232	-1.33606	0.333896
Cexma (Baseline educational expectation was Masters Degree—ref BA)	cexma	-0.11761	0.344832	-0.34	0.735	-0.8151	0.579874
Cexphd (Baseline educational expectation was Ph.D.—ref BA)	cexphd	-0.80588	0.469222	-1.72	0.094	-1.75497	0.143209
Cothrac (Race was not Hispanic, Black, or White—ref Black)	cothrac	-0.54198	0.572089	-0.95	0.349	-1.69914	0.615182
Chisp (Hispanic—ref Black)	chisp	-0.4907	0.643455	-0.76	0.45	-1.79221	0.810811
Cwhite (Race was White, not Hispanic—ref Black)	cwhite	-0.647	0.348201	-1.86	0.071	-1.3513	0.057307
Cfemale (Female)	cfemale	0.534927	0.181975	2.94	0.005	0.166847	0.903007
Parbefor (Reported participated in other pre-college supplemental services before random assignment)	parbefor	0.411237	0.334681	1.23	0.227	-0.26572	1.088194
_cons	_cons	0.080847	0.53191	0.15	0.88	-0.99504	1.156736

*/**/****/***** Significant at 0.10/0.05/0.01/0.00 level; NS = not significant at the .10 level or below.

NOTE: Results of this table appear in Figure 9 and Table 12. Standardized based on baseline survey question B1 with correction for 1991-92 responders. SFA = Student Financial Aid files. Ref = left out reference in dummy variable sequence. See Table 5 for additional note information. Number of strata (wprstco) = 28; Number of PSU (wprojid) = 67; uses postratified longitudinal baseline weight (v5bwgtp1).

SOURCE: Data tabulated January 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

TABLE B-6 Intent to Treat (ITT) logistic regression results for sample members with lower educational expectations for modeling of dependent variables of attainment of any postsecondary credential using survey data only adjusted for non-response
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

Pr—Treatment- 50.3, Control- 35.0 Difference - 15.3** bahexp == 0	Variable name	Coef.	Linearized Std. Err.	t	P> t	[95% Conf.	Interval]
Ffutc (random assignment to treatment)	ffutc	0.781074	0.356626	2.19	0.035	0.059731	1.502417
Gr79293 (Grade 7 in 1992-93 ref grade 9)	gr79293	15.74681	0.737344	21.36	0	14.25539	17.23823
Gr89293 (Grade 8 in 1992-93 ref grade 9)	gr89293	-1.76353	0.856123	-2.06	0.046	-3.4952	-0.03186
Gr109293 (Grade 10 in 1992-93 ref grade 9)	gr109293	-0.04512	0.81914	-0.06	0.956	-1.70199	1.611743
Gr119293 (Grade 11 in 1992-93 ref grade 9)							
Clowoy (Low income only)	clowoy	1.004854	0.97003	1.04	0.307	-0.95722	2.966925
Cfgenoy (First generation only)	cfgenoy	0.316873	0.610377	0.52	0.607	-0.91773	1.551476
C11gssf (Grade was 11 on student selection form—ref grade 9)	c11gssf	-1.56826	1.093469	-1.43	0.159	-3.78	0.643495
C10gssf (Grade was 10 on student selection form—ref grade 9)	c10gssf	-1.38135	0.637629	-2.17	0.036	-2.67107	-0.09162
C8gssfm (Grade was 8 on student selection form—ref grade 9)	c8gssfm	-17.8409
Cexdk (Baseline educational expectation was don't know—ref BA)	cexdk	-0.45648	0.571858	-0.8	0.43	-1.61317	0.700211
Cexhs (Baseline educational expectation was high school only—ref BA)	cexhs	1.464931	0.468557	3.13	0.003	0.517185	2.412677
Cex13v (Baseline educational expectation was vocational—ref BA)							
cex14aa (Baseline educational expectation was 2-year—ref BA)	cex14aa	-0.71024	0.872378	-0.81	0.421	-2.47479	1.054315
Cexma (Baseline educational expectation was Masters Degree—refer BA)							
Cexphd (Baseline educational expectation was Ph.D.—ref BA)							
Cothrac (Race was not Hispanic or Black or White—ref Black)	cothrac	0.188601	0.435626	0.43	0.667	-0.69254	1.069738
Chisp (Hispanic—ref Black)	chisp	0.65849	0.522057	1.26	0.215	-0.39747	1.714449
Cwhite (Race was White, not Hispanic—ref Black)	cwhite	-0.35067	0.413444	-0.85	0.402	-1.18694	0.485598
Cfemale (Female)	cfemale	0.769137	0.544524	1.41	0.166	-0.33227	1.87054
Parbefor (Reported participated in other pre-college supplemental services before random assignment)	parbefor	0.135167	0.207005	0.65	0.518	-0.28354	0.553873
_cons	_cons	0.604448	0.873176	0.69	0.493	-1.16172	2.370613

*/**/***/**** Significant at 0.10/0.05/0.01/0.00 level; NS = not significant at the .10 level or below.

NOTE: Ref = left out reference in dummy variable sequence. See Table 5 in text for complete note information; Number of strata = 28; Number of PSU = 67; Note results using survey data only subject to non-response bias and sub-group results subject to unequal weighting.

Appendix C

Project Sample Frame and Stratum (C1) and Unweighted and Weighted Number of Participants Per Project (C2)

The following is a description of how the strata in Table C-1 were defined. It is taken from Appendix A in the third follow-up report (Myers et al. 2004, Appendix A).

Strata are defined, in part, by cross-tabulating three stratifying variables: (1) location of the host institution, (2) type and control of the host institution, and (3) project size. Type and control were ascertained from the 1990–1991 Integrated Postsecondary Education Data System (IPEDS) Institutional Characteristics file. The project size variable had three categories: (1) small (60 or fewer students), (2) medium (61 to 99 students), and (3) large (100 or more students). Enrollment figures were obtained from the 1990–1991 Upward Bound performance reports.

Although some strata are defined entirely in terms of the location, type, and size variables, many strata are defined by also taking into account projects' racial/ethnic composition. At least 25 percent of the students served by "Asian projects" are classified as Asian or Pacific Islander. For a Native American (including Alaskan Native), African American, Latino, or white project, at least 50 percent of the students served by the project are classified as members of the specified racial/ethnic group. Data on race/ethnicity were obtained from Upward Bound performance reports.

In addition to the 46 stratum defined in Table C-1, projects were permitted to establish additional strata for their applicants (those who completed the baseline survey). These might be based on target school, sex, or applicant recruitment period. This resulted in a total of 339 strata. Weights were poststratified to reflect these differences in selection probabilities per project. Treatment and control weights per project were also equalized. This resulted in the unweighted and weighted distributions per project are tabulated in Table C-2.

In each individual round of the surveys, a non-response adjusted weight was developed adjusting the weights on a per-project basis to the poststratified totals. There were also adjustments done based on applicants who were considered "must serves" by the projects. These cases were removed and their weights distributed within the project.

TABLE C-1 Sample documentation" Table A.1 Selection of Upward Bound Projects for the Impact Study"
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

Stratum			Number of Projects		
			Universe	Sample Selected	Sample Respondents ^a
URBAN: FOUR-YEAR, PUBLIC	Small	African American ^b	14	2	2
		Latino	4	1	1
		Other	7	1	1
	Medium	Asian	5	2	2
		Native American	2	1	1
		Latino	9	2	2
	Large	Other	56	1	1
		African American	25	3	3
		Latino	6	3	3
		White	2	1	1
URBAN: FOUR-YEAR, PRIVATE	Small	African American	8	1	1
		Other	5	1	1
		Asian	4	1	1
	Medium	African American	38	3	3
		Latino	3	2	2
		Other	5	1	1
	Large	Asian	2	1	1
		African American	22	5	3
		Other	3	1	1
		URBAN: TWO-YEAR	Small	Native American	1
African American	9			3	3
Latino	3			1	1
Other	5			1	1
Medium	Asian		2	1	1
	African American		10	3	3
	Other		4	1	1
Large			3	1	1
RURAL: FOUR-YEAR, PUBLIC	Small	White	6	1	1
		Other	6	1	1
	Medium	Native American	7	3	2
		Latino	4	1	1
	Large	Other	30	1	1
		African American	5	1	1
RURAL: FOUR-YEAR, PRIVATE	Medium	Other	10	2	2
		Small	7	1	1
	Large	Medium	14	2	2
		Large	4	1	1
RURAL: TWO-YEAR	Small	African American	4	2	2
		White	5	1	1
		Other	6	1	1
	Medium	African American	5	1	1
		White	8	2	2
		Other	5	1	1
	Large	White	3	1	1
		Other	3	1	1
Total			395	70	67

^a Respondents are projects in which random assignment was carried out.

^b At least 50 percent of the students served by "African American projects" are classified as African American according to the 1990-91 Upward Bound performance reports. Native American, Latino, and White projects are similarly defined. (Native American includes Alaskan Native.) For Asian projects, at least 25 percent of the students served are classified as Asian or Pacific Islander.

NOTE: Based on 395 projects that had been operating for three-years time of study sampling.

SOURCE: Appendix A. U.S. Department of Education, Office of the Undersecretary, Policy and Program Studies Service (PPSS) The Impacts of Regular Upward Bound: Results from the Third Follow Up Data Collection Study, Washington, DC, 2004: 13.

