IES Institute of Education Sciences

Evaluation Report

Study of Enhanced College Advising in Upward Bound: Impacts on Where and How Long Students Attend College

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Study of Enhanced College Advising in Upward Bound: Impacts on Where and How Long Students Attend College

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U.S. DEPARTMENT OF EDUCATION

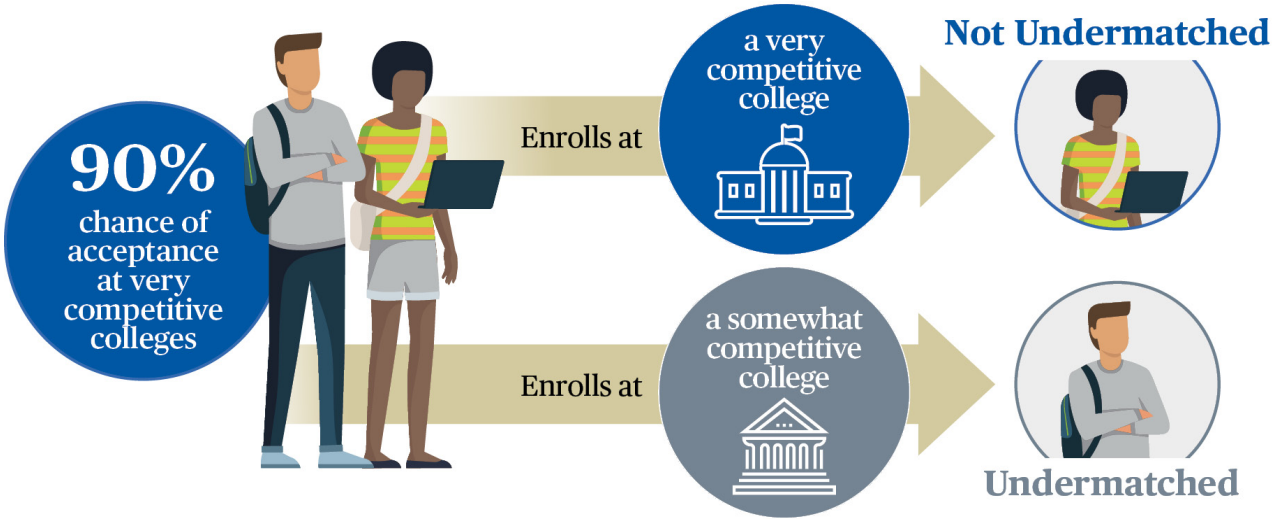
Decisions about whether and where to go to college can make a difference in students' later success. However, many students from low-income families–"undermatch"–they do not enroll at all or do not enroll in the most selective college they likely could attend. This study investigated whether promising advising strategies, bundled together in a package called *Find the Fit*, could improve college choices for rising high school seniors in the federal college access program Upward Bound. *Find the Fit* includes customized information about college going and costs, text messaging of key application and financial aid deadlines, and specialized training for the students' advisors. About 200 Upward Bound projects across the country volunteered to test *Find the Fit*, with half randomly selected to get access to it during the study period. This final report compared the college choices of 4,500 students in projects with and without access to *Find the Fit* to determine its effects on college attendance.

Key Findings

- *Despite its initial benefits – increasing the number and selectivity of the colleges to which students applied –* Find the Fit *did not change whether these students, mostly from low-income families, undermatched.*
- Find the Fit *did shift some students' enrollment choices to more selective colleges, regardless of whether students were undermatched. This shift did not seem to come with higher costs or a greater risk of dropping out, potential consequences of attending a more selective college.*
- *But there was no significant effect on college persistence through the third year after high school.*

Some form of postsecondary education is important to unlocking opportunities for students after high school.[1] Each year, more than two million young adults enroll in college for the first time.[2] Yet nationally, about four in ten "undermatch"[3]–either not attending college at all or attending less selective colleges than their academic credentials would allow (illustrated in Exhibit 1).[4] Undermatching may have consequences.[5] Some evidence links enrolling at a more selective or higher quality college to a better chance of graduating, shorter time to degree, and higher earnings after graduation.[6]

Exhibit 1. Illustrative Example of How Students' Choices Can Result in Undermatch



Students from low-income families are even more at risk for undermatching, according to studies that emerged over the last decade.[7] The best available estimates suggest that more than half (53 percent) of these students undermatch.[8] For these students, cost, application logistics, and concerns about falling short are real challenges to their attending more selective colleges.[9]

Interest in addressing undermatch as an equity issue prompted the U.S. Department of Education (ED) to investigate strategies that might benefit students in its college access programs, including Upward Bound.[10] Like other federal TRIO programs,[11] Upward Bound is designed to help prepare students from disadvantaged backgrounds to enroll in and complete postsecondary education.[12] The large majority of Upward Bound seniors enroll in college immediately after high school graduation.[13] Yet they, like many students from low-income families, may miss opportunities to enroll in more selective institutions.[14]

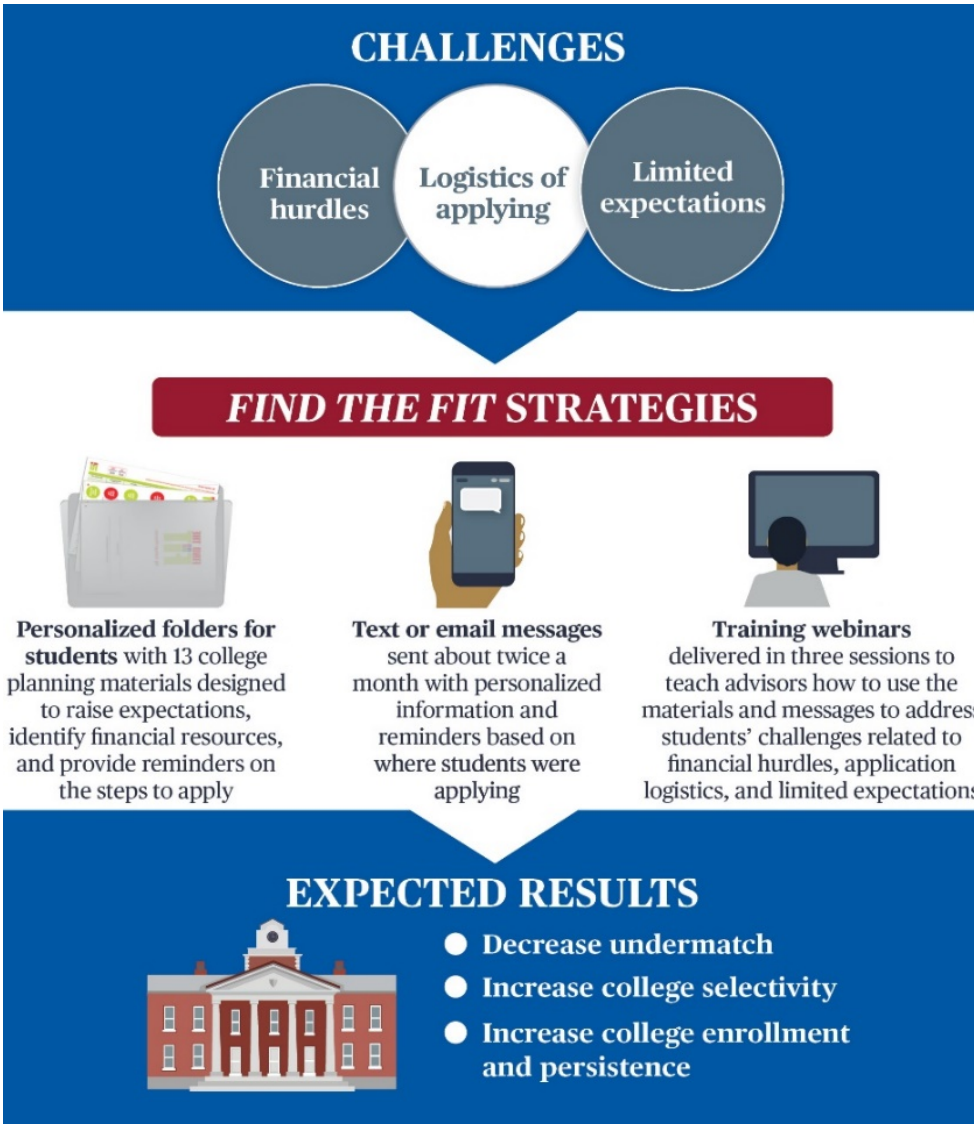
Upward Bound projects must offer an array of academic supports and college preparation services, including college advising and application help, to students throughout high school (Exhibit 2). Projects vary in how they carry out their college advising and application help, and there is some evidence that college quality or selectivity is not a significant priority for projects in advising their students about which college to attend.[15] For example, though almost all regular Upward Bound projects in 2014 provided students support in researching colleges to which they might apply, fewer than two-thirds provided services that helped students assess colleges' outcomes as part of their research. Only 10 percent of projects emphasized college ranking or selectivity as among the most important characteristics for students to consider when choosing where to apply.

