

# REALIZING POTENTIAL

A WHITE PAPER ON  
COLLEGE STUDENT UNDERMATCHING



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# FOREWORD



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The inconvenient truth about higher education is that where a person attends college matters. That is not to say that there are not many students who have gone on to be tremendously successful regardless of which four-year institution or community college they attended. Although there are students who are successful at a wide range of institutions, when we look at the data, we see that the college match the student makes is important. A good match is not defined purely by the selectivity or prestige of the institution, but by a complex series of factors that signify the institution will be able to nurture the student's potential through to degree completion. This match is of the utmost importance for low-income and first-generation students, because they often lack the necessary support systems to help them navigate not only the college-going process, but also college persistence.

Statistics prove that some colleges successfully graduate more low-income and first-generation students than others. Of course, not all colleges and universities operate on a level playing field. Many colleges that serve low-income and first-generation students well benefit from exponential financial resources, nationally recognized faculty members, student bodies built on meritocracy, polished reputations, or vast alumni networks ensuring employment upon graduation. These benefits have a direct influence on the student; they create an environment where she is more likely to be successful.

For multiple reasons, many of which are outlined in this white paper, academically capable low-income and first-generation college students rarely find their way to the more competitive institutions where the likelihood of success is great. In fact, it is more likely that students from this background will choose institutions where their potential for failure outweighs their potential for success, and they often never even consider applying to a more competitive institution. The opportunity is never considered because the student believes, or has been led to believe, that he is unworthy of great success or incapable of contributing to society in remarkable ways.

A voice inside my head goes off every time I walk into an "at-risk" high school. It tells me, "There's genius here. It's buried under all of the normative statistics, test scores, and poverty. Somewhere in here is brilliance. You need to find it and help it escape this mediocrity we've created to keep it caged. All of this potential. It's out there... waiting for you to find it."

# EXECUTIVE SUMMARY

As our nation changes and adapts to meet the challenges of the 21<sup>st</sup> century, our national conversation around college becomes more heated, passionate, and urgent. Leaders from both political parties have recognized that in order for our workforce to be competitive globally, we need people who traditionally have not gone to college – low-income<sup>1</sup>, first-generation<sup>2</sup>, and underrepresented minority<sup>3</sup> students – to access and graduate from postsecondary institutions. Reaching these previously under-tapped student populations requires us to do things differently, but making these changes is essential to the continued vibrancy of our nation’s families, communities, and civic life. When students are linked to educational opportunities where they are more likely to attain a credential, the success they realize transforms their lives and the lives of their families, as well as changes the narrative for entire communities.

How young people make choices about where to apply to college, and their subsequent retention, has increasingly become the subject matter of research and policy efforts. At the Tennessee College Access & Success Network (TCASN), driven by the mission to increase the number of Tennesseans with a postsecondary credential, these research studies and targeted policy efforts are a critical focus. This white paper is designed to provide a high-level summary of key research findings from the fields of economics and education to help inform TCASN members, practitioners, and policy makers about key data, with results from earlier interventions and best practices to help guide TCASN’s work moving forward. The paper focuses on students with high promise who choose to attend colleges that are not a match for their academic profiles. It explores the reasons for these choices, how they affect student outcomes, and approaches that have been effective in changing students’ educational trajectories. We chose to focus on the moment of college match because the research indicates that the choices of where to apply to and attend college are what produce disparate outcomes in educational attainment.

**THIS PAPER IS DESIGNED TO SUMMARIZE KEY FINDINGS TO HELP INFORM TCASN MEMBERS, PRACTITIONERS, AND POLICY MAKERS OF PROVEN RESULTS AND BEST PRACTICES.**

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<sup>1</sup> The researchers cited in this paper classify students as “low-income” using a variety of indicators, including student-provided income information, federal poverty levels, and free and reduced price lunch eligibility. For the purposes of this paper, TCASN is using “low-income” as a general term and encourages readers to access original research sources to learn more about how students are classified.

<sup>2</sup> The term “first-generation” refers to a student who is the first person in his family to go to college, but the specific parameters used to classify a student as first-generation can vary; some researchers and policy makers would consider a student as first-generation only if neither of the student’s parents attended college, while others would classify a student as first-generation as long as neither of the student’s parents had obtained a bachelor’s degree. For the purposes of this paper, TCASN is using “first-generation” as a general term and encourages readers to access original research sources to learn more about how students are classified.