TABLE C-2 Number of unweighted sample members and weighted sample totals by control and treatment status by project for 67 participating sampled grantees
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

Project ID	Unweighted sample members			Weighted sample totals			Project ID	Unweighted sample members			Weighted sample totals		
	Control	Treatment	Total	Control	Treatment	Total		Control	Treatment	Total	Control	Treatment	Total
P59	2	2	4	28	28	56	P31	22	20	42	126	126	252
P37	3	2	5	10	10	20	P19	19	24	43	90	90	180
P81	6	6	12	60	60	120	P40	21	22	43	722	722	1,444
P82	5	7	12	96	96	192	P44	13	33	46	114	114	228
P47	8	9	17	38	38	76	P60	21	25	46	417	417	833
P64	8	10	18	96	96	192	P66	19	27	46	306	306	612
P17	10	10	20	73	73	147	P73	18	28	46	337	337	675
P58	10	12	22	104	104	207	P28	19	28	47	196	196	392
P24	14	9	23	115	115	230	P16	23	25	48	250	250	500
P75	7	16	23	58	58	115	P27	19	29	48	150	150	300
P33	14	10	24	78	78	156	P30	23	25	48	1,470	1,470	2,940
P51	11	13	24	113	113	225	P39	15	33	48	240	240	480
P56	11	13	24	175	175	350	P50	20	29	49	633	633	1,267
P48	13	12	25	25	25	50	P72	20	30	50	196	196	392
P29	11	15	26	41	41	81	P12	33	18	51	217	217	433
P38	13	13	26	52	52	104	P41	17	35	52	260	260	520
P34	16	16	28	140	140	280	P61	27	26	53	114	114	228
P54	12	17	29	240	240	480	P67	22	31	53	371	371	742
P15	12	18	30	120	120	240	P79	26	28	54	747	747	1,494
P32	14	20	32	294	294	588	P63	27	29	56	427	427	854
P43	16	16	32	78	78	156	P55	28	29	57	500	500	1,000
P71	19	14	33	231	231	462	P20	28	30	58	413	413	826
P35	13	15	34	128	128	256	P70	38	24	62	320	320	640
P68	16	18	34	68	68	136	P52	32	35	67	617	617	1,233
P77	12	22	34	119	119	238	P18	27	48	75	150	150	300
P36	18	17	35	257	257	513	P80	36	39	75	243	243	486
P11	16	20	36	164	164	328	P46	38	40	78	572	572	1,144
P57	16	20	36	120	120	240	P21	36	44	80	320	320	640
P22	21	17	38	390	390	780	P78	41	42	83	252	252	504
P62	14	24	38	228	228	456	P45	42	43	85	570	570	1,140
P74	18	20	38	80	80	160	P69	52	33	85	5,768	5,768	11,536
P13	18	22	40	210	210	420	P23	46	50	96	300	300	600
P26	21	19	40	192	192	384	Total	1,322	1,522	2,844	21,866	21,866	43,731
P49	18	23	41	129	129	258							
P76	18	23	41	110	110	220							

SOURCE: Data tabulated January 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

Appendix D

Additional Tabulations: Sensitivity to Project 69

STANDARDIZATION AND USE OF ADMINISTRATIVE RECORDS

The tables in the body of the report attempt to mitigate some of the observed bias introduced by Project 69 by use of a longitudinal file composed of all sample members rather than only responders to the survey, standardization of outcomes to EHSGY, and care in the use of the National Student Clearinghouse (NSC) data. This appendix addresses the issue of the sensitivity of results to Project 69 when these procedures are not followed. Specifically it addresses the question of the sensitivity of the results published by ED in the third follow-up report to inclusion of 69 and also to standardization and use of administrative records. We also include some tables comparing fourth follow-up data with and without 69. Note that none of the models included control for the academic differences in treatment and control group introduced by 69, as these were measures from the 9th grade after treatment had begun for a portion of the sample.

Tables D-1 and D-1a present models based on only those who responded to the third follow-up report for the outcome of “any postsecondary enrollment.” The weights were adjusted for non-response by project and weighted up to the poststratified totals. The outcome variable is not standardized as to expected high school graduation year (EHSGY) and the file uses only survey data unsupplemented by SFA data. As can be seen, results in D-1 without the outlier Project 69 are significant, and those with 69 are not significant (D-1a). Results in D-1a are consistent with those that formed the basis of the conclusions in the published third follow-up report which stated that the program had no effect on postsecondary enrollment.

Tables D-2 and D-2a present similar models from the fourth follow-up survey. The tables are also based on survey responders only, do not include standardization for EHSGY, and do not use SFA records. The models use the fourth follow-up non-response adjusted weights. Results in D-2 excluding 69 are significant and those in D-2a including 69 are not significant.

Tables D-3 and D-3a, also using fourth follow-up survey data, give results when the survey data are supplemented with SFA Pell recipient data and a longitudinal file made up of all sample members including survey non-responders is used. The outcome variable is not standardized for EHSGY. As can be seen in these two models, results with and without 69 are significant.

Tables D-5 and D-5a and D-6 and D-6a present data from responders to the third follow-up survey only with standardization for EHSGY for outcomes of postsecondary entrance evidence and presence on the aid file respectively. Tables D-5 and D-5a show the model including Project 69 is significant at the .08 level and the model without 69 is significant at the .01 level. Tables D-6 and D-6a with third follow-up responders only look at presence on the aid file by +1 and show significance without Project 69, but are not significant with Project 69.

TABLE D-1 Third follow-up survey responders only, excludes Project 69, no SFA records, no standardization Intent to Treat (ITT) logistic regression results for dependent variable of having evidence of entering postsecondary from survey only: National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

pr-T = 77.8, pr-C = 72.2 Difference = 5.7** psstu3 pweight: f3wgtstu							
	Variable name	Coef.	Linear-ized Std. Err.	T	P> t	95% Confidence Interval	
FFUTC (random assigned to treatment)	ffutc	0.369317	0.185317	1.99	0.053	-0.00552	0.744156
Gr79293 (Grade 7 on baseline ref grade 9)	gr79293	-0.38526	0.713454	-0.54	0.592	-1.82835	1.05784
Gr89293 (Grade 8 on baseline ref grade 9)	gr89293	-0.51941	0.260255	-2	0.053	-1.04582	0.007009
Gr109293 (Grade 10 on baseline ref grade 9)	gr109293	-0.55074	0.418589	-1.32	0.196	-1.39742	0.295935
Gr119293 (Grade 11 on baseline ref grade 9)	gr119293	-2.93193	0.797048	-3.68	0.001	-4.54411	-1.31975
Clowoy (Low income only)	clowoy	0.497022	0.33415	1.49	0.145	-0.17886	1.172904
Cfgenoy (First generation only)	cfgenoy	0.502402	0.150072	3.35	0.002	0.198852	0.805951
C11gssf (Grade was 11 on student selection form—ref grade 9)	c11gssf	0.594807	0.435353	1.37	0.18	-0.28578	1.475391
C10gssf (Grade was 10 on student selection form—ref grade 9)	c10gssf	0.033499	0.28969	0.12	0.909	-0.55246	0.619453
C8gssfm (Grade was 8 on student selection form—ref grade 9)	c8gssfm	-0.27028	0.573049	-0.47	0.64	-1.42938	0.88882
Cexdk (Baseline educational expectation was "don't know"—ref BA)	cexdk	-1.1039	0.133833	-8.25	0	-1.3746	-0.8332
Cexhs (Baseline educational expectation was high school only—ref BA)	cexhs	-2.04626	0.362701	-5.64	0	-2.77989	-1.31263
Cex13v (Baseline educational expectation was vocational—ref BA)	cex13v	-0.70324	0.222507	-3.16	0.003	-1.1533	-0.25318
cex14aa (Baseline educational expectation was two-year—ref BA)	cex14aa	-0.75898	0.153389	-4.95	0	-1.06924	-0.44872
Cexma (Baseline educational expectation was Masters Degree—refer BA)	cexma	0.083534	0.153466	0.54	0.589	-0.22688	0.393948
Cexphd (Baseline educational expectation was Ph.D.—ref BA)	cexphd	0.293215	0.197091	1.49	0.145	-0.10544	0.691868
Cothrac (Race was not Hispanic, Black, or White—ref Black)	cothrac	-0.30344	0.390095	-0.78	0.441	-1.09248	0.485601
Chisp (Hispanic—ref Black)	chisp	-0.56072	0.334941	-1.67	0.102	-1.23821	0.11676
Cwhite (Race was White, not Hispanic—ref Black)	cwhite	-0.6727	0.1874	-3.59	0.001	-1.05176	-0.29365
Cfemale (Female)	cfemale	0.482606	0.08674	5.56	0	0.307157	0.658055
Parbefor (Reported participated in other pre-college supplemental services before random assignment)	parbefor	0.418205	0.176585	2.37	0.023	0.061028	0.775383
_cons	_cons	1.136211	0.42492	2.67	0.011	0.276729	1.995692

*/**/***/**** Significant at 0.10/0.05/0.01/0.00 level; NS = not significant at the .10 level or below.

NOTE: For this model only cases responding to the third follow-up survey were included. The same model (see D-2) is not significant when Project 69 is included. SFA = Student Financial Aid file records; Ref = left out reference in dummy variable sequence. See Table 5 in body of report for additional note information. Number of strata (v5no69st) = 27; Number of PSU (wprojid) = 66; Third follow-up non-response adjusted weight (f3wgtstu).

SOURCE: Data tabulated April 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04.