Exhibit 2: Upward Bound Required Services

- Academic tutoring and instruction to prepare students to complete secondary or postsecondary courses.
- Guidance on high school course selection.
- College advising.
- Assistance in preparing for college entrance exams (e.g., SAT, ACT) and completing college admission applications.
- Information on all federal student financial aid programs and benefits, as well as resources for locating public and private scholarships.
- Assistance in completing financial aid applications.
- Education or counseling services to improve the financial and economic literacy of students or their parents, including financial planning for postsecondary education.

Policy interest in the potential to increase the selectivity of where students from low-income families enroll to improve college completion prompted this study.[16] The study tested promising college advising strategies to address key challenges that low-income and first-generation college goers may face in finding and enrolling in the most selective college that is a good fit for them (Exhibit 3).[17] Specifically, *Find the Fit* included materials and exercises to assist students in applying for financial aid and understanding college costs, practical help on the logistics of applying to colleges, and approaches to widen and raise students' aspirations and expectations regarding college choice.[18] Upward Bound advisors were trained to integrate these low-cost enhancements (about $13.50 per student) into their projects' existing college advising practices.[19]

Exhibit 3. *Find the Fit* Strategies Address Common Challenges to Attending More Selective Colleges



This final report from the study examines whether *Find the Fit* affected students' college choices, including whether they undermatched or enrolled in more selective colleges. The report also explores whether any effects came with corresponding positive consequences, like greater college persistence, or negative consequences that might come from attending a poor college match like greater rates of transfer or dropout and higher cost. (Exhibit 4; see Appendix B for more detail on the study design.)

Exhibit 4. Overview of the Evaluation Design

Who participated?

- 194 Upward Bound projects (out of 702 projects) across the country volunteered to participate.[20]
- These projects served 4,443 rising 2015-16 seniors who were the focus of the study.
  - 64 percent were female, 39 percent were Black, and 26 percent were Hispanic.
  - 88 percent were from low-income households; 92 percent would be the first in their family to attain a bachelor's degree.

How was the study conducted?

- About half of the participating Upward Bound projects were randomly assigned by lottery to receive *Find the Fit* to use with their rising 2015-16 seniors (the "*Find the Fit* projects"). The other half (the "regular UB advising projects") were not provided *Find the Fit* during the study period.[21] Students in the two groups of projects were similar on all 10 characteristics measured before random assignment.[22]
- The study compared outcomes for the two groups using statistical (regression) models that took into account participating students' demographic and academic characteristics as well as characteristics of their Upward Bound projects.[23] This difference in outcomes is the impact or effect of being in an Upward Bound project with access to *Find the Fit*.

What outcomes were measured?

- *Undermatch* - Whether a student undermatched was determined by comparing where that student chose to attend college with the highest college selectivity level that the student was predicted to have at least a 90 percent chance of acceptance. The latter was based on the student's academic credentials (SAT/ACT scores, GPA, and advanced course taking). If a student did not enroll in college or enrolled in a college below the highest level he or she was predicted to be admissible, then the student undermatched.[24]
- *Selectivity level of the college attended* - The seven selectivity levels used in the study come from the six selectivity categories for four-year colleges defined by the NCES-Barron's Admissions Competitiveness Index, plus one additional category that includes two-year colleges. Consistent with prior research,[25] the study examined whether students attended a college at or above each selectivity level. Focusing on the share of students attending a given selectivity level or higher reflects net improvements in the selectivity level attended, rather than shifts at one selectivity level that could come at the expense of another.[26]
- *College persistence* - Whether a student persisted in college into the third fall after high school was measured by whether the student was continuously enrolled in college through the third fall or graduated by that time.

What data were used?

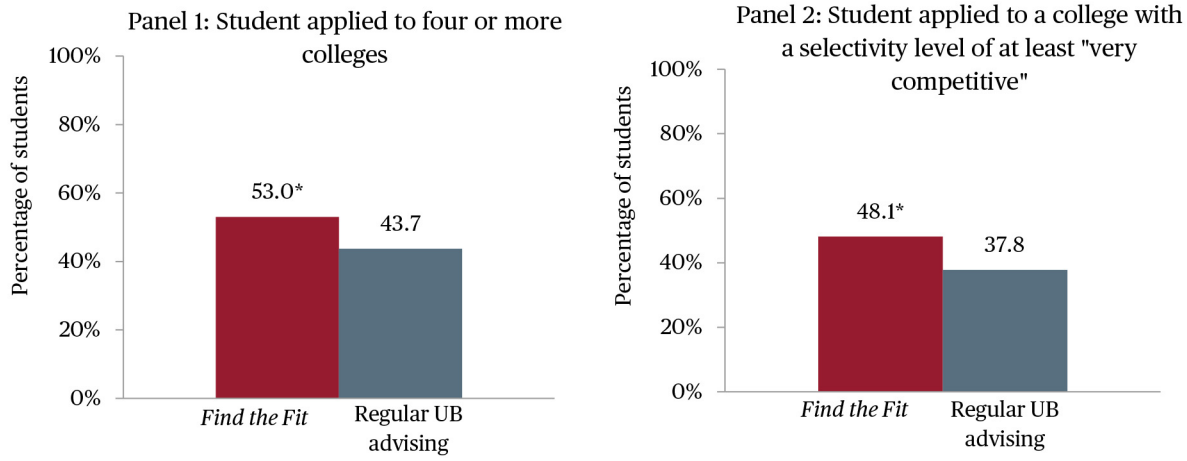
- National Student Clearinghouse and Federal Student Aid data to determine what college students attended and whether they persisted
- NCES-Barron's Admissions Competitiveness Index data to classify four-year colleges' selectivity
- Education Longitudinal Study (ELS) of 2002 data to help predict the highest college selectivity level to which students were likely admissible based on colleges' prior admissions patterns
- A student survey conducted at the start of the study to describe students' characteristics (81 percent of students responded) and a follow-up student survey conducted in the spring of students' senior year of high school to learn about the college advising students received and the colleges where they applied (82 percent of students responded)
- A survey of Upward Bound staff conducted in the spring of students' senior year to learn about projects' use of *Find the Fit* materials (95 percent of projects responded)
- Implementation data on webinar attendance and text messaging
- Data from Upward Bound Annual Performance Reports, student rosters, the College Board (SAT) and ACT, and the Integrated Postsecondary Education Data System to measure student, college, and Upward Bound project characteristics

DESPITE SHIFTING WHERE STUDENTS APPLIED, *FIND THE FIT* DID NOT REDUCE THE RATE OF COLLEGE UNDERMATCH

To address challenges that may lead to undermatch, *Find the Fit* provided students and advisors with strategies that have proven effective with other populations and in somewhat similar settings (Exhibit 3, above). Some *Find the Fit* components focused on college matriculation, since this is important in reducing the undermatch that results when a student does not attend college. College planning materials in the personalized student folders and about 24 personalized text message reminders were designed to help students plan and complete the necessary steps in the application and enrollment processes. Other folder materials prompted students to focus on the academic quality of colleges, a key factor in undermatch, for example through exercises that led them to research and record the graduation rates and other selection factors of the colleges that a student was considering. Finally, other materials offered strategies for making college affordable because students might be deterred from a better matched school if they believe it will be more costly. For example, folder materials and text messaging encouraged students to file a Free Application for Federal Student Aid (FAFSA); other activities had them compare college net price—what students can expect to pay to attend college once scholarships and grants are applied —with colleges' published sticker prices.[27] Some of the *Find the Fit* materials tied several of these concepts together. For example, student folders included customized sheets that showed students the graduation rates and net prices at six colleges across a range of selectivity levels to illustrate that colleges with better outcomes, like graduation rates, were not necessarily more expensive.[28]

The study's prior report showed that *Find the Fit* succeeded in shifting where students *apply* to college. Students offered *Find the Fit* were about 10 percentage points more likely to apply to four or more colleges and apply to at least one college at the "very competitive" level or higher, compared to students in regular UB advising projects. (Exhibit 5).[29] These shifts in where students apply to college are key initial steps on the hypothesized path toward changing where students attend college, including reducing undermatch. (See Appendix Exhibit B.1 lays out the study's theory of change.)