<sup>3</sup> Underrepresented minorities in higher education can include African American, Latino/Hispanic, American Indian, Southeast Asian, and New American populations.

Finally, it should be noted that the researchers cited in this paper use slightly different definitions of the terms “low-income,” and “first-generation.” To understand the exact definition used by each researcher, readers should refer to the original research source cited. Additionally, authors of this white paper used the same demographic terminology when referring to race, ethnicity, and geography as cited by the original researchers. To understand the exact terminology used by each researcher, readers should refer to the original research source cited.

## KEY FINDINGS

**Undermatching** occurs when a student **chooses to attend a higher education institution that is less selective** than that which he or she could attend. When students undermatch, they are less likely to graduate from college or attend graduate school and more likely to have decreased lifetime earnings.

While any student can undermatch, **students with certain demographic characteristics, such as low-income and first-generation students, are most likely to undermatch.** These students’ application behaviors look very different from their more affluent peers; they often do not even apply to any selective colleges.

Students who undermatch face many **roadblocks on the path to college.** These include:

- The **perception that they cannot afford college.**
- A **lack of “college knowledge”** – information on the college application and enrollment processes.
- **Low expectations** and a lack of experience and culture of college-going at home and at school.

The good news is that we know that **when these students have relationships with someone who can act as a guide to college, their outcomes change.** As demonstrated in this white paper, trained school counselors, college coaches, near-peer mentors, and other caring adults can shift students’ trajectories to help them make better college matches.

# REALIZING POTENTIAL

## WHAT IS UNDERMATCHING?

Each year, high school seniors across the country make important, life-changing decisions regarding their postsecondary plans. For some high-achieving students, attending college is a foregone conclusion, and the only decision to be made is which institutions are the best “match” for their personal, academic, and professional ambitions. For other students, many of whom are just as academically capable and accomplished as this first group, the college search, application, admissions, and enrollment processes seem to be insurmountable obstacles, and too often they settle for institutions for which they are overqualified, or even decide to forego higher education altogether. This phenomenon, in which students select and attend a college or university that is less selective than an institution they *could* have attended considering their academic qualifications, is referred to as “undermatching.”

### RESEARCH ON THE DEFINITION AND EXTENT OF UNDERMATCHING:

	“THE FULL EXTENT OF STUDENT-COLLEGE ACADEMIC UNDERMATCH” SMITH ET AL., 2012	“THE DETERMINANTS OF MISMATCH BETWEEN STUDENTS AND COLLEGES” DILLON AND SMITH, 2013
DEFINITION	“Academic undermatch occurs when a student’s academic credentials permit them access to a college or university that is more selective than the postsecondary alternative they actually choose.”	Mismatching students are “high ability students who choose to attend relatively low quality colleges and low ability students who attend relatively high quality colleges.”
MEASUREMENT	The study divided institutions into categories based on selectivity, then compared each student’s chosen school to the highest category to which she was likely (90% chance) to be admitted. Substantial undermatch was defined as a student attending a school two levels below their highest level of access.	The study measured students’ ability using the Armed Services Vocational Aptitude Battery (ASVAB) as well as the quality of each institution. A student was considered to have mismatched if his ability percentile deviated significantly from the quality percentile of his chosen institution.
FINDINGS	41% of students in the study undermatched and 16% undermatched substantially. Over 40% of students with access to selective or highly selective schools undermatched.	26% of students in the study undermatched. Of those students, 69% did not apply to any match schools. The average undermatched student applied to two schools.

## WHAT IS THE VALUE OF ATTENDING A SELECTIVE INSTITUTION<sup>4</sup>?

Enrollment in a selective college or university can positively impact student graduation rates, advanced degree attainment, and lifetime earnings. The average completion rate at selective colleges is 73%, compared to 40% at open access institutions (Carnevale and Strohl, 2013). Controlling for academic achievements, students graduate at higher rates at more selective institutions compared to less selective schools. Bowen et al. (2009) found that academically qualified students who attend a less selective college than they could have were less likely to graduate within 150% of the expected time (Bowen et al. 2009). Additionally, 35% of selective college graduates go on to receive graduate degrees, compared to 21% of open access college graduates (Carnevale and Strohl, 2013).