TABLE D-1A Third follow-up survey responders only, includes Project 69, no SFA records, no standardization, Intent to Treat (ITT) logistic regression results for dependent variable of having evidence of entering postsecondary from survey only: National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

pr-T = 76.4, pr-C = 75.4 Difference = 1.0 NS psstu3	Variable name	Coef.	Linear- ized Std. Err.	t	P> t 	95% Confidence Interval	
FFUTC (random assigned to treatment)	ffutc	0.141031	0.268171	0.53	0.602	-0.4014	0.683458
Gr79293 (Grade 7 on baseline ref grade 9)	gr79293	-0.59776	0.663163	-0.9	0.373	-1.93913	0.743614
Gr89293 (Grade 8 on baseline ref grade 9)	gr89293	-0.75743	0.266349	-2.84	0.007	-1.29617	-0.21869
Gr109293 (Grade 10 on baseline ref grade 9)	gr109293	-0.46113	0.426424	-1.08	0.286	-1.32365	0.401397
Gr119293 (Grade 11 on baseline ref grade 9)	gr119293	-2.46243	0.934213	-2.64	0.012	-4.35205	-0.57281
Clowoy (Low income only)	clowoy	0.479191	0.358532	1.34	0.189	-0.24601	1.204391
Cfgenoy (First generation only)	cfgenoy	0.302686	0.208178	1.45	0.154	-0.11839	0.723767
C11gssf (Grade was 11 on student selection form—ref grade 9)	c11gssf	0.138236	0.559293	0.25	0.806	-0.99304	1.269513
C10gssf (Grade was 10 on student selection form—ref grade 9)	c10gssf	-0.3085	0.376911	-0.82	0.418	-1.07088	0.45387
C8gssfm (Grade was 8 on student selection form—ref grade 9)	c8gssfm	-0.32094	0.582832	-0.55	0.585	-1.49983	0.857945
Cexdk (Baseline educational expectation was “don’t know”—ref BA)	cexdk	-1.03927	0.112994	-9.2	0	-1.26782	-0.81072
Cexhs (Baseline educational expectation was high school only—ref BA)	cexhs	-2.45028	0.527662	-4.64	0	-3.51758	-1.38298
Cex13v (Baseline educational expectation was vocational—ref BA)	cex13v	-1.06833	0.287396	-3.72	0.001	-1.64964	-0.48702
cex14aa (Baseline educational expectation was two-year—ref BA)	cex14aa	-0.70579	0.135953	-5.19	0	-0.98078	-0.4308
Cexma (Baseline educational expectation was Masters Degree—refer BA)	cexma	0.136026	0.126256	1.08	0.288	-0.11935	0.391403
Cexphd (Baseline educational expectation was Ph.D.—ref BA)	cexphd	0.115257	0.196742	0.59	0.561	-0.28269	0.513205
Cothrac (Race was not Hispanic, Black, or White—ref Black)	cothrac	-0.22205	0.375809	-0.59	0.558	-0.98219	0.538097
Chisp (Hispanic—ref Black)	chisp	-0.17922	0.331225	-0.54	0.592	-0.84918	0.490748
Cwhite (Race was White, not Hispanic—ref Black)	cwhite	-0.56851	0.185982	-3.06	0.004	-0.94469	-0.19232
Cfemale (Female)	cfemale	0.492856	0.088764	5.55	0	0.313315	0.672398
Parbefor (Reported participated in other pre-college supplemental services before random assignment)	parbefor	0.690804	0.251563	2.75	0.009	0.18197	1.199639
_cons	_cons	1.453551	0.460216	3.16	0.003	0.522675	2.384426

*/**/***/**** Significant at 0.10/0.05/.01/00 level; NS = not significant at the .10 level or below.

NOTE: For this model only cases responding to the third follow-up survey were included. The same model (see D-1) is significant when Project 69 is excluded. SFA = Student Financial Aid file records; Ref = left out reference in dummy variable sequence. See Table 5 in body of report for additional note information. Number of strata (wprstco) = 28; Number of PSU (wprojid) = 67; Third follow-up non-response adjusted weight (f3wgtsu).

SOURCE: Data tabulated January 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04.

TABLE D-2 Fourth follow-up survey responders only, excludes Project 69, no SFA records, no standardization, Intent to Treat (ITT) logistic regression results for dependent variable of having evidence of entering postsecondary from survey only: National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

pr-T = 83.3, pr-C = 79.0 Difference = 4.3*** ps_stud		Variable name	Coef.	Linear-ized Std. Err.	t	P> t	95% Confidence Interval	
FFUTC (random assigned to treatment)		ffutc	0.337605	0.10175	3.32	0.002	0.131797	0.543413
Gr79293 (Grade 7 on baseline ref grade 9)		gr79293	1.30252	0.867437	1.5	0.141	-0.45204	3.057077
Gr89293 (Grade 8 on baseline ref grade 9)		gr99293	0.879648	0.535513	1.64	0.109	-0.20353	1.962826
Gr109293 (Grade 10 on baseline ref grade 9)		gr109293	1.088942	0.812492	1.34	0.188	-0.55448	2.732363
Gr119293 (Grade 11 on baseline ref grade 9)								
Clowoy (Low income only)		clowoy	0.633752	0.364168	1.74	0.09	-0.10285	1.370352
Cfgenoy (First generation only)		cfgenoy	0.814161	0.213126	3.82	0	0.383073	1.24525
C11gssf (Grade was 11 on student selection form—ref grade 9)		c11gssf	-0.54535	0.767777	-0.71	0.482	-2.09833	1.007628
C10gssf (Grade was 10 on student selection form—ref grade 9)		c10gssf	-0.14976	0.495249	-0.3	0.764	-1.1515	0.851977
C8gssfm (Grade was 8 on student selection form—ref grade 9)		c8gssfm	-1.25548	0.864469	-1.45	0.154	-3.00403	0.493073
Cexdk (Baseline educational expectation was “don’t know”—ref BA)		cexdk	-0.97584	0.228482	-4.27	0	-1.43799	-0.5137
Cexhs (Baseline educational expectation was high school only—ref BA)		cexhs	-1.17703	0.385399	-3.05	0.004	-1.95657	-0.39749
Cex13v (Baseline educational expectation was vocational—ref BA)		cex13v	-0.64872	0.258846	-2.51	0.016	-1.17229	-0.12516
cex14aa (Baseline educational expectation was two-year—ref BA)		cex14aa	-0.97565	0.27436	-3.56	0.001	-1.53059	-0.4207
Cexma (Baseline educational expectation was Masters Degree—refer BA)		cexma	0.025812	0.317701	0.08	0.936	-0.6168	0.668423
Cexphd (Baseline educational expectation was Ph.D.—ref BA)		cexphd	0.327316	0.210097	1.56	0.127	-0.09764	0.752276
Cothrac (Race was not Hispanic, Black, or White—ref Black)		cothrac	0.32522	0.396929	0.82	0.418	-0.47765	1.128086
Chisp (Hispanic—ref Black)		chisp	-0.44816	0.347514	-1.29	0.205	-1.15108	0.254751
Cwhite (Race was White, not Hispanic—ref Black)		cwhite	-0.72431	0.183085	-3.96	0	-1.09463	-0.35398
Cfemale (Female)		cfemale	0.679909	0.129109	5.27	0	0.418763	0.941056
Parbefor (Reported participated in other pre-college supplemental services before random assignment)		parbefor	0.151738	0.235195	0.65	0.523	-0.32399	0.627465
_cons		_cons	0.713349	0.251182	2.84	0.007	0.205287	1.221412

*/**/***/**** Significant at 0.10/0.05/0.01/0.00 level; NS = not significant at the .10 level or below.

NOTE: Note this model is not significant when Project 69 is included. For this model only cases responding to the fourth follow-up survey were included. SFA = Student Financial Aid file records; Ref = left out reference in dummy variable sequence. See Table 5 in text for complete note information; Number of strata = 27; Number of PSU = 66; Fourth Follow-up non-response adjusted weight used (f3wgtstu).

SOURCE: Data tabulated January 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04.

TABLE D-2A Fourth follow-up survey responders only, includes Project 69, no SFA records, no standardization, Intent to Treat (ITT) logistic regression results for dependent variable of having evidence of entering postsecondary from survey only: National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

pr-T = 80.4, pr-C = 80.1 Difference = .3NS		Variable name	Coef.	Linear-ized Std. Err.	t	P> t 	95% Confidence Interval	
FFUTC (random assigned to treatment)		ffutc	0.084736	0.215254	0.39	0.696	-0.35066	0.520128
Gr79293 (Grade 7 on baseline ref grade 9)		gr79293	0.428275	1.020849	0.42	0.677	-1.63659	2.493137
Gr89293 (Grade 8 on baseline ref grade 9)		gr89293	-0.95684	0.402589	-2.38	0.022	-1.77115	-0.14252
Gr109293 (Grade 10 on baseline ref grade 9)		gr109293	0.383448	0.636128	0.6	0.55	-0.90324	1.670137
Gr119293 (Grade 11 on baseline ref grade 9)								
Clowoy (Low income only)		clowoy	0.593685	0.344787	1.72	0.093	-0.10371	1.291083
Cfgenoy (First generation only)		cfgenoy	0.681439	0.149827	4.55	0	0.378385	0.984493
C11gssf (Grade was 11 on student selection form—ref grade 9)		c11gssf	-1.01867	0.809222	-1.26	0.216	-2.65548	0.618132
C10gssf (Grade was 10 on student selection form—ref grade 9)		c10gssf	-0.35362	0.382688	-0.92	0.361	-1.12768	0.420438
C8gssfm (Grade was 8 on student selection form—ref grade 9)		c8gssfm	-1.26615	0.817749	-1.55	0.13	-2.9202	0.387908
Cexdk (Baseline educational expectation was “don’t know”—ref BA)		cexdk	-0.99535	0.18506	-5.38	0	-1.36967	-0.62103
Cexhs (Baseline educational expectation was high school only—ref BA)		cexhs	-1.11906	0.298769	-3.75	0.001	-1.72338	-0.51474
Cex13v (Baseline educational expectation was vocational—ref BA)		cex13v	-0.19011	0.49659	-0.38	0.704	-1.19455	0.814342
cex14aa (Baseline educational expectation was two-year—ref BA)		cex14aa	-0.65298	0.375402	-1.74	0.09	-1.4123	0.106341
Cexma (Baseline educational expectation was Masters Degree—refer BA)		cexma	0.243658	0.311587	0.78	0.439	-0.38659	0.873903
Cexphd (Baseline educational expectation was Ph.D.—ref BA)		cexphd	0.245596	0.167969	1.46	0.152	-0.09415	0.585346
Cothrac (Race was not Hispanic, Black, or White—ref Black)		cothrac	0.233535	0.377198	0.62	0.539	-0.52942	0.996489
Chisp (Hispanic—ref Black)		chisp	0.115153	0.462875	0.25	0.805	-0.8211	1.051406
Cwhite (Race was White, not Hispanic—ref Black)		cwhite	-0.48924	0.209367	-2.34	0.025	-0.91272	-0.06576
Cfemale (Female)		cfemale	0.647159	0.137993	4.69	0	0.368041	0.926277
Parbefor (Reported participated in other pre-college supplemental services before random assignment)		parbefor	0.553313	0.337405	1.64	0.109	-0.12915	1.235778
_cons		_cons	1.478867	0.45247	3.27	0.002	0.563661	2.394073

*/**/***/**** Significant at 0.10/0.05/.01/00 level; NS = not significant at the .10 level or below.