Exhibit 5. Previously Reported Impacts of *Find the Fit* on Where Students Applied to College

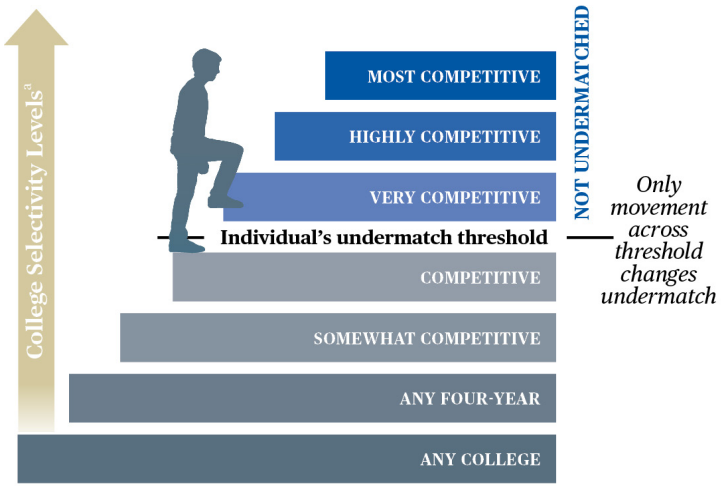


Notes: *Difference is statistically significant at the .05 level. Sample = 1,920 students in *Find the Fit* projects and 1,710 students in regular UB advising projects. Percentage of students represents those who (panel 1) reported applying to four or more colleges by spring of their senior year in high school and (panel 2) applied to a college ranked as "very competitive" or above. Percentage for students in *Find the Fit* projects and impact are estimated using the study's statistical model. UB = Upward Bound.

Source: For panel 1 - follow-up student survey 2016; for panel 2 - follow-up student survey 2016 and NCES-Barron's Admissions Competitiveness Index 2014.

To directly measure the effects of *Find the Fit* on undermatch, the study compared the share of students in *Find the Fit* projects versus those in regular UB advising projects who enrolled in a college below their undermatch "threshold" (Exhibit 6). This threshold was based on the highest college selectivity level that each student was predicted to be able to attend based on his or her academic credentials.

Exhibit 6. Example of a Student's Undermatch Threshold and the Range of Selectivity Levels

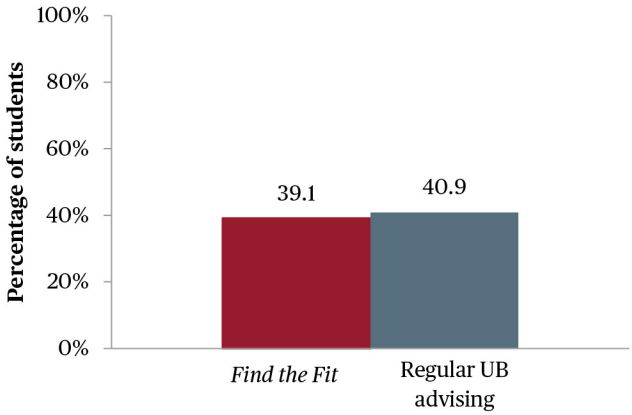


[a] Based on NCES-Barron's Admissions Competitiveness Index categories, plus an "*any college*" category that includes two-year colleges.

- ***There was no significant impact of* Find the Fit *on whether students undermatched*** (Exhibit 7).[30] About 39 percent of students in *Find the Fit* projects and about 41 percent of students in regular UB advising projects undermatched, meaning that they either did not attend college or enrolled in a college that was less selective than the level to which they could be admitted.[31]

In addition to examining the effects of *Find the Fit* overall, the study explored effects for key groups of students and projects ("subgroups") that could be of interest to policymakers or Upward Bound project directors.[32] Prior research suggests that some groups of students—for example, male students, Hispanic students, and students in rural areas—are likely to have higher rates of college undermatch or face greater challenges in attending more selective, higher quality colleges.[33] Though exposure to *Find the Fit* was hypothesized to affect these students differently than subgroups with fewer challenges, that was not the case.[34] There was no significant effect for any of the individual subgroups of students or projects the study examined. (See Appendix Exhibit C.1 for details.)

Exhibit 7. Impact of *Find the Fit* on Whether Students Undermatched in Their College Choices



Note: Data include 2,274 students in *Find the Fit* projects and 1,996 students in regular UB advising projects. Percentage of students represents those who undermatched in their college choice. Percentage for students in *Find the Fit* projects and impact are estimated using the study's statistical model. UB = Upward Bound.

Source: FSA 2017; NSC 2016; NCES-Barron's Admissions Competitiveness Index 2014.

- ***The lack of effect on undermatch was not related to how much of* Find the Fit *Upward Bound projects chose to use.*** *Find the Fit* comprised three components (Exhibit 3, above), each of which had multiple elements, including 13 informational resources in the student folders, text messages about twice a month,[35] and three webinars to help train Upward Bound advisors. As described more fully in the study's first report, project staff could decide how much of the *Find the Fit* package to use because the delivery of Upward Bound services varies across projects. To

Find the Fit materials could extend the college advising that already existed in each project, rather than requiring that all of the components and materials be used or used in specific ways. Based on the study's implementation benchmarks, more than one third (37 percent) of projects implemented *Find the Fit* to a high extent, meaning they implemented three quarters or more of each of its three components. An additional 51 percent implemented *Find the Fit* to a moderate extent, implementing more than a quarter but not necessarily three quarters of each component.[36]

Given this variation in how much projects used *Find the Fit*, it was important to examine whether it may have contributed to the lack of impacts on undermatch overall. For example, if high-implementation projects reduced undermatch, one solution to address undermatch is simply supporting better implementation of *Find the Fit*. But exploratory analyses suggest that impacts did not differ by extent of implementation[37]–that is, the lack of impact on undermatch was found in projects that implemented *Find the Fit* at a high level as well as in projects that implemented it at a low level, implementing less than one quarter of any one component. (See Appendix Exhibit D.1.)

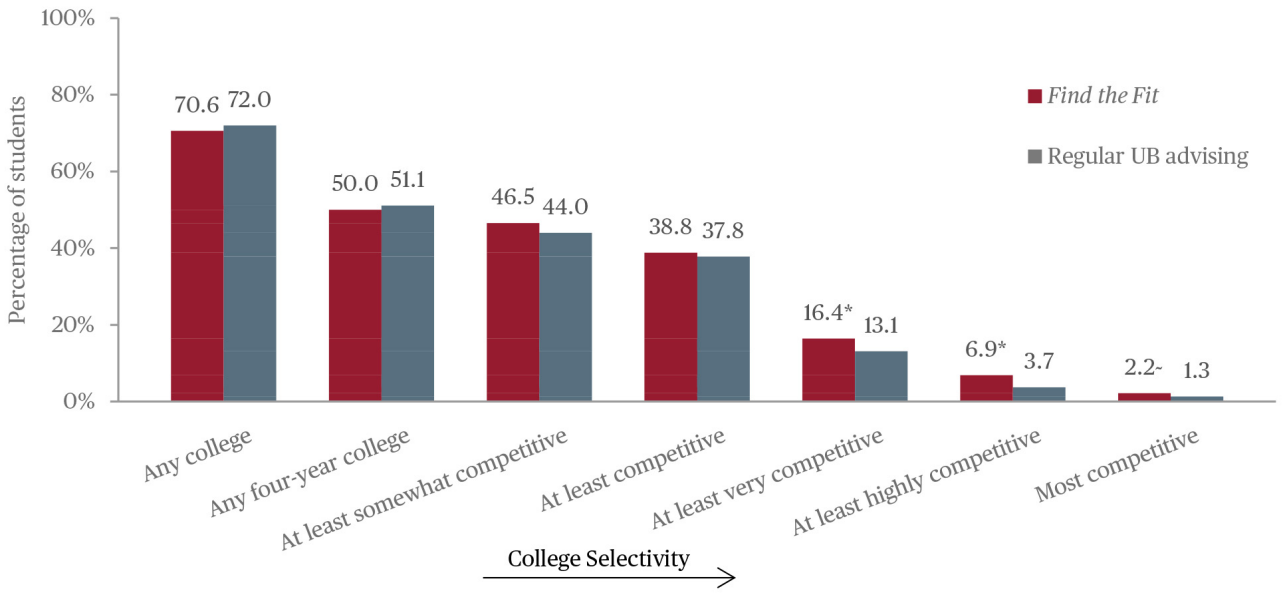
FIND THE FIT LED STUDENTS TO CHOOSE MORE SELECTIVE COLLEGES REGARDLESS OF UNDERMATCHING, WITH NO CLEAR NEGATIVE CONSEQUENCES