**CONTROLLING FOR ACADEMIC ACHIEVEMENTS, STUDENTS GRADUATE AT HIGHER RATES AT MORE SELECTIVE INSTITUTIONS.**

Students at selective institutions typically have access to superior peer networks that lead to job opportunities and a higher income (Marmaros and Sacerdote, 2002). Dale and Krueger found these networks to be particularly advantageous for at-risk students: “Highly selective colleges provide access to networks for minority students and for students from disadvantaged family backgrounds that are otherwise not available to them” (2011). Social networks influence and assist with career searches and employment, thus access to a better network may result in higher paying jobs. Dale and Krueger (2011) also found that attending an institution with a 100-point higher average SAT score will increase earnings by 7% for African American, Hispanic, and low-income students.

**ATTENDING AN INSTITUTION WITH A 100-POINT HIGHER SAT SCORE WILL INCREASE EARNINGS BY 7% FOR AFRICAN AMERICAN, HISPANIC, AND LOW-INCOME STUDENTS.**

Access to better jobs and higher incomes for underrepresented students provides direct benefits to society. There are substantial personal consequences for a student who matches inappropriately, but student undermatching also negatively impacts the public. Hoxby and Turner (2013) argue that

high achieving, low-income students who undermatch or do not attend college because of a lack of guidance or information are decreasing the return on the enormous social and economic investment of their K-12 schooling. Thus, there is a societal impetus to ensure these students attend appropriately matched schools.

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<sup>4</sup> “Selective institution,” refers to colleges that do not admit all applicants. While multiple data points such as grade point average and standardized test scores may be used to determine a college’s selectivity, “selective,” typically refers to the college’s acceptance rate percentage. The lower the admissions acceptance rate, the more selective, the institution is considered to be. Colleges and universities with high acceptance rates are often classified as “nonselective;” institutions that admit all applicants are classified as “open access” or “open enrollment.” The researchers cited in this paper define selectivity differently, so TCASN uses “selective institution” as a general term.

## WHO UNDERMATCHES?

Researchers agree that low-income students are the most at risk to undermatch. Of low-income students, even those that are high achieving often attend nonselective colleges. More than 40% of very high achieving, low-income students attend open access institutions (Hoxby and Avery, 2013). Open access institutions are defined as community colleges and low performing, localized four-year institutions. However, undermatching is not exclusively a problem for low-income students. Many student groups struggle to make an appropriate college match. For example, Dillon and Smith (2013) found that students who live near low-tuition public schools are also likely to undermatch.

### DEMOGRAPHIC CHARACTERISTICS OF STUDENTS WHO UNDERMATCH:

<b>LOW-INCOME STUDENTS</b>	<p>59% of low-income students studied undermatched (Bowen et al., 2009).</p> <p>40% of low-income, high achieving students studied undermatched (Hoxby and Avery, 2013).</p> <p>“Low-income students are less likely to apply to selective colleges than are their higher income peers, but, conditional on applying, are no less likely to be admitted or matriculate” (Pallais, 2014).</p> <p>“22.7 percent of lower-socio economic status students enroll in a college that is two selectivity levels below the level they could have attended” (Smith et al., 2012).</p>
<b>FIRST-GENERATION COLLEGE STUDENTS</b>	<p>“Students whose parents graduated with a college degree are less likely to undermatch than those students whose parents are without a college degree” (Smith et al., 2012).</p> <p>65% of first-generation college students studied undermatched (Bowen et al., 2009).</p>
<b>AFRICAN AMERICAN STUDENTS</b>	<p>African American students (and in particular female students) are more likely to undermatch than their white peers (Bowen et al., 2009).</p> <p>“More than 30% of African Americans (and Hispanics) with a high school GPA higher than 3.5 go to community colleges compared with 22% of whites with the same GPA” (Carnevale and Strohl, 2013).</p>
<b>HISPANIC STUDENTS</b>	<p>Since 1995, 72% of new Hispanic enrollments have gone to two and four year open access schools, whereas 82% of new white enrollments have gone to the 468 most selective colleges (Carnevale and Strohl, 2013).</p> <p>36% of Hispanic students, compared to 57% of white students, earn a bachelor’s degree or better (Carnevale and Strohl, 2013).</p>
<b>RURAL STUDENTS</b>	<p>The vast majority of very high achieving, low-income students who do not apply to any selective colleges are highly geographically dispersed (Hoxby and Avery, 2012).</p> <p>Rural students are more likely to undermatch than their urban and suburban peers (Smith et al., 2012).</p>