NOTE: This model is significant when Project 69 is excluded. For this model only cases responding to the fourth follow-up survey were included. SFA = Student Financial Aid file records; Ref = left out reference in dummy variable sequence. See Table 5 in text for complete note information; Number of strata = 27; Number of PSU = 66; Fourth follow-up survey non-response adjusted weight. (f3wgtu).

SOURCE: Data tabulated January 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04.

TABLE D-3 Fourth follow-up, includes all sample members including survey non-responders (longitudinal file), excludes Project 69, uses SFA files, no standardization, Intent to Treat (ITT) logistic regression results for dependent variable of having evidence of entering postsecondary from survey or Pell Award File (EHSGY)

National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

pr-T = 76.9, pr-C = 68.6 Difference = 8.3**** newpost v5bwgtp1	Variable name	Coef.	Linearized Std. Err.	t	P> t 	95% Confidence Interval	
	FFUTC (random assigned to treatment)	0.463618	0.099849	4.64	0	0.261655	0.665581
	Gr79293 (Grade 7 on baseline ref grade 9)	1.08042	0.58644	1.84	0.073	-0.10577	2.266607
	Gr89293 (Grade 8 on baseline ref grade 9)	0.409761	0.217525	1.88	0.067	-0.03023	0.849747
	Gr109293 (Grade 10 on baseline ref grade 9)	0.28351	0.604111	0.47	0.641	-0.93842	1.50544
	Gr119293 (Grade 11 on baseline ref grade 9)	-1.91973	1.068992	-1.8	0.08	-4.08197	0.242508
	Clowoy (Low income only)	0.22122	0.243387	0.91	0.369	-0.27108	0.713517
	Cfgenoy (First generation only)	0.502117	0.167035	3.01	0.005	0.164257	0.839977
	C11gssf (Grade was 11 on student selection form— ref grade 9)	0.238785	0.557928	0.43	0.671	-0.88973	1.367301
	C10gssf (Grade was 10 on student selection form— ref grade 9)	0.126644	0.27933	0.45	0.653	-0.43835	0.691642
	C8gssfm (Grade was 8 on student selection form— ref grade 9)	-1.16844	0.556986	-2.1	0.042	-2.29505	-0.04183
	Cexdk (Baseline educational expectation was “don’t know”—ref BA)	-0.75869	0.188105	-4.03	0	-1.13917	-0.37821
	Cexhs (Baseline educational expectation was high school only—ref BA)	-0.82877	0.223662	-3.71	0.001	-1.28117	-0.37637
	Cex13v (Baseline educational expectation was vocational— ref BA)	-0.84796	0.251484	-3.37	0.002	-1.35664	-0.33929
	cex14aa (Baseline educational expectation was two- year—ref BA)	-0.61834	0.179248	-3.45	0.001	-0.98091	-0.25578
	Cexma (Baseline educational expectation was Masters Degree—refer BA)	-0.00142	0.19485	-0.01	0.994	-0.39555	0.392697
	Cexphd (Baseline educational expectation was Ph.D.— ref BA)	0.247364	0.167452	1.48	0.148	-0.09134	0.586067
	Cothrac (Race was not Hispanic, Black, or White—ref Black)	-0.03242	0.330711	-0.1	0.922	-0.70134	0.636507
	Chisp (Hispanic—ref Black)	-0.41865	0.338453	-1.24	0.224	-1.10323	0.265937
	Cwhite (Race was White, not Hispanic—ref Black)	-0.55126	0.136633	-4.03	0	-0.82763	-0.2749
	Cfemale (Female)	0.708592	0.091058	7.78	0	0.524409	0.892774
	Parbefor (Reported participated in other pre-college supplemental services before random assignment)	0.073842	0.173554	0.43	0.673	-0.2772	0.424889
	_cons	0.302325	0.156342	1.93	0.06	-0.01391	0.618557

*/**/***/**** Significant at 0.10/0.05/0.01/0.00 level; NS = not significant at the .10 level or below.

NOTE: This model is significant with and without Project 69. Longitudinal file of all sample members; no standardization. SFA = Student Financial Aid file records; Ref = left out reference in dummy variable sequence. See Table 5 in text for additional information; Number of strata = 27; Number of PSU = 66; Uses poststratified weight --v5bwgtp1

SOURCE: Data tabulated January 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04.

TABLE D-3A Fourth follow-up, includes all sample members including survey non-responders (longitudinal file), includes Project 69, uses SFA files, no standardization, Intent to Treat (ITT) logistic regression results for dependent variable of having evidence of entering postsecondary from survey or Pell Award File (EHSGY)
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

pr-T = 74.6, pr-C = 69.3 Difference = 5.3** newpost v5bwgtp1							
	Variable name	Coef.	Linearized Std. Err.	t	P> t	95% Confidence Interval	
FFUTC (random assigned to treatment)	ffutc	0.32958	0.145134	2.27	0.029	0.036019	0.623141
Gr79293 (Grade 7 on baseline ref grade 9)	gr79293	1.201728	0.601639	2	0.053	-0.0152	2.418659
Gr89293 (Grade 8 on baseline ref grade 9)	gr99293	0.614978	0.256851	2.39	0.022	0.095448	1.134508
Gr109293 (Grade 10 on baseline ref grade 9)	gr109293	1.581075	1.178788	1.34	0.188	-0.80325	3.965398
Gr119293 (Grade 11 on baseline ref grade 9)	gr119293	-0.55819	1.482307	-0.38	0.709	-3.55645	2.440055
Clowoy (Low income only)	clowoy	0.192644	0.225623	0.85	0.398	-0.26372	0.64901
Cfgenoy (First generation only)	cfgenoy	0.586295	0.14419	4.07	0	0.294643	0.877946
C11gssf (Grade was 11 on student selection form—ref grade 9)	c11gssf	-1.13846	1.183651	-0.96	0.342	-3.53262	1.255705
C10gssf (Grade was 10 on student selection form—ref grade 9)	c10gssf	-0.23374	0.352961	-0.66	0.512	-0.94767	0.480189
C8gssfm (Grade was 8 on student selection form—ref grade 9)	c8gssfm	-1.20102	0.536453	-2.24	0.031	-2.28609	-0.11594
Cexdk (Baseline educational expectation was “don’t know”—ref BA)	cexdk	-0.76208	0.152513	-5	0	-1.07057	-0.4536
Cexhs (Baseline educational expectation was high school only—ref BA)	cexhs	-0.78848	0.174431	-4.52	0	-1.1413	-0.43566
Cex13v (Baseline educational expectation was vocational—ref BA)	cex13v	-0.9222	0.176962	-5.21	0	-1.28014	-0.56426
cex14aa (Baseline educational expectation was two-year—ref BA)	cex14aa	-0.41154	0.212039	-1.94	0.06	-0.84043	0.017345
Cexma (Baseline educational expectation was Masters Degree—refer BA)	cexma	0.130265	0.176729	0.74	0.465	-0.2272	0.487732
Cexphd (Baseline educational expectation was Ph.D.—ref BA)	cexphd	0.009553	0.209893	0.05	0.964	-0.415	0.434102
Cothrac (Race was not Hispanic, Black, or White—ref Black)	cothrac	0.033766	0.303158	0.11	0.912	-0.57943	0.646961
Chisp (Hispanic—ref Black)	chisp	-0.22797	0.240451	-0.95	0.349	-0.71433	0.258387
Cwhite (Race was White, not Hispanic—ref Black)	cwhite	-0.37358	0.144243	-2.59	0.013	-0.66533	-0.08182
Cfemale (Female)	cfemale	0.794426	0.109682	7.24	0	0.572573	1.016279
Parbefor (Reported participated in other pre-college supplemental services before random assignment)	parbefor	0.538958	0.369007	1.46	0.152	-0.20743	1.285344
_cons	_cons	0.067727	0.178514	0.38	0.706	-0.29335	0.428806

*/**/***/**** Significant at 0.10/0.05/0.01/0.00 level; NS = not significant at the .10 level or below.

NOTE: This model is significant with and without Project 69. Longitudinal file of all sample members; no standardization. SFA = Student Financial Aid file records; Ref = left out reference in dummy variable sequence. See Table 5 in text for additional information; Number of strata = 28; Number of PSU = 67; Uses poststratified weight --v5bwgtp1

SOURCE: Data tabulated January 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education.