Find the Fit encouraged students to consider attending the most selective or highest quality college they could as the key path towards not undermatching. Many components of *Find the Fit* that were intended to reduce undermatch were expected to do so by influencing the selectivity of the college students chose. Assessing the effects on students' college selectivity, irrespective of their undermatch threshold, provides a wider lens to view the potential benefits of the enhanced advising. This wider view is important because attending the most selective college possible has been linked to a higher chance of graduating,[38] regardless of whether a student is undermatched or not at that institution. To determine whether *Find the Fit* shifted students' actual college choices in that way, the study compared the share of students in *Find the Fit* projects versus regular UB advising projects who enrolled in a college at "at least" each of the seven selectivity levels.[39] For example, attending "at least a very competitive college" means attending a very competitive college or a college in the two higher selectivity levels–highly competitive and most competitive.[40]

- ***Find the Fit led somewhat more students to attend more selective colleges immediately after high school graduation, particularly colleges at the highest selectivity levels.*** For example, students in *Find the Fit* projects were 3 percentage points more likely than those in regular UB advising projects to attend colleges that were at least very competitive in the first fall after their high school graduation (about 16 percent vs. about 13.1 percent, respectively).[41] These selectivity levels include colleges frequently attended by students in the study projects such as the University of Texas at Austin, University of Minnesota-Twin Cities, Berea College and University of California–Los Angeles (Exhibit 8, below).[42] These effects were generally consistent for the different subgroups of students and projects examined (See Appendix Exhibits C.8 and C.9), including projects across all levels of *Find the Fit* implementation (See Appendix Exhibit D.2).

- ***However,* Find the Fit *did not move more students up among the lower selectivity levels.*** For example, it did not increase the share of students who enrolled in college at all right after high school. About 71 percent of students in *Find the Fit* projects and 72 percent of students in regular UB advising projects enrolled in college in the fall after their high school graduation. There also were no significant differences in where students attended college below the "at least very competitive" cut point (Exhibit 8, below).

Exhibit 8. Impact of *Find the Fit* on the Selectivity of the College Students Initially Attended



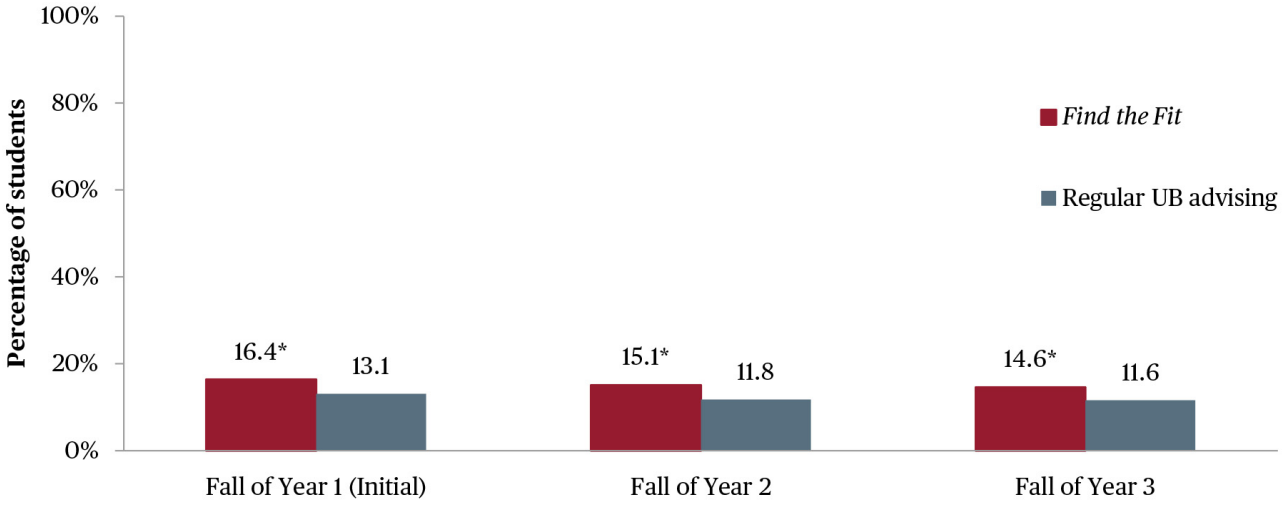
Note: Data include 2,336 students in *Find the Fit* projects and 2,107 students in regular UB advising projects. Percentage of students represents those who attended a college of at least a given selectivity level. For example, "any college" includes attending college of any college selectivity. As another example, "at least *very competitive*" includes attending colleges at the two selectivity levels above *very competitive*: *highly competitive* and *most competitive*. Differences were compared at each level by combining students who had attended colleges at that selectivity level and the levels above. Percentage for students in *Find the Fit* projects and impact are estimated using the study's statistical model. UB = Upward Bound

* Difference meets the study's bar for statistical significance at the .05 level. - Difference does not meet the study's bar for statistical significance but would be significant at the .10 level. The findings remain statistically significant after a Benjamini-Hochberg adjustment.

Source: FSA Award Year 2017, 2018, 2019; NSC 2016, 2017, 2018; NCES-Barron's Admissions Competitiveness Index 2014.

- ***The impacts on college selectivity remained three years later, and without some of the hypothesized negative consequences.*** Through the fall of the third year after high-school graduation, students in *Find the Fit* projects were still about 3 percentage points more likely than those in regular UB advising projects to attend colleges that were at least very competitive (Exhibit 9, below). The impact on selectivity after two years was similar. (See Appendix Exhibits C.10 and C.11 for details.)

Exhibit 9. Impact of *Find the Fit* on Whether Students Attended a College That Was At Least Very Competitive Each Fall after High School Graduation

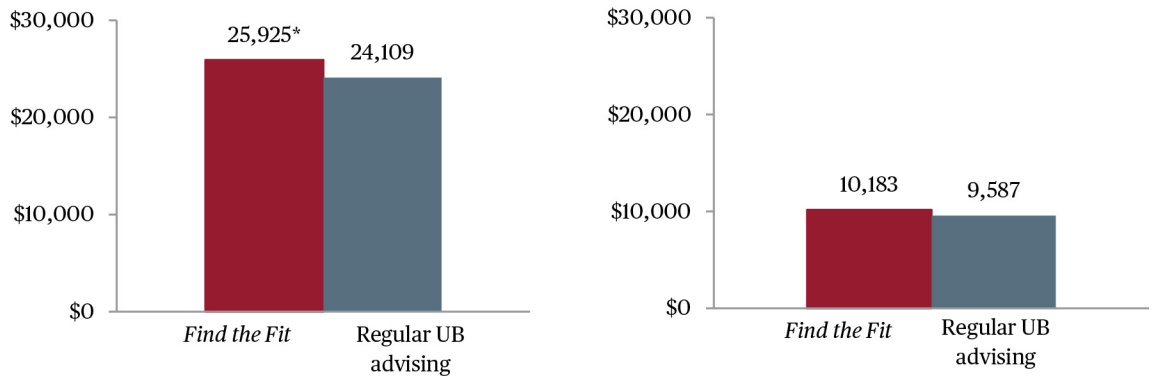


Note: Data include 2,336 students in *Find the Fit* projects and 2,107 students in regular UB advising projects. Percentage of students represents those who attended a college that was at least *very competitive*, including attending colleges at the two selectivity levels above *very competitive*: *highly competitive* and *most competitive*. Percentage for students in *Find the Fit* projects and impact are estimated using the study's statistical model. UB = Upward Bound
* Difference meets the study's bar for statistical significance at the .05 level.
Source: FSA 2017; NSC 2016; NCES-Barron's Admissions Competitiveness Index 2014.

Prior to gaining access to *Find the Fit* some advisors expressed concern that encouraging students to attend more selective colleges might lead them to "overmatch"—meaning they are less academically prepared than their peers—causing them to struggle academically and be more likely to drop out or transfer down to a less selective college over time.[43] This was one potential side effect of improving college selectivity that the study considered. Another possibility is that students could not afford the colleges where they were admitted. More selective colleges usually have a higher average posted cost (sometimes called "sticker price") than less selective colleges do.[44] So the impacts on where students attend college could also result in greater financial burden.