## WHAT CAUSES STUDENTS TO UNDERMATCH?

### FINANCIAL OBSTACLES

As demonstrated above, undermatching is most predominant among low-income students. Unsurprisingly, a perceived lack of financial resources is one of the most immediate obstacles standing between these students and the successful navigation of the college enrollment process. In “Student Perceptions of College Opportunities: The Boston COACH Program,” Avery and Kane (2004) specifically found that 37% of public school students in inner city Boston said they believed they would find a way to pay for college, compared to 76% of their suburban peers. The students in Valadez’s study of college enrollment behaviors among Mexican immigrants put it succinctly: “Money is the problem.” (2008)

Despite the availability of financial aid, particularly at more selective institutions, students and their families assume that the costs of attending these institutions are insurmountable. This perception presents a formidable obstacle to students’ and families’ serious consideration of these schools (Bettinger et al. 2012). According to Donald Heller’s “The Role of Finances in Postsecondary Access and Success,” lower income students are more sensitive to tuition prices than their upper income peers; more significantly, they tend to base their decisions on a school’s “sticker price,” as opposed to the net price they would be paying after financial aid is taken into account (2012). Avery et al.’s evaluation of Harvard’s financial aid process found that, despite the relatively low net price for low-income students who are admitted to Harvard, the cost continued to be a barrier (2006). The study found that the opaqueness of the financial aid process itself diminished these students’ belief that they could afford to attend.

**DESPITE THE AVAILABILITY OF FINANCIAL AID  
... THE PERCEPTION OF COLLEGE COSTS  
PRESENTS A FORMIDABLE OBSTACLE.**

Bettinger et al. 2012

### LACK OF INFORMATION ON THE COLLEGE ENROLLMENT PROCESS

In their assessment of the factors that contribute to mismatching, Dillon and Smith (2013) found that students with less access to information regarding the college enrollment process were more likely to undermatch. Avery et al. confirm this, noting that many low-income students do not have access to high quality institutions like Harvard, regardless of whether or not they are qualified to attend. Tornatzky et al. (2002) found that low-income, Latino parents have high aspirations for their students’ postsecondary careers but lack the know-how to help them reach their full potential.

Much of this information barrier stems from the role and expectations of the high school guidance counselor, who is traditionally charged with helping high school students find and apply to appropriate institutions of higher education. In her assessment of the College Coach program implemented in Chicago Public Schools, Stephan notes that the average caseload for a public school counselor is 248 students, a number that increases even further among low-income, inner city schools. Further, traditional school counseling, which centers on one-on-one meetings that must be initiated by the student, is inadequate for low-income students who often lack the social capital and know-how to seek out the information that they need (2013).

## LACK OF COLLEGE-GOING CULTURE OR EXPECTATIONS

Often the most immediate and formidable obstacle that low-income and minority students face when navigating the college enrollment process is the societal and cultural expectation that they will not succeed. Despite the fact that many of these students are qualified to attend selective institutions, low-income and minority students do not see themselves on these campuses – literally and figuratively. The lack of role models from similar backgrounds can create a perception that these students will not be able to enroll successfully and succeed at these schools. Additionally, in their study on Boston public school students' college-going behaviors, Avery and Kane found that low-income students often falter on their perceptions of the standardized

testing component of the application:

“Most had concluded, correctly or incorrectly, that they would do so poorly that their scores would cause them to be rejected by the four-year colleges they wanted to attend.” (2004)

**LOW-INCOME AND MINORITY STUDENTS DO NOT SEE THEMSELVES ON THESE [SELECTIVE] CAMPUSES – LITERALLY AND FIGURATIVELY.**

In some cases, particularly in Latino/Hispanic immigrant and African American communities, cultural norms make the decision to attend a selective institution a more difficult one, particularly if that institution is far from home. Valadez (2008) points out that immigrant students tend to disassociate from the more American value of individualism, which may discourage low-income, high-achieving students from trying to move beyond their current social class. In her study on the pursuit of higher education among students of color, Farmer-Hinton notes that first-generation African American college students can feel conflicting emotions of motivation and discomfort/discouragement as they consider college (2008).