TABLE D-4 Third follow-up survey, survey responders only, excludes Project 69, includes standardization, Intent to Treat (ITT) logistic regression results for dependent variable of having evidence of entering postsecondary from survey or SFA file by +1 year of expected high school graduation year (EHSGY)
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

pr-T = 77.8 pr-C = 70.0 Difference = 7.8****—Keyne2 standardized by EHSGY		Variable name	Coef.	Linearized Std. Err.	t	P> t	95% Confidence Interval	
FFUTC (random assigned to treatment)		ffutc	0.471848	0.145736	3.24	0.002	0.177069	0.766627
Gr79293 (Grade 7 on baseline ref grade 9)		gr79293	-0.20484	1.029489	-0.2	0.843	-2.28718	1.877502
Gr89293 (Grade 8 on baseline ref grade 9)		gr89293	-0.40037	0.238112	-1.68	0.101	-0.882	0.081255
Gr109293 (Grade 10 on baseline ref grade 9)		gr109293	-0.7047	0.478781	-1.47	0.149	-1.67312	0.263728
Gr119293 (Grade 11 on baseline ref grade 9)		gr119293	-2.46541	0.978341	-2.52	0.016	-4.44429	-0.48653
Clowoy (Low income only)		clowoy	0.362786	0.317251	1.14	0.26	-0.27892	1.004488
Cfgenoy (First generation only)		cfgenoy	0.383814	0.245482	1.56	0.126	-0.11272	0.880347
C11gssf (Grade was 11 on student selection form—ref grade 9)		c11gssf	0.193708	0.575234	0.34	0.738	-0.96981	1.357227
C10gssf (Grade was 10 on student selection form—ref grade 9)		c10gssf	-0.14841	0.279921	-0.53	0.599	-0.7146	0.417786
C8gssfm (Grade was 8 on student selection form—ref grade 9)		c8gssfm	-0.37578	0.777055	-0.48	0.631	-1.94752	1.195961
Cexdk (Baseline educational expectation was “don’t know”—ref BA)		cexdk	-0.9754	0.165755	-5.88	0	-1.31067	-0.64012
Cexhs (Baseline educational expectation was high school only—ref BA)		cexhs	-1.54376	0.451226	-3.42	0.001	-2.45645	-0.63107
Cex13v (Baseline educational expectation was vocational—ref BA)		cex13v	-0.87067	0.265627	-3.28	0.002	-1.40795	-0.33339
cex14aa (Baseline educational expectation was two-year—ref BA)		cex14aa	-0.6131	0.152911	-4.01	0	-0.92239	-0.30381
Cexma (Baseline educational expectation was Masters Degree—refer BA)		cexma	0.166976	0.141145	1.18	0.244	-0.11852	0.452469
Cexphd (Baseline educational expectation was Ph.D.—ref BA)		cexphd	0.292371	0.153158	1.91	0.064	-0.01742	0.602162
Cothrac (Race was not Hispanic, Black, or White—ref Black)		cothrac	-0.27156	0.327282	-0.83	0.412	-0.93355	0.390427
Chisp (Hispanic—ref Black)		chisp	-0.46167	0.337168	-1.37	0.179	-1.14366	0.220311
Cwhite (Race was White, not Hispanic—ref Black)		cwhite	-0.65014	0.197479	-3.29	0.002	-1.04958	-0.2507
Cfemale (Female)		cfemale	0.532785	0.105862	5.03	0	0.318658	0.746912
Parbefor (Reported participated in other pre-college supplemental services before random assignment)		parbefor	0.376998	0.210911	1.79	0.082	-0.04961	0.803606
_cons		_cons	1.028935	0.411984	2.5	0.017	0.195618	1.862251

*/**/****/***** Significant at 0.10/0.05/0.01/0.00 level; NS = not significant at the .10 level or below.

NOTE: For this model only cases responding to the third follow-up survey were included. Outcome variable is standardized. The same model (see D-5a) is marginally significant when Project 69 is included. SFA = Student Financial Aid file records; Ref = left out reference in dummy variable sequence. See Table 5 in body of report for additional note information. Number of strata (v5no69st) = 27; Number of PSU (wprojid) = 66; third follow-up non-response adjusted weight (f3wgtsu).

SOURCE: Data tabulated May 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93-2003-04; federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

TABLE D-4A Third follow-up survey, survey responders only, includes Project 69, includes standardization, Intent to Treat (ITT) logistic regression results for dependent variable of having evidence from survey or SFA file of entering postsecondary within +1 year expected high school graduation year (EHSYG)
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

pr-T = 75.9 pr-C = 71.4 Difference = 4.6*—Keyne2 standardized by EHSYG							
	Variable name	Coef.	Linearized Std. Err.	t	P> t	95% Confidence Interval	
FFUTC (random assigned to treatment)	Ffutc	0.318136	0.17791	1.79	0.082	-0.04172	0.677992
Gr79293 (Grade 7 on baseline ref grade 9)	gr79293	-0.56832	0.947441	-0.6	0.552	-2.48471	1.348057
Gr89293 (Grade 8 on baseline ref grade 9)	gr89293	-0.78901	0.382443	-2.06	0.046	-1.56257	-0.01544
Gr109293 (Grade 10 on baseline ref grade 9)	gr109293	-0.67931	0.48134	-1.41	0.166	-1.65292	0.294287
Gr119293 (Grade 11 on baseline ref grade 9)	gr119293	-2.2214	1.02137	-2.17	0.036	-4.28731	-0.15548
Clowoy (Low income only)	Clowoy	0.378319	0.343516	1.1	0.278	-0.31651	1.073144
Cfgenoy (First generation only)	Cfgenoy	0.275751	0.222008	1.24	0.222	-0.1733	0.724804
C11gssf (Grade was 11 on student selection form—ref grade 9)	c11gssf	-0.29124	0.686345	-0.42	0.674	-1.6795	1.097028
C10gssf (Grade was 10 on student selection form—ref grade 9)	c10gssf	-0.50922	0.399144	-1.28	0.21	-1.31656	0.298126
C8gssfm (Grade was 8 on student selection form—ref grade 9)	c8gssfm	-0.33268	0.734281	-0.45	0.653	-1.8179	1.152547
Cexdk (Baseline educational expectation was “don’t know”—ref BA)	Cexdk	-0.87859	0.166817	-5.27	0	-1.21601	-0.54117
Cexhs (Baseline educational expectation was high school only—ref BA)	Cexhs	-2.0257	0.624246	-3.25	0.002	-3.28836	-0.76305
Cex13v (Baseline educational expectation was vocational—ref BA)	cex13v	-1.00957	0.206954	-4.88	0	-1.42817	-0.59097
cex14aa (Baseline educational expectation was two-year—ref BA)	cex14aa	-0.71782	0.157606	-4.55	0	-1.03661	-0.39903
Cexma (Baseline educational expectation was Masters Degree—refer BA)	Cexma	0.074933	0.155035	0.48	0.632	-0.23865	0.388519
Cexphd (Baseline educational expectation was Ph.D.—ref BA)	Cexphd	0.027615	0.23187	0.12	0.906	-0.44139	0.496615
Cothrac (Race was not Hispanic, Black, or White—ref Black)	Cothrac	-0.21328	0.329648	-0.65	0.521	-0.88006	0.453496
Chisp (Hispanic—ref Black)	Chisp	-0.32536	0.219513	-1.48	0.146	-0.76937	0.118642
Cwhite (Race was White, not Hispanic—ref Black)	Cwhite	-0.56228	0.191528	-2.94	0.006	-0.94968	-0.17488
Cfemale (Female)	Cfemale	0.547214	0.092548	5.91	0	0.360018	0.734409
Parbefor (Reported participated in other pre-college supplemental services before random assignment)	Parbefor	0.44684	0.160402	2.79	0.008	0.122397	0.771284
_cons	_cons	1.47975	0.527458	2.81	0.008	0.412865	2.546635

*/**/***/**** Significant at 0.10/0.05/.01/00 level; NS = not significant at the .10 level or below.

NOTE: For this model only cases responding to the third follow-up survey were included. Outcome variable is standardized. SFA = Student Financial Aid file records; Ref = left out reference in dummy variable sequence. See Table 5 in body of report for additional note information. Number of strata (wprstco) = 28; Number of PSU (wprojid) = 67; third follow-up non-response adjusted weight (f3wgtsu).

SOURCE: Data tabulated May 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

TABLE D-5 Third follow-up, survey responders only, excludes Project 69, includes standardization, instrumental variables regression (TOT) results for dependent variable of having evidence of entering postsecondary from survey or SFA file of expected high school graduation year (EHSGY)
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

pr-T = 78.2 pr-C = 65.6 Difference = 12.6*** Keyne2 standardized by EHSGY		Variable name	Coef.	Linearized Std. Err.	t	P> t	95% Confidence Interval	
xnewgp (evidence had some participation in UB or UBMS)		Xnewgp	0.12093	0.041916	2.89	0.006	0.036147	0.205712
Gr79293 (Grade 7 on baseline ref grade 9)		gr79293	-0.05136	0.163701	-0.31	0.755	-0.38248	0.279756
Gr89293 (Grade 8 on baseline ref grade 9)		gr89293	-0.06701	0.044185	-1.52	0.137	-0.15638	0.02236
Gr109293 (Grade 10 on baseline ref grade 9)		gr109293	-0.11024	0.097094	-1.14	0.263	-0.30663	0.086156
Gr119293 (Grade 11 on baseline ref grade 9)		gr119293	-0.37186	0.164149	-2.27	0.029	-0.70388	-0.03984
Clowoy (Low income only)		Clowoy	0.058254	0.050461	1.15	0.255	-0.04381	0.16032
Cfgenoy (First generation only)		Cfgenoy	0.066584	0.044515	1.5	0.143	-0.02346	0.156623
C11gssf (Grade was 11 on student selection form—ref grade 9)		c11gssf	0.030226	0.116421	0.26	0.797	-0.20526	0.26571
C10gssf (Grade was 10 on student selection form—ref grade 9)		c10gssf	-0.01582	0.051378	-0.31	0.76	-0.11974	0.088105
C8gssfm (Grade was 8 on student selection form—ref grade 9)		c8gssfm	-0.04571	0.121014	-0.38	0.708	-0.29049	0.199061
Cexdk (Baseline educational expectation was “don’t know”—ref BA)		Cexdk	-0.21047	0.040112	-5.25	0	-0.29161	-0.12934
Cexhs (Baseline educational expectation was high school only—ref BA)		Cexhs	-0.3324	0.104278	-3.19	0.003	-0.54332	-0.12148
Cex13v (Baseline educational expectation was vocational—ref BA)		cex13v	-0.19009	0.061876	-3.07	0.004	-0.31525	-0.06494
cex14aa (Baseline educational expectation was two-year—ref BA)		cex14aa	-0.12471	0.031524	-3.96	0	-0.18847	-0.06095
Cexma (Baseline educational expectation was Masters Degree—refer BA)		Cexma	0.026265	0.02443	1.08	0.289	-0.02315	0.07568
Cexphd (Baseline educational expectation was Ph.D.—ref BA)		Cexphd	0.043174	0.023858	1.81	0.078	-0.00508	0.091431
Cothrac (Race was not Hispanic, Black, or White—ref Black)		Cothrac	-0.04565	0.061107	-0.75	0.46	-0.16925	0.077949
Chisp (Hispanic—ref Black)		Chisp	-0.08405	0.066721	-1.26	0.215	-0.219	0.050908
Cwhite (Race was White, not Hispanic—ref Black)		Cwhite	-0.11131	0.039783	-2.8	0.008	-0.19178	-0.03085
Cfemale (Female)		Cfemale	0.105072	0.020994	5	0	0.062607	0.147537
Parbefor (Reported participated in other pre-college supplemental services before random assignment)		Parbefor	0.057645	0.035567	1.62	0.113	-0.0143	0.129587
_cons		_cons	0.695867	0.08441	8.24	0	0.525132	0.866603