- ***Find the Fit's impacts did not seem to result in higher college costs.*** The average sticker price of colleges attended by students in the *Find the Fit* projects was higher than for colleges attended by students in the regular UB advising projects: $25,925 versus $24,109 (Exhibit 10, panel 1, below). However, there was no significant difference in the likely out-of-pocket cost for students (net price for students from low-income families): the average net price was $10,183 for students in *Find the Fit* projects versus $9,587 for students in regular UB advising projects (Exhibit 10, panel 2, below).[45] More selective colleges often have more resources and are able to keep students' costs down by making grants and scholarships available to students from low-income families such as those in Upward Bound, in some cases allowing students to avoid the potential trade-off between attending more selective colleges and incurring higher out-of-pocket costs.[46]

Exhibit 10. Impact of *Find the Fit* on Sticker Price and Expected Net Price of the College That Students Attended

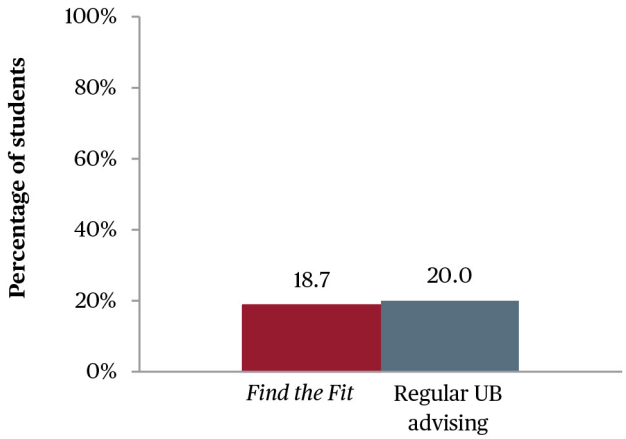


Notes: Data for panel 1 include 1,418 students in *Find the Fit* projects and 1,331 students in regular UB advising projects. Data for panel 2 include 1,422 students in *Find the Fit* projects and 1,333 students in regular UB advising projects. Cost represents (panel 1) the sticker price or the average posted cost of tuition, fees, and living expenses of colleges attended and (panel 2) the net price or the average estimated cost of attendance after financial aid for students from households with incomes below $30,000. Costs for students in *Find the Fit* projects and impacts are estimated using the study's statistical model. UB = Upward Bound

* Difference is statistically significant at the .05 level.

- **Find the Fit did not increase transferring or dropping out.**[47] Students in *Find the Fit* projects were no more likely than their counterparts in regular UB advising projects to transfer to a less selective college or drop out of college by the start of the second year (Exhibit 11; see Appendix Section C.4.2 for more details).[48]

Exhibit 11. Impact of *Find the Fit* on Whether Students Dropped Out or Transferred to a Less Selective College



Note: Data include 2,336 students in *Find the Fit* projects and 2,107 students in regular UB advising projects. Percentage of students represents those who dropped out of college or transferred to a less selective college by the start of Year 2 (October 1, 2017). Percentage for students in *Find the Fit* projects and impact are estimated using the study's statistical model. UB = Upward Bound

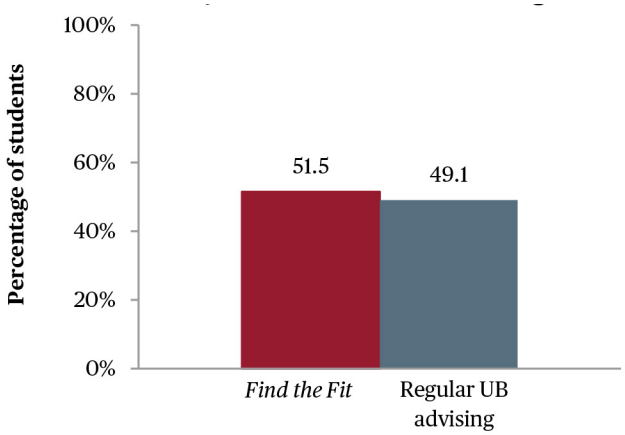
Source: FSA 2017, 2018, 2019; NSC 2016, 2017, 2018; NCES-Barron's Admissions Competitiveness Index 2014.

FIND THE FIT MADE NO SIGNIFICANT DIFFERENCE IN COLLEGE PERSISTENCE INTO THE THIRD YEAR, A HYPOTHESIZED POSITIVE CONSEQUENCE OF IMPROVING SELECTIVITY AND REDUCING UNDERMATCH

Helping students attend more selective colleges and reduce their chances of undermatching was a potential means to increasing college completion rates and career opportunities for students from low-income families. Prior research that accounts for various student pre-college characteristics such as ability, ambition, race, gender shows that students who attend higher quality colleges graduate at rates that are between 10 and 34 percent higher than those students who attend lower quality colleges.[49] Other studies show the annual earnings for students who attend the most selective colleges compared to similar students who attend less selective colleges are about five to 20 percent higher.[50] Exploratory analyses of students in this study found a positive relationship between higher levels of college selectivity and better college outcomes (See Appendix Section C.6). Therefore it is important to assess *Find the Fit's* impacts on longer-term outcomes.

- **Find the Fit *did not significantly change the share of students who persisted into or completed a program by their third year of college.*** About 52 percent of students in *Find the Fit* projects and 49 percent of students in regular UB advising projects were continuously enrolled into the third fall after their high school graduation (or had earned a credential) (Exhibit 12). Exploring how F*ind the Fit* affected different subgroups of students and projects showed that the overall lack of an effect was generally consistent across the 16 different subgroups examined (See Appendix Exhibit C. 14), and does not seem to be related to how well or how much projects used the key components of *Find the Fit* (See Appendix Exhibit D.3).

Exhibit 12. Impact of *Find the Fit* on Continuous Enrollment into or Graduation by the Third Fall after High School



Note: Data include 2,336 students in *Find the Fit* projects and 2,107 students in regular UB advising projects. Percentage of students represents those who were continuously enrolled in any college between July 1, 2016 (immediately after high school) and October 1, 2018, without an interruption in enrollment of five or more consecutive months, and/or had graduated with any postsecondary degree or certificate by October 1, 2018. Percentage for students in *Find the Fit* projects and impact are estimated using the study's statistical model. UB = Upward Bound

Source: FSA 2017, 2018, 2019; NSC 2016, 2017, 2018.

LOOKING AHEAD

The findings from this study suggest lessons for improving college advising for students from low-income families and raise questions that remain to be answered.

What does it mean that the positive effects on college selectivity did not vary with how much of* Find the Fit *was implemented?

This study's findings are both promising and puzzling. *Find the Fit* included folders with information and activities personalized to students' academic backgrounds, text messaging to help with college application logistics, and advisor trainings about the importance of reducing undermatch and how to implement the other components. Each component was purposefully adapted to the Upward Bound context from strategies found effective with somewhat similar students and in somewhat similar settings. This approach is at the heart of ED's efforts to promote the use of evidence-based strategies, but adjusting to local circumstances, among federal grantees.

The fact that *Find the Fit's* modest effect on students was similar across projects with high, medium, and low levels of implementation could indicate that the study's measures of implementation were not sufficiently refined. Or, there may be more substantive explanations, such as:

- Flexibility in how projects used *Find the Fit* was an intended feature. Because Upward Bound projects have a great deal of autonomy in how they serve their students, *Find the Fit* was structured so that it could be used to complement whatever regular advising the projects offered. Advisors were encouraged to adopt the parts of *Find the Fit* that would supplement what they typically cover. This means that projects that had low implementation of *Find the Fit* may still have introduced students to the key concepts, if just not with *Find the Fit*'s materials.

- Advisors may have played a central role, regardless of how much they or their students engaged with the text messaging or used the student folders. Choosing a college to attend is a highly personal decision about "fit", often requiring students and families to trade off qualities like selectivity with cost, distance from home, available instructional programs, and a sense of the campus "vibe." Through the training webinars, *Find the Fit* raised the profile of college selectivity and undermatch as important considerations for advisors in how they helped students, parents, and other guardians make these decisions. That may have been all that was needed to generate the effects on at least some students' choices to enroll in more selective colleges.

What might be needed to boost the share of students who benefit from* Find the Fit *or from another form of college advising? *Find the Fit* did not shift enough students to more selective colleges to shift the overall pattern of staying in and leaving college. If college selectivity is indeed related to better college outcomes, broader effects on college selectivity would be needed to subsequently shift longer-term college outcomes. Student behaviors are multifaceted and behavior change may be incremental. Advising strategies may need to be combined with other supports to improve college completion for disadvantaged students.[51] *Find the Fit* did not provide financial aid to reduce the costs of college, which may be the largest challenge that students face enrolling in college or in attending a more selective one.[52] *Find the Fit* provided information about financial aid and tried to help students understand that they may not pay more to attend a more selective college, but the advising did not provide any direct financial resources. This may have been a particular barrier for students deciding between going to college and not going to college, which is where the largest share of undermatch in this study came from (that is, students not enrolling in college at all).

The contents of students' folders were modeled after materials that had been shown to increase college selectivity when sent to students who had very strong academic backgrounds and not a lot of access to college advising.[53] The Upward Bound program serves students with a much wider range of academic preparation. However, there is evidence that *Find the Fit*'s positive impacts on college selectivity occurred through movement only at the highest levels of college selectivity. These are not the colleges to which most Upward Bound students applied.[54] Different strategies may be necessary to get results among students who did not enroll in college, or who enrolled in colleges at the lower end of selectivity.