*** Significant at 0.10/0.05/0.01/00 level; NS = not significant at the .10 level or below.

NOTE: For this model only cases responding to the third follow-up survey were included. Outcome variable is standardized. SFA = Student Financial Aid file records; Ref = left out reference in dummy variable sequence. See Table 5 in body of report for additional note information. Number of strata (wprstco) = 28; Number of PSU (wprojid) = 67; Third Follow-up non-response adjusted weight (f3wgtsu).

SOURCE: Data tabulated May 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

TABLE D-5A Third follow-up survey, survey responders only, includes Project 69, includes standardization, instrumental variables regression (TOT) results for dependent variable of having evidence of entering postsecondary from survey or SFA file of expected high school graduation year (EHSGY)
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

pr-T = 76.0 pr-C = 68.2 Difference = 8.2 NS .11 Keyne2 standardized by EHSGY							
	Variable name	Coef.	Linearized Std. Err.	t	P> t	95% Confidence Interval	
xnewgp (evidence had some participation in UB or UBMS)	xnewgp	0.079566	0.049383	1.61	0.115	-0.02032	0.179453
Gr79293 (Grade 7 on baseline ref grade 9)	gr79293	-0.1101	0.148731	-0.74	0.464	-0.41093	0.19074
Gr89293 (Grade 8 on baseline ref grade 9)	gr89293	-0.13549	0.049163	-2.76	0.009	-0.23493	-0.03605
Gr109293 (Grade 10 on baseline ref grade 9)	gr109293	-0.11446	0.096604	-1.18	0.243	-0.30986	0.080939
Gr119293 (Grade 11 on baseline ref grade 9)	gr119293	-0.37385	0.164861	-2.27	0.029	-0.70731	-0.04039
Clowoy (Low income only)	clowoy	0.060933	0.05433	1.12	0.269	-0.04896	0.170826
Cfgenoy (First generation only)	cfgenoy	0.046977	0.039249	1.2	0.239	-0.03241	0.126365
C11gssf (Grade was 11 on student selection form—ref grade 9)	c11gssf	-0.05445	0.121787	-0.45	0.657	-0.30079	0.191882
C10gssf (Grade was 10 on student selection form—ref grade 9)	c10gssf	-0.08505	0.055154	-1.54	0.131	-0.19661	0.026505
C8gssfm (Grade was 8 on student selection form—ref grade 9)	c8gssfm	-0.04671	0.116594	-0.4	0.691	-0.28255	0.189119
Cexdk (Baseline educational expectation was “don’t know”—ref BA)	cexdk	-0.18175	0.043381	-4.19	0	-0.2695	-0.09401
Cexhs (Baseline educational expectation was high school only—ref BA)	cexhs	-0.44227	0.13162	-3.36	0.002	-0.70849	-0.17604
Cex13v (Baseline educational expectation was vocational—ref BA)	cex13v	-0.20448	0.044165	-4.63	0	-0.29381	-0.11515
cex14aa (Baseline educational expectation was two-year—ref BA)	cex14aa	-0.14424	0.02802	-5.15	0	-0.20091	-0.08756
Cexma (Baseline educational expectation was Masters Degree—refer BA)	cexma	0.014779	0.026204	0.56	0.576	-0.03822	0.067781
Cexphd (Baseline educational expectation was Ph.D.—ref BA)	cexphd	0.003308	0.035543	0.09	0.926	-0.06858	0.0752
Cothrac (Race was not Hispanic, Black, or White—ref Black)	cothrac	-0.03762	0.063098	-0.6	0.554	-0.16525	0.090009
Chisp (Hispanic—ref Black)	chisp	-0.0598	0.04181	-1.43	0.161	-0.14437	0.024766
Cwhite (Race was White, not Hispanic—ref Black)	cwhite	-0.10072	0.039535	-2.55	0.015	-0.18069	-0.02076
Cfemale (Female)	cfemale	0.108196	0.019756	5.48	0	0.068236	0.148156
Parbefor (Reported participated in other pre-college supplemental services before random assignment)	parbefor	0.068257	0.026527	2.57	0.014	0.0146	0.121913
_cons	_cons	0.787128	0.085408	9.22	0	0.614374	0.959882

*/**/***/**** Significant at 0.10/0.05/0.01/0.00 level; NS = not significant at the .10 level or below.

NOTE: For this model only cases responding to the third follow-up survey were included. Outcome variable is standardized. SFA = Student Financial Aid file records; Ref = left out reference in dummy variable sequence. See Table 5 in body of report for additional note information. Number of strata (wprstco) = 28; Number of PSU (wprojid) = 67; Third follow-up non-response adjusted weight (f3wgtsu).

SOURCE: Data tabulated May 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

TABLE D-6 Third follow-up, survey responders only, includes Project 69, instrumental variables regression (TOT) results for dependent variable of having evidence of entering postsecondary from survey no standardization: National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

xb-T = 75.4, xb-C = 71.7 Difference = 3.7 NS Pweight = f3wgtstu Psstu3							
	Variable name	Coef.	Linearized Std. Err.	t	P> t	95% Confidence Interval	
xnewgp (evidence had some participation in UB or UBMS)	Xnewgp	0.032015	0.067863	0.47	0.64	-0.10525	0.169281
Gr79293 (Grade 7 on baseline ref grade 9)	gr79293	-0.0986	0.097035	-1.02	0.316	-0.29488	0.097668
Gr89293 (Grade 8 on baseline ref grade 9)	gr89293	-0.1198	0.022705	-5.28	0	-0.16573	-0.07388
Gr109293 (Grade 10 on baseline ref grade 9)	gr109293	-0.07644	0.072907	-1.05	0.301	-0.22391	0.071023
Gr119293 (Grade 11 on baseline ref grade 9)	gr119293	-0.44269	0.122826	-3.6	0.001	-0.69113	-0.19425
Clowoy (Low income only)	Clowoy	0.07375	0.050999	1.45	0.156	-0.02941	0.176905
Cfgenoy (First generation only)	Cfgenoy	0.049848	0.035698	1.4	0.17	-0.02236	0.122053
C11gssf (Grade was 11 on student selection form—ref grade 9)	c11gssf	0.036368	0.082454	0.44	0.662	-0.13041	0.203148
C10gssf (Grade was 10 on student selection form—ref grade 9)	c10gssf	-0.0463	0.044216	-1.05	0.302	-0.13573	0.043138
C8gssfm (Grade was 8 on student selection form—ref grade 9)	c8gssfm	-0.05032	0.091234	-0.55	0.584	-0.23486	0.134213
Cexdk (Baseline educational expectation was “don’t know”—ref BA)	Cexdk	-0.21359	0.029249	-7.3	0	-0.27276	-0.15443
Cexhs (Baseline educational expectation was high school only—ref BA)	Cexhs	-0.51924	0.100293	-5.18	0	-0.7221	-0.31637
Cex13v (Baseline educational expectation was vocational—ref BA)	cex13v	-0.21884	0.062181	-3.52	0.001	-0.34461	-0.09307
cex14aa (Baseline educational expectation was two-year—ref BA)	cex14aa	-0.13191	0.029941	-4.41	0	-0.19247	-0.07135
Cexma (Baseline educational expectation was Masters Degree—refer BA)	Cexma	0.021932	0.02081	1.05	0.298	-0.02016	0.064023
Cexphd (Baseline educational expectation was Ph.D.—ref BA)	Cexphd	0.016635	0.029403	0.57	0.575	-0.04284	0.076108
Cothrac (Race was not Hispanic or Black or White—ref Black)	Cothrac	-0.03536	0.07011	-0.5	0.617	-0.17717	0.106448
Chisp (Hispanic—ref Black)	Chisp	-0.03149	0.057064	-0.55	0.584	-0.14691	0.083933
Cwhite (Race was White, not Hispanic—ref Black)	Cwhite	-0.10203	0.035308	-2.89	0.006	-0.17345	-0.03061
Cfemale (Female)	Cfemale	0.090886	0.021805	4.17	0	0.046781	0.13499
Parbefor (Reported participated in other pre-college supplemental services before random assignment)	Parbefor	0.104119	0.0359	2.9	0.006	0.031505	0.176734
_cons	_cons	0.786003	0.071313	11.02	0	0.641759	0.930247

*/**/***/**** Significant at 0.10/0.05/0.01/0.00 level; NS = not significant at the .10 level or below.

NOTE: For this model only cases responding to the third follow-up survey were included. Outcome variable is not standardized. The same model is significant when Project 69 is excluded. Ref = left out reference in dummy variable sequence. See Table 5 in body of report for additional note information. Number of strata (wprstco) = 28; Number of PSU (wprojid) = 67; Third follow-up non-response adjusted weight (f3wgtstu).

SOURCE: Data tabulated September 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04.

TABLE D-7 Third follow-up survey responders only, excludes Project 69, includes standardization, Intent to Treat (ITT) logistic regression results for dependent variable of appearing on federal financial aid file as applicant within +1 (18 months) of expected high school graduation year (EHSGY)
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

pr-T = 67.2, pr-C = 60.7 Difference = 6.5** --kaidhs standardized by EHSGY	Variable name	Coef.	Linearized Std. Err.	t	P> t 	95% Confidence Interval	
FFUTC (random assigned to treatment)	Ffutc	0.335097	0.131333	2.55	0.015	0.069451	0.600744
Gr79293 (Grade 7 on baseline ref grade 9)	gr79293	-0.62925	0.847138	-0.74	0.462	-2.34275	1.084246
Gr89293 (Grade 8 on baseline ref grade 9)	gr89293	-0.62684	0.247231	-2.54	0.015	-1.12691	-0.12676
Gr109293 (Grade 10 on baseline ref grade 9)	gr109293	-0.2284	0.584013	-0.39	0.698	-1.40968	0.952875
Gr119293 (Grade 11 on baseline ref grade 9)	gr119293	-1.97727	1.054882	-1.87	0.068	-4.11097	0.15643
Clowoy (Low income only)	Clowoy	0.076876	0.252053	0.3	0.762	-0.43295	0.5867
Cfgenoy (First generation only)	Cfgenoy	0.182671	0.23071	0.79	0.433	-0.28398	0.649325
C11gssf (Grade was 11 on student selection form—ref grade 9)	c11gssf	-0.04901	0.667762	-0.07	0.942	-1.39969	1.301666
C10gssf (Grade was 10 on student selection form—ref grade 9)	c10gssf	-0.29504	0.275853	-1.07	0.291	-0.853	0.262927
C8gssfm (Grade was 8 on student selection form—ref grade 9)	c8gssfm	-0.11524	0.590867	-0.2	0.846	-1.31038	1.079904
Cexdk (Baseline educational expectation was “don’t know” ---ref BA)	Cexdk	-0.94322	0.223889	-4.21	0	-1.39608	-0.49037
Cexhs (Baseline educational expectation was high school only---ref BA)	Cexhs	-1.46153	0.309387	-4.72	0	-2.08732	-0.83573
Cex13v (Baseline educational expectation was vocational—ref BA)	cex13v	-0.61096	0.2129	-2.87	0.007	-1.04159	-0.18033
cex14aa (Baseline educational expectation was two-year—ref BA)	cex14aa	-0.74734	0.123378	-6.06	0	-0.9969	-0.49779
Cexma (Baseline educational expectation was Masters Degree---refer BA)	Cexma	0.152594	0.122309	1.25	0.22	-0.0948	0.399988
Cexphd (Baseline educational expectation was Ph.D.—ref BA)	Cexphd	0.133778	0.092662	1.44	0.157	-0.05365	0.321205
Cothrac (Race was not Hispanic, Black, or White—ref Black)	Cothrac	-0.06428	0.26635	-0.24	0.811	-0.60302	0.474468
Chisp (Hispanic—ref Black)	Chisp	-0.41505	0.263606	-1.57	0.123	-0.94824	0.118145
Cwhite (Race was White, not Hispanic—ref Black)	Cwhite	-0.60977	0.199767	-3.05	0.004	-1.01384	-0.20571
Cfemale (Female)	Cfemale	0.523694	0.129561	4.04	0	0.261633	0.785755
Parbefor (Reported participated in other pre-college supplemental services before random assignment)	Parbefor	0.200495	0.114352	1.75	0.087	-0.0308	0.431794
_cons	_cons	0.869016	0.372415	2.33	0.025	0.115735	1.622297

*/**/***/**** Significant at 0.10/0.05/0.01/0.00 level; NS = not significant at the .10 level or below.

NOTE: For this model only cases responding to the third follow-up survey were included. Outcome variable is standardized. The same model (see D-6a) is not significant when Project 69 is included. SFA = Student Financial Aid file records; Ref = left out reference in dummy variable sequence. See table 5 in body of report for additional note information. Number of strata (v5no69st) = 27; Number of PSU (wprojid) = 66; Third follow-up non-response adjusted weight (f3wgtstu).

SOURCE: Data tabulated May 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to 2003-04; federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

TABLE D-8 Third follow-up survey responders only, includes Project 69, includes standardization, Intent to Treat (ITT) logistic regression results for dependent variable of appearing on federal financial aid file as applicant within +1 (18 months) of expected high school graduation year (EHSGY)
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04

pr-T = 62.0, pr-C = 59.1 Difference = 2.8 NS kaidhs		Variable name	Coef.	Linearized Std. Err.	t	P> t	95% Confidence Interval	
FFUTC (random assigned to treatment)		Ffutc	0.201285	0.15696	1.28	0.207	-0.1162	0.518766
Gr79293 (Grade 7 on baseline ref grade 9)		gr79293	-0.99231	0.683285	-1.45	0.154	-2.37438	0.389767
Gr89293 (Grade 8 on baseline ref grade 9)		gr89293	-1.1552	0.502105	-2.3	0.027	-2.1708	-0.1396
Gr109293 (Grade 10 on baseline ref grade 9)		gr109293	0.041714	0.619753	0.07	0.947	-1.21185	1.295282
Gr119293 (Grade 11 on baseline ref grade 9)		gr119293	-1.45371	1.128657	-1.29	0.205	-3.73664	0.829212
Clowoy (Low income only)		Clowoy	0.268405	0.305969	0.88	0.386	-0.35048	0.887286
Cfgenoy (First generation only)		Cfgenoy	0.176501	0.176561	1	0.324	-0.18063	0.533629
C11gssf (Grade was 11 on student selection form— ref grade 9)		c11gssf	-0.79206	0.880256	-0.9	0.374	-2.57255	0.988424
C10gssf (Grade was 10 on student selection form— ref grade 9)		c10gssf	-0.8853	0.549069	-1.61	0.115	-1.99589	0.225298
C8gssfm (Grade was 8 on student selection form— ref grade 9)		c8gssfm	0.067778	0.495135	0.14	0.892	-0.93373	1.069283
Cexdk (Baseline educational expectation was “don’t know”— ref BA)		Cexdk	-0.80728	0.22559	-3.58	0.001	-1.26358	-0.35098
Cexhs (Baseline educational expectation was high school only—ref BA)		Cexhs	-1.76048	0.435647	-4.04	0	-2.64166	-0.87931
Cex13v (Baseline educational expectation was vocational— ref BA)		cex13v	-1.0296	0.312666	-3.29	0.002	-1.66202	-0.39717
cex14aa (Baseline educational expectation was two-year— ref BA)		cex14aa	-1.00794	0.260691	-3.87	0	-1.53524	-0.48065
Cexma (Baseline educational expectation was Masters Degree—refer BA)		Cexma	0.18785	0.094023	2	0.053	-0.00233	0.37803
Cexphd (Baseline educational expectation was Ph.D.—ref BA)		Cexphd	-0.16609	0.226026	-0.73	0.467	-0.62327	0.291092
Cothrac (Race was not Hispanic, Black, or White—ref Black)		Cothrac	0.37531	0.391083	0.96	0.343	-0.41573	1.166349
Chisp (Hispanic—ref Black)		Chisp	-0.08086	0.254593	-0.32	0.752	-0.59582	0.434104
Cwhite (Race was White, not Hispanic—ref Black)		Cwhite	-0.18963	0.315171	-0.6	0.551	-0.82712	0.447861
Cfemale (Female)		Cfemale	0.650257	0.197571	3.29	0.002	0.250632	1.049883
Parbefor (Reported participated in other pre-college supplemental services before random assignment)		Parbefor	0.344947	0.130587	2.64	0.012	0.080809	0.609084
_cons		_cons	1.012604	0.38979	2.6	0.013	0.22418	1.801029

//*/*/* Significant at 0.10/0.05/0.01/0.00 level; NS = not significant at the .10 level or below.

NOTE: For this model only cases responding to the third follow-up survey were included. Outcome variable is standardized. The same model (see D-6) is significant when Project 69 is included. SFA = Student Financial Aid file records; Ref = left out reference in dummy variable sequence. See Table 6 in body of report for additional note information. Number of strata (wprstco) = 28; Number of PSU (wprojid) = 67; third follow-up non-response adjusted weight (f3wgtstu).

SOURCE: Data tabulated (May 2008) by Policy and Program Studies Services (PPSS) using data from the, National Evaluation of Upward Bound, as applicable, study files baseline through fifth follow-up; Federal Student Financial Aid (SFA) files: 1994-95 to 2003-04.

Appendix E

Additional Tabulations Referenced in Text

Tables E-1 to E-4 contain additional tables referenced in the text. Table E-1 gives the distribution for the Student Selection Form of grade reported by the project directors around the time of random assignment into the treatment group. This grade is not keyed to a specific academic year, as the random assignment spanned over two academic years and also students might have been “rising” into the grade reported rather than already having entered it or completed the grade. This grade was used as a control in the Mathematica models for grade at entry into Upward Bound. This paper also uses the grade on student selection form as a control; however, unlike the Mathematica impact estimates, as discussed in appendix B, in this paper most of the outcome measures are standardized to the expected high school graduation based on the baseline survey grade completed in 1992-93 or based on grade in 1993-94 as reported on the first follow-up survey.