The context in which advising strategies are used is also important to consider. In this case, the extent of undermatch among Upward Bound students seems to be lower than among students from low-income families nationally. About 40 percent of students in this study undermatched in their college choices, compared to 53 percent of students from low-income families nationally—though the national undermatch rate is from an earlier time period.[55] This gap could reflect a difference in the types of students from low-income families who do and do not participate in Upward Bound, Upward Bound projects' success in helping students attend well-matched colleges even without *Find the Fit*, or other factors. This could be one explanation for why the strategies found to be effective in some other studies were not effective at reducing undermatch in this case.

Relatedly, there is accumulating evidence that the kind of text messaging used in *Find the Fit* is not often effective, and specifically not for students who already have access to college information and counseling like those participating in Upward Bound.[56] It is possible that this component, accounting for an average of $8.25 of the $13.50 per student cost of Find the Fit, did not play much of a role in moving students into more selective colleges.

Is it possible there are long-term benefits for students who had access to* Find the Fit*, even though there were no effects on persistence in college?

Getting students to attend more selective colleges was meant to position them to reap the potential educational and career benefits of attending institutions with more instructional and financial resources, more academically prepared peers, and strong reputations. *Find the Fit* had a significant impact on college selectivity for only 3 percent of students.[57] But for these students, the future impact of *Find the Fit* on earnings could be meaningful. Even if they remain enrolled and graduate from these more selective colleges at rates similar to that of students who were not exposed to *Find the Fit*, they can expect to earn an average of $8,000 more each year, under conservative assumptions.[58]

ENDNOTES

[1] In this document "college" is used to refer to all institutions of higher education.

[2] The estimated national enrollment in fall 2017 for first-time students aged 18 to 24 at Title IV, degree-granting institutions was 2,401,666. See the National Student Clearinghouse Research Center. (2017). Current Term Enrollment Estimates Fall 2017. Herndon, VA: Author. https://nscresearchcenter.org/current-term-enrollment-estimates-fall-2017/

[3] Ovink, S., Kalogrides, D., Nanney, M., and Delaney, P. (2018). College Match and Undermatch: Assessing Student Preferences, College Proximity, and Inequality in Post-College Outcomes. *Research in Higher Education*, *59*(5): 553-90.

Smith, J., Pender, M., and Howell, J. (2013). The Full Extent of Student-College Academic Undermatch. *Economics of Education Review, 32*: 247-261.

Hudes, R.P. (2016). *Student-College Match and Bachelor's Degree Completion* (dissertation). South Orange, NJ: Seton Hall University.

[4] Researchers define and measure undermatch in a variety of ways, many of which result in different estimates of the extent of undermatch (see Bastedo, M. N., & Flaster, A. (2014). Conceptual and methodological problems in research on college undermatch. *Educational Researcher*, 43(2): 93-99, House, E. A. (2017). *Finding the best fit: Exploring postsecondary undermatch in Tennessee* [Unpublished doctoral dissertation]. Michigan: University of Michigan, for summaries and critiques of different approaches). This study examines academic undermatch, which compares a student's college choice with where the student's academic credentials (SAT/ACT scores, unweighted GPA, and high school Advanced Placement (AP)/International Baccalaureate (IB) course taking) suggest she has a high probability of being admitted. Students who attend a less selective college than they could attend, or do not attend college at all, are considered undermatched. This definition and approach to measuring undermatch are common in the literature, and are most similar to those used in Smith, Pender, and Howell (2013) and in Roderick, M., Coca, V., and Nagaoka, J. (2011). Potholes on the Road to College: High School Effects in Shaping Urban Students' Participation in College Application, Four-Year College Enrollment, and College Match. *Sociology of Education, 84*(3): 178-211. In Appendix Section C.2.2 the study explores an alternative measure of undermatch that compares student's SAT/ACT score to the 75th percentile of the incoming freshmen SAT/ACT score at the college in which they enrolled.

[5] Bound, J., Lovenheim, M.F., and Turner, S. (2010). Why Have College Completion Rates Declined? An Analysis of Changing Student Preparation and Collegiate Resources. *American Economic Journal: Applied Economics, 2*(3): 129-157.

Bowen, W.G., Chingos, M.M., and McPherson, M.S. (2009). *Crossing the Finish Line: Completing College at America's Public Universities*. Princeton, NJ: Princeton University Press.

Dillon, E.W., and Smith, J.A. (2020). The Consequences of Academic Match between Students and Colleges. *Journal of Human Resources, 55*(3): 767-808.

Horn, L., and Carroll, C.D. (2006). *Placing College Graduation Rates in Context: How 4-Year College Graduation Rates Vary with Selectivity and the Size of Low-Income Enrollment. Postsecondary Education Descriptive Analysis Report*. Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. http://nces.ed.gov/pubs2007/2007161.pdf

Hoxby, C. (2001). The Return of Attending a More Selective College: 1960 to the Present. In M. Devlin and J. Meyerson (Eds.), *Forum Futures: Exploring the Future of Higher Education, 2000 Papers*. San Francisco: Jossey-Bass.

Smith, J. (2013). Ova and Out: Using Twins to Estimate the Educational Returns to Attending a Selective College. *Economics of Education Review, 36*: 166-180.

[6] Horn and Carroll (2006); Hoxby (2001)

Bound, J., Lovenheim, M.F., and Turner, S. (2012). Increasing Time to Baccalaureate Degree in the United States. *Association for Education Finance and Policy, 7*(4): 375-424.

Witteveen, D., and Attewell, P. (2017). The Earnings Payoff from Attending a Selective College. *Social Science Research, 66*: 154-169.

[7] Hudes (2016); Smith, Pender, and Howell (2013); Ovink et al. (2018)

[8] Smith, Pender, and Howell (2013)

[9] Bowen, Chingos, and McPherson (2009)

Avery, C. (2013). *Evaluation of the College Possible Program: Results from a Randomized Controlled Trial* (NBER No. w19562). Cambridge, MA: National Bureau of Economic Research.

Hoxby, C., and Avery, C. (2013). The Missing "One-Offs": The Hidden Supply of High-Achieving, Low-Income Students. *Brookings Papers on Economic Activity*, *2013*(1): 1-65.

Walton, G.M., and Cohen, G.L. (2011). A Brief Social-Belonging Intervention Improves Academic and Health Outcomes of Minority Students. *Science, 331:* 1447-1451.

[10] This study also fulfills a congressional mandate in the 2008 Higher Education Opportunity Act that ED rigorously assess promising practices that might help to improve its college access programs. 20 USC § 1070a-18.

[11] TRIO is the proper name for a set of eight programs (originally three programs) with the common goal of increasing progress through the academic pipeline to higher education for individuals from disadvantaged backgrounds.

[12] To be eligible for Upward Bound, a student must come from a household with income below 150 percent of the poverty level or in which no parent in the household holds a bachelor's degree; two-thirds of any Upward Bound project's participants must satisfy both criteria. Most Upward Bound participants enter the program in 9th or 10th grade.

[13] Among 2012-13 seniors, 85 percent enrolled, according to project-submitted data. See U.S. Department of Education. (n.d.). *Upward Bound and Upward Bound Math-Science Grantee-Level Performance Results: 2013-14*. Washington, DC: Author. https://www2.ed.gov/programs/trioupbound/grantee-level.html

[14] A previous study of Upward Bound found that only 11 percent of Upward Bound students enrolled in colleges classified as *most competitive, highly competitive,* or *very competitive* (Seftor, N.S., Mamun, A., and Schirm, A. (2009). *The Impacts of Regular Upward Bound on Postsecondary Outcomes Seven to Nine Years after Scheduled High School Graduation*. Princeton, NJ: Mathematica Policy Research. http://files.eric.ed.gov/fulltext/ED505850.pdf), about half the rate of students nationally (Schmitt, C.M. (2015). *Documentation for the Restricted-Use NCES-Barron's Admissions Competitiveness Index Data Files: 1972, 1982, 1992, 2004, 2008, and 2014* (NCES 2015-333). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics). In addition, a substantial share of seniors, in Upward Bound projects operated (or hosted) at colleges, end up attending the college that hosts their Upward Bound project, particularly among students participating at projects hosted by two-year colleges (Martinez, A., Linkow, T., Miller, H., and Parsad, A. (2018) *Study of Enhanced Advising in Upward Bound: Impacts on Steps Toward College*. Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance).