Table E-2 presents a comparison of impact estimates using the “PELL award” indicator with those obtained using the “applied for aid” indicator. In both cases the fourth follow up survey results were used and the measures were unstandardized as to years since high school graduation. One can see that both sets of impacts are significant and positive. In this set of estimates the PELL award indicator has slightly higher impact estimates.

Table E-3 presents results for PELL award by +1 and by +4 of expected high school graduation year.

Table E-4 presents results using the same outcome measure as was used for the main estimates for postsecondary entrance in the Mathematica Fifth Follow Up report. It includes using National Student Clearinghouse data in a period when its use is not recommended as NSC coverage reached only 25 percent by 1996, and Project 69 was not participating. Outcomes are also not standardized by EHSGY. It is presented here to show that the results are sensitive to Project 69’s inclusion and also to the post-stratification weights compared to the baseweights and compared to using no weights. Table E-4 also presents impact estimates from a model that includes interaction terms for being in the control group in project 69. Impact estimates are similar to those that are obtained when project 69 is removed (see last row in table).

TABLE E-1 Percentage distribution of grade listed on the Student Selection Form, total sample and Project 69
National Evaluation of Upward Bound (UB), study conducted 1992-93 to 2003-04

Student Selection Form Grade Reported	Total Sample			Project 69	
	All	Treatment	Control	Treatment	Control
8	13	13	13	0	0
9	46	48	45	63	48
10	31	30	34	28	45
11	9	9	10	10	8

NOTE: Student Selection Form is not keyed to a specific academic year. Recruitment spanned over 2-academic years and distribution reflects the grade reported by projects as the grade the student was classified as when the forms were completed. A portion of those coded as grade 9 may have been “rising 9th graders” entering UB in summer before high school. Others may have been already in the 9th grade or in spring of the 9th grade. Weights are the poststratified weight used analyses.

SOURCE: Data tabulated May 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), US Department of Education: study conducted 1992-93 to 2003-04.

**TABLE E-2 Evidence of postsecondary entrance based on reporting postsecondary entrance on the Fourth Follow-Up survey or presence on the PELL award files for ITT and TOT models:
Not Standardized by Expected High School Graduation Year (EHSGY)
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04**

Outcome variable	All sampling strata		One outlier project removed (remainder represents 74 percent of Horizons waiting list)	
	Given UB Opportunity (ITT)	Participated in UB/ UBMS (TOT/CACE)	Given UB Opportunity (ITT)	Participated in UB/ UBMS (TOT/CACE)
Evidence of from Fourth Follow Up Survey conducted in 2001-02 or from PELL files (1994-2004)	pr-T = 74.6, pr-C = 69.3 Difference = 5.3** (pr T = 77.7, pr C = 71.1 Difference = 6.6****)	xb T = 74.5, xb C = 65.9 Difference = 8.6** (xb T = 78.2, xb C = 67.9 Difference = 10.3****)	pr T = 76.9, pr C = 68.6 Difference = 8.3**** (pr T = 77.9, pr C = 71.0 Difference = 6.9****)	xb T = 77.6, xb C = 64.8 Difference = 13.8**** (xb T = 78.5, xb C = 67.7 Difference = 10.8****)
Evidence from Fourth Follow Up Survey conducted in 2001-02 or was applicant on the federal student aid files (applied for aid)	pr-T = 77.6, pr-C = 74.5 Difference = 3.1 (.14) (pr T = 81.0, pr C = 75.7 Difference = 5.3****)	xb T = 76.7, xb C = 70.8 Difference = 5.9 (NS) (xb T = 81.1, xb C = 72.2 Difference = 8.9****)	pr T = 80.1, pr C = 74.3 Difference = 5.8**** (pr T = 81.1, pr C = 75.6 Difference = 5.5****)	xb T = 79.9, xb C = 70.0 Difference = 9.9**** (xb T = 81.3, xb C = 72.0 Difference = 9.3****)

*/**/***/**** Significant at 0.10/0.05/.01/0.00 level; NS = not significant at the .10 level or below.

NOTE: Unweighted data given in parentheses. Please see table 5 for detailed notes. UB = regular Upward Bound; UBMS = Upward Bound Math/ Science; ITT = intent to treat; TOT = treated on treated; CACE = complier average causal effect; T = treatment; C = control or comparison; pr = estimated probability from STATA logit regression; xb = linear prediction from STATA ivreg (instrumental variables regression).

SOURCE: Data tabulated January 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to - 2003-04; and federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

**TABLE E-3 Evidence of Pell Award within +1 (18 months) and within +4 of expected high school graduation year (EHSGY) for ITT and TOT models
National Evaluation of Upward Bound, study conducted 1992-93 to 2003-04**

Outcome variable	All sampling strata		One outlier project removed (remainder represents 74 percent of Horizons waiting list)	
	Given UB Opportunity (ITT)	Participated in UB/ UBMS (TOT/CACE)	Given UB Opportunity (ITT)	Participated in UB/ UBMS (TOT/CACE)
Evidence of Pell Award within +1 of EHSGY	pr-T = 47.8, pr-C = 43.1 Difference = 4.7*** (pr T = 49.0, pr C = 45.4 Difference = 4.6**)	xb T = 50.0, xb C = 42.6 Difference = 8.4** (xb T = 50.7, xb C = 44.6 Difference = 6.1*)	pr T = 47.8, pr C = 43.6 Difference = 4.2* (pr T = 49.1, pr C = 45.4 Difference = 3.7*)	xb T = 49.7, xb C = 42.9 Difference = 5.8* (xb T = 49.7, xb C = 43.0 Difference = 6.7*)
Evidence of Pell Award within +4 of EHSGY	pr-T = 54.3, pr-C = 50.0 Difference = 4.3** (pr T = 56.9, pr C = 52.6 Difference = 4.3**)	xb T = 55.9, xb C = 48.8 Difference = 7.1** (xb T = 58.1, xb C = 51.2 Difference = 6.9**)	pr T = 56.3, pr C = 50.3 Difference = 6.0** (pr T = 57.1, pr C = 52.7 Difference = 4.4**)	xb T = 58.0, xb C = 48.9 Difference = 9.1** (xb T = 58.2, xb C = 51.3 Difference = 6.9**)

*/**/***/**** Significant at 0.10/0.05/.01/0.00 level; NS = not significant at the .10 level or below.

NOTE: Unweighted data given in parentheses. Please see table 5 for detailed notes. UB = regular Upward Bound; UBMS = Upward Bound Math/ Science; ITT = intent to treat; TOT = treated on treated; CACE = complier average causal effect; T = treatment; C = control or comparison; pr = estimated probability from STATA logit regression; xb = linear prediction from STATA ivreg (instrumental variables regression).

SOURCE: Data tabulated January 2008 using: National Evaluation of Upward Bound data files, study sponsored by the Policy and Program Studies Services (PPSS), of the Office of Planning, Evaluation and Policy Development (OPEPD), U.S. Department of Education: study conducted 1992-93 to - 2003-04; and federal Student Financial Aid (SFA) files 1994-95 to 2003-04.

TABLE E-4 Results for “Ever Attended Postsecondary” using fifth-follow-up survey, PELL and National Student Clearinghouse not standardized by EHSYG outcome data: comparison of results with different weights, with interaction terms for Project 69, and with and without Project 69

Evidence of Post-secondary attendance using fifth-follow-up survey report, SFA and NSC files (Note NSC coverage was 25 percent by 1996, & Project 69 was not participating)							Estimated effect for 74 percent of study applicants (Without Project 69)					
	ITT Original Random Assignment (FFUTC)			TOT/Complier Average Causal Effect (CACE) UB/UBMS (xnewgrp) Used instrumental			ITT Original Random Assignment (FFUTC)			TOT/Complier Average Causal Effect (CACE) UB/UBMS (xnewgrp) Used instrumental		
V5m5a	T	C	Diff	T	C	Diff	T	C	Diff	T	C	Diff
Unweighted	84	81	3***	82	79	3***	84	81	3***	82	78	4***
Original Base weighted	81	79	2*	80	75	5*	82	78	4***	81	76	5***
Poststratified base weight used in Fifth-follow-up report	81	79	NS	79	77	NS	82	78	4***	82	75	7***
Poststratified base weight used in Fifth-follow-up report—and model includes interaction terms for Project 69	83	79	4****	82	75	7****	NA	NA	NA	NA	NA	NA

*/**/*** Significant at 0.10/0.01/.00 level

NOTE: Estimates include bias introducing National Student Clearinghouse (NSC) data which had 25 percent coverage in applicable period (1996); and are not standardized by EHSYG. NA = not applicable. T= treatment group; C = Control group; Diff = Difference. ITT = Intent to Treat; TOT = Treatment on Treated. SFA = Student Financial Aid; NSC = National Student Clearinghouse. All models used in these analyses use STATA taking into account the complex sample design. Complier Average Causal Effect (CACE) tabulated using STATA, svy: ivreg. This two step procedure first models participation and then treats participation as an instrumental variable in the second stage equation modeling the effect of participation on those who actually participated or treatment on the treated.

SOURCE: Data tabulated (September 2007) by Policy and Planning Studies Services (PPSS) using data from the, National Evaluation of Upward Bound, study files baseline through Fifth-follow-up and Federal Student Aid Application and Pell Award Files 1994-95 to 2003-04 and National Student Clearinghouse Data.





About the Council

Established in 1981, the Council for Opportunity in Education is a nonprofit organization, established in 1981, dedicated to furthering the expansion of educational opportunities throughout the United States. Through its numerous membership services, the Council works in conjunction with colleges, universities, and agencies that host TRIO Programs to specifically help low-income students enter college and graduate.

The mission of the Council is to advance and defend the ideal of equal educational opportunity in postsecondary education. As such, the focus of the Council is assuring that the least advantaged segments of the population have a realistic chance to enter and graduate from a postsecondary institution.

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