[15] Epps, S.R., Jackson, R.H., Olsen, R.O., Shivji, A., and Roy, R. (2016). Upward Bound at 50: Reporting on Implementation Practices Today (NCEE 2017-4005). Washington, DC: National Center for Education Evaluation, Institute of Education Sciences, U.S. Department of Education.

[16] Bound et al. 2010; Bowen et al. 2009; Horn and Carroll 2006; Hoxby 2001; Smith 2013.

Cohodes, S.R., and Goodman, J.S. (2014). Merit Aid, College Quality, and College Completion: Massachusetts' Adams Scholarship as an In-Kind Subsidy. *American Economic Journal: Applied Economics, 6*(4): 251-85.

[17] The objective was for *Find the Fit* to be integrated with existing Upward Bound college advising activities to help students find a good college fit. Because the delivery of services varies across Upward Bound projects (Epps, S.R., Jackson, R.H., Olsen, R.O., Shivji, A., and Roy, R. (2016). *Upward Bound at 50: Reporting on Implementation Practices Today* (NCEE 2017-4005). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance), *Find the Fit* did not prescribe how its materials should be integrated, nor did it require that all materials be used. Instead, it offered some suggestions for how the materials could be used to supplement or extend the college advising that already existed in each project. The components of *Find the Fit* drew on existing materials examined with other populations and found to be beneficial for at least some students (see Section A in the Appendix for details).

[18] Academic preparation also can be a hurdle to low-income and first-generation college students' success; however, *Find the Fit* did not target this.

[19] The projected cost to projects, should they choose to use *Find the Fit* in the future, is $13.50. It includes printing the student materials and access to the messaging platform, assuming that projects would print the student materials on site. The cost of the messaging platform would depend on the exact number of students served in a project and the level of message customization. Advisors' time is not included as a cost because advisors could shift how they currently spend some of their college advising time to incorporate *Find the Fit* activities. See Section A.3 of the Appendix for more details on the cost calculations. Upward Bound projects receive federal grants equating to about $4,300 per student to provide a wide range of services, include college advising.

[20] The 702 Upward Bound projects that received fiscal year 2012 grants from ED were eligible to participate.

[21] Projects first were grouped (or "blocked") by their host institution type and their geographic locale, then randomly assigned within each block. For more details on the randomization (lottery) process, including how and why projects were grouped prior to random assignment, see Appendix Section B.2.2. The lottery resulted in 98 *Find the Fit* projects, serving 2,336 students included in the study, and 96 regular UB advising projects, serving 2,107 students included in the study.

[22] Random assignment should create two groups that are initially similar on characteristics likely to be related to college academic undermatch, selectivity, and postsecondary progress. Appendix Section B.2.2 shows that this was the case in terms of both student and project characteristics.

[23] Appendix Section B.4.2 describes the study's statistical model while Section B.4.1 provides more details on the student and project characteristics included in the study's model.

[24] Students not enrolled in college are considered undermatched because all high school seniors could be admitted to at least a two-year institution. This follows the common approach to define undermatch as occurring when a high school graduate either does not attend college or attends a college that is less selective than her academic achievement indicates (Bastedo and Flaster 2014; Bowen, Chingos, and McPherson, 2009; Dillon and Smith, 2009; Hoxby and Avery, 2012; Hoxby and Turner, 2013; Roderick, Coca, and Nagaoka, 2011; Smith, Pender, & Howell, 2013.) For more detail on the study's approach to determining undermatch, which is modeled on the common approach to measuring undermatch and the one used by Smith, Pender, and Howell (2013), see Appendix Section B.4.1.

[25] This is similar to the approach used in Dynarski, S., Libassi, C.J., Michelmore, K., and Owen, S. (2018). *Closing the Gap: The Effect of a Targeted, Tuition-free Promise on College Choices of High-achieving, Low-income Students* (NBER Working Paper 25349). Cambridge, MA: National Bureau of Economic Research. https://www.nber.org/papers/w25349. Appendix Section B.4.1 provides more information on how the study's outcomes were measured.

[26] For example, the study examined whether students attended a college that was at least *very competitive,* which include colleges in three Barron's selectivity categories: *very competitive* plus the two selectivity levels above that–*highly competitive* and *most competitive*. If the study instead examined each selectivity level separately, an increase in the percentage of students attending, for example, a *very competitive* college could occur either because (a) fewer students attended a *competitive* college–a shift from attending a less competitive to a more competitive college, an improvement–or because fewer students attended a *highly competitive* college–a shift from attending a more competitive to a less competitive college, a decline. Focusing on the share of students attending a given selectivity level or higher allows the study to identify any net improvements in the selectivity level attended.

[27] Net price is what a student can expect to pay to attend college, including tuition, fees, books, and living expenses, after taking into account scholarships and grants (see Appendix Section C.4 for details about how IPEDS estimates net price).

[28] This handout was adapted for the Upward Bound population from the information packets Hoxby and Turner 2013 mailed to low-income, high-achieving students about how and where to apply to college.

[29] Martinez et al. (2018)

[30] As an alternative to measuring undermatch based on college selectivity, a student's college entrance exam scores can be compared to those of other incoming freshmen to create a measure of how well the student fits academically among her peers. *Find the Fit* had no significant impact on undermatch when undermatch was identified by comparing a student's college entrance exam scores to those of all incoming students at her college.

[31] One reason students may undermatch is that there is not a public college in their state at or above the highest selectivity to which they are admissible. Examination of how availability of selective colleges within a state showed that only a small proportion of students (1.8 percent of students in *Find the Fit* projects and 2.1 percent of students in regular UB advising projects) had academic qualifications that suggested they were admissible to a more selective college than those that were available in their state.

[32] Five student and project characteristics define the subgroups: race/ethnicity, gender, baseline college entrance exam score, host institution locale, and host institution type. Given the number of subgroups examined, some differences may be detected as significant due to chance. Details about subgroup variable construction are included in Appendix Section B.4.1.

[33] Smith, Pender, and Howell (2013)

Hurtado, S., Saenz, V.B., Santos, J.L., and Cabrera, N.L. (2008). *Advancing in Higher Education: A Portrait of Latina/o College Freshmen at Four-Year Institutions, 1975-2006*. Los Angeles, CA: Higher Education Research Institute, University of California, Los Angeles. https://www.heri.ucla.edu/PDFs/pubs/TFS/Special/Monographs/AdvancingInHigherEducation-LatinoTrends.pdf

Appendix Exhibit B.16 more fully describes the rationale for focusing on these subgroups.

[34] In addition, because many prior efforts to address undermatch have focused exclusively on students with high academic qualifications, such as those with ACT or SAT scores in the top 10 percent (see Hoxby, C., and Turner, S. (2013). *Expanding College Opportunities for High-Achieving, Low Income Students* (SIEPR Discussion

Paper No. 12-014). Stanford, CA: Stanford Institute for Economic Policy Research.), this study examined whether *Find the Fit* had particular promise for reducing undermatch for the most academically prepared students. These students with the highest college entrance exam scores (ranging from 1140 to 1600), are likely to be admitted to most of the colleges to which they apply and, as low-income or first-generation college goers, also would likely receive substantial financial aid so that affordability was not a barrier (Hoxby and Turner 2013). Among these high achievers, students in *Find the Fit* projects were 12.6 percentage points less likely to undermatch than were students in the regular UB advising projects. However, this difference in undermatch (p-value of .06) was just short of the study's bar for statistical significance.

[35] The messages were sent to students about twice a month from the end of their junior year and continued until the end of students' senior year, or through the summer after students' high school graduation for students in the projects with a summer bridge program. About 24 messages were sent to students during the school year and another five messages were sent during the summer between high school and college.

[36] To summarize the extent of implementation, *Find the Fit* projects were divided into three categories– "high," "low," and "moderate" –based on the extent to which they carried out each of the three components of *Find the Fit*. Projects had "high" implementation if they implemented 75 percent or more of each component– meaning the project had to: (1) report that it used at least three quarters–10 of 13–of the materials with students; (2) send text or email messages to at least three quarters of students; and (3) have some project staff in attendance at over three quarters–all three–of the training webinars for advisors. Projects had "low" implementation if they implemented less than 25 percent of any one component. Projects had "moderate" implementation if they implemented more than a quarter but not necessarily 75 percent of each component– that is, they were in the moderate or high category for each component but were not high on all components (Martinez et al. 2018).

[37] See Appendix D for more details about the relationship between impacts and *Find the Fit* implementation.

[38] It may be the case that college selectivity does not directly cause persistence. Persistence in college may be driven more by difficult to measure characteristics of the students, such as motivation to succeed, than by the selectivity of the colleges they attend. This would suggest that the associations between these two outcomes found in previous studies were measuring the fact that students who choose to enroll in more selective colleges may already be predisposed to stay in school, despite the researchers' best efforts to take those predispositions into account. Students' high school grade point averages (GPAs) and advanced course-taking are likely related to students' motivation for educational success and better predictors of college graduation because of the variety of student behaviors and skills that are captured in GPAs and course-taking patterns relative to a single standardized test like the SAT or ACT (Allensworth, E. M. and Clark, K. (2020). High School GPAs and ACT Scores as Predictors of College Completion: Examining Assumptions About Consistency Across High Schools. *Educational Researcher*, 49(3); Chingos, M. (2018). *What Matters Most for College Completion? Academic Preparation Is a Key Predictor of Success*. Washington, DC: American Enterprise Institute and Third Way Institute.). Studies that account for these student characteristics still find a relationship between higher levels of college selectivity and better college outcomes: one study accounts for both students' high school GPAs and their advance course-taking patterns (Smith 2013), some studies take into account students' high school GPAs (Bound, Lovenheim, and Turner 2012; Bowen et al. 2009), and others account for students' scores on college entrance exams, but not high school GPA or course-taking (Cohodes and Goodman 2014; Goodman, Hurwitz, and Smith 2017; Howell and Pender 2016).

[39] Alternative definitions of college quality include the college entrance exam scores of incoming freshmen and the college's graduation rate. *Find the Fit* had no significant impact on the quality of college attended when measured using the 75th percentile of college entrance exam scores or the college's graduation rate (see Appendix Exhibits C.12 and C.13 for these sensitivity analyses). The study also examined the distance from students' home to the college that they attended because local and familiar colleges are often the default for low-income and first-generation college students and attending more selective or higher-quality colleges

might require students to travel further from home. *Find the Fit* had no significant impact on the distance that students' colleges were from their home (see Appendix Exhibit C.23).

[40] The study did not test for impacts on each selectivity level individually, because a difference at a single selectivity level could reflect either movement up from the level below (an intended outcome of *Find the Fit*) or down from the selectivity level above (not an intended outcome).

[41] Historically, a substantial share of students in Upward Bound end up attending the college that hosts their Upward Bound project (Martinez et al. 2018). However, these host colleges may or may not be a good academic fit for individual students. Therefore, the study investigated whether *Find the Fit* decreased the share of students who attended their Upward Bound host institution. Students in *Find the Fit* projects were four percentage points less likely to attend their host college than were students in regular UB advising projects (14.7 percent vs. 18.9 percent, respectively; see Appendix Exhibit C.24).

[42] Because the main measures of undermatch and selectivity fall into the same domain of college enrollment, the study did a Benjamini-Hochberg correction for multiple comparisons within this domain as a sensitivity test, see Appendix Exhibit C.7b. The results of *Find the Fit* on undermatch and attendance at colleges at various selectivity levels were consistent after conducting a Benjamini-Hochberg correction for multiple comparisons in the enrollment domain. Multiple comparisons adjustment was not necessary for persistence because it is the only outcome in the progressing in college domain. Multiple comparisons adjustments were not made for exploratory analyses such as those examines effects for subgroups.

[43] Bowen, Chingos, and McPherson (2009)

Kurlaender, M., & Grodsky, E. (2013). Mismatch and the Paternalistic Justification for Selective College Admissions. *Sociology of Education*, *86*(4): 294-310.

[44] Analysis of college selectivity and sticker prices shows that, on average, as college selectivity increases so too does the sticker price (author's calculations using IPEDS and Barron's data). Although more selective colleges typically have higher sticker prices than less selective colleges, greater selectivity does not necessarily correspond to higher net price, perhaps because financial aid for low-income students is more generous at more selective colleges (Dynarski et al. 2018). (See Appendix Section C.4 for more information about the relationship among selectivity, sticker price, and net price.)

[45] The sticker price is the annual posted cost of attendance—including tuition, fees, books, and living expenses—while the net price is the projected annual cost of attendance that a student with a family income below $30,000 would pay to attend the college, after taking into account scholarships and grants (see Appendix Section C.4 for details about how IPEDS estimates net price). These analyses included only students who attended college and whose colleges reported these characteristics to IPEDS.

[46] This depends on students' household income and academic qualifications, as well as institutional resources and policies. While the most selective colleges often are able to offer generous financial aid packages to low-income students, at more moderately selective institutions, low- to moderate-income students may face a difficult trade-off if the net price is higher but so is the likelihood of graduation. See Bastedo and Flaster (2014); Cohodes and Goodman (2014); Howell, J.S., and Pender, M. (2016). The Costs and Benefits of Enrolling in an Academically Matched College. *Economics of Education Review, 51*: 152-168; Page, L.C., and Iriti, J.E. (2016). On Undermatching and College Cost: A Case Study of the Pittsburgh Promise. In A.P. Kelly, J.S. Howell, and C. Sattin-Bajaj (Eds.), *Matching Students to Opportunity: Expanding College Choice, Access, and Quality*. Cambridge, MA: Harvard University Press; Radford, A., and Howell, J. (2014). Addressing Undermatch: Creating Opportunity and Social Mobility. In R.D. Kahlenberg (Ed.), The Future of Affirmative Action: New Paths to Higher Education Diversity after Fisher v. University of Texas. New York, NY: Century Foundation Press.

[47] Just over 8 percent of students in both *Find the Fit* and regular UB advising projects transferred from Year 1 to Year 2.

[48] Interruptions along the college pathway, such as transferring down a level to less challenging college and stopping out or dropping out, can result in longer time to degree or no degree at all (Goldrik-Rab, S. (2006) Following Their Every Move: An Investigation of Social-Class Differences in College Pathways. *Sociology of Education* 79(1): 61-79; Shapiro, D., Dundar, A., Wakhungu, P.K., Yuan, X., Nathan, A, & Hwang, Y. (2016). *Time to Degree: A National View of the Time Enrolled and Elapsed for Associate and Bachelor's Degree Earners* Herndon, VA: National Student Clearinghouse Research Center). For students at two-year colleges, dropping out is the only choice that falls lower on the continuum of college choices. Because transferring down a level for students who initially entered a two-year college means dropping out of college and because both transferring down and dropping out may led to longer time to degree, the analysis combines students experiencing both of these disruptions into a single group.

[49] Bowen, Chingos, and McPherson (2009); Dillon and Smith 2020; Howell and Pender 2016; Smith 2013.

[50] Dale, S.B., and Krueger, A.B. (2014). Estimating the Effects of College Characteristics over the Career Using Administrative Earnings Data. *Journal of Human Resources, 49*(2): 323-358;

Hoxby 2001; Witteveen and Attewell 2017.

[51] Gupta, H. (2017). *The Power of Fully Supporting Community College Students: The Effects of the City University of New York's Accelerated Study in Associate Programs After Six Years*. MDRC. Retrieved from https://www.mdrc.org/publication/power-fully-supporting-community-college-students#graduation

Roder, A., and M. Elliott. (2020). *Nine Year Education Gains: Project QUEST's Impact on Student Success. New York: Economic Mobility Corporation*. Retrieved from https://economicmobilitycorp.org/wp-content/uploads/2020/06/Nine_Year_Education_Gains.pdf

[52] On the student survey conducted at the start of the study, 83 percent of students reported costs of attendance to be "very important" in choosing a college.

[53] Hoxby and Turner (2013)

[54] Martinez et al. (2018)

[55] It is important to note that the estimate of undermatching for low-income students nationally, though the most current available, comes from data that is 10 years older than the data used to compute undermatching in this study. The national undermatch estimate is from Smith, Pender, and Howell (2013), who draw on data from the Education Longitudinal Study of 2002 and measure undermatch for the graduating class of 2004 using a methodology similar to that used in this report.

[56] For a synthesis of the research about the impacts of text messaging on college enrollment see Linkow, T., Miller, H., Parsad, A., Price, C. and Martinez, A. (2021). Study of College Transition Messaging in GEAR UP: Impacts on Enrolling and Staying in College (NCEE 2021-005). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance.

[57] Exhibit 7 shows the three percent of students in *Find the Fit* projects for whom there was a statistically significant impact: 16.4 percent of students in *Find the Fit* projects attended colleges that were at least very competitive in the first fall after their high school graduation whereas 13.1 percent of students in regular UB advising projects did so.

[58] This is the difference in mean earnings 10 years after college entry for low-income students who attend a very competitive college compared to a competitive college. "Low-income students" are defined as those with a household income below $30,000. Author's calculations using data from the NCES-Barron's Admissions Competitiveness Index, IPEDS, and the College Scorecard (available at https://collegescorecard.ed.gov/).

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DISCLOSURE OF POTENTIAL CONFLICTS OF INTEREST

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