## HOW CAN UNDERMATCHING BE PREVENTED?

As demonstrated in the research summary, low-income and minority students undermatch because of their misconceptions of college costs, lack of college knowledge, and low expectations for their success. These students could benefit tremendously from timely interventions that help to disseminate important information on the college search, application, admission, financial aid, and enrollment processes at selective institutions. Simple information dissemination is not enough, however. As Hoxby and Turner (2015) note, students and their families struggle not only to access this information but to distinguish whether college-going information they encounter is trustworthy. Unlike peers, students who are likely to undermatch get widely varying and disparate messages about the value of college and whether they belong there (Farmer-Hinton 2008; Valadez 2008). Perhaps not surprisingly, then, there is a large body of research that focuses on relationships between students and the professionals, mentors, and experts who can act as trusted guides to college and help students distinguish which information they need to be paying attention to. The table on the following page details overviews of some of the research on different types of guiding relationships that have been leveraged to successfully combat undermatching. For those in search of more information about how interventions were structured, we encourage readers to access the research source directly.

INTERVENTION	OUTCOME	SOURCE
<b>COLLEGE COUNSELORS</b>		
College Coaches in Chicago Public Schools utilized proactive outreach and group advising sessions in an attempt to decrease the number of highly qualified students enrolling in open access institutions.	Significantly increased the number of “college-going actions” (completing the FAFSA, submitting applications, etc.) among at-risk students.	Stephan, 2013
High-achieving, low-income students across the Northeast received college counseling from experienced professionals.	Students who received the intervention were 7.9% more likely to enroll at a selective institution.	Avery, 2010
College counseling was offered to Boston-area and Atlanta-area students in the summer after senior year.	Increased the number of students who enrolled in college on time, as well as the number of students who followed their original college plans.	Castleman et al., 2012
<b>STUDENT PEERS</b>		
College counseling GO-Centers in Texas public schools trained students to act as peer mentors who helped coach their fellow students through the college enrollment process.	Increased college enrollment and persistence among low-income Hispanic students.	Cunha and Miller, 2009
College Coaches in Chicago Public Schools leveraged existing peer networks to disseminate information on the college enrollment process.	Significantly increased the number of “college-going actions” (completing the FAFSA, submitting applications, etc.) among at-risk students.	Stephan, 2013
<b>EXTERNAL MENTORS</b>		
Students on the verge of not applying for college were paired with Dartmouth students who advised	Particularly among women, some evidence of students who had planned on enrolling at an open access institution or no institution at all	Carrell and Sacerdote, 2013

them through the application and enrollment process.	elected to apply and enroll at a four-year institution.	
<b>COLLEGE ADMISSIONS RECRUITERS</b>		
As part of effort to increase low-income enrollment at Harvard, the admissions office increased its outreach through mailings and visits to high schools; the focus of the outreach was on building relationships between individual students and admissions counselors.	Increased the number of low-income students who applied to and enrolled at Harvard.	Avery et al., 2006
Texas GO-Centers prioritized connecting students with admissions staff at high quality colleges and universities.	Increased college enrollment and persistence among low-income Hispanic students.	Cunha and Miller, 2009
<b>OTHER PROFESSIONALS</b>		
H&R Block provided personalized assistance to families with college-aged students in completing the FAFSA.	Improved students' chances of attending and persisting in college, as well as receiving financial aid (in particular the Pell Grant).	Bettinger et al., 2012

## SUMMARY AND COMMENTARY

Undermatching, and its undue prevalence on low-income and first-generation students, has lifetime consequences for educational attainment, lifetime earnings, and other key indicators of success and opportunity. When these students do attend more selective institutions, they are more likely to graduate from college, earn more, connect with social networks that benefit them in the workplace, and attend graduate school. Undermatching is the result of a number of obstacles these students face in the college enrollment process, not least among them a lack of crucial information, guidance, and encouragement along the way. It is no surprise, then, that relationships with adults who can provide this critical information and encouragement are integral to addressing mismatching and changing students' educational trajectories. These adults are the critical component to helping the most at-risk students enroll in institutions that fit their strengths and needs, and most importantly, help them to realize their enormous potential.

Each of the relationship-based interventions included here is structured differently. Some include quick, "just-in-time" assistance, like the H&R Block FAFSA intervention, while others are situated within a larger programmatic context that leverages the student's traditional K-12 school experience and highly-

trained professionals. Even with these structural differences, each intervention positively affected students' application behaviors and subsequent enrollment patterns. The challenge, then, is how to leverage and formalize interventions that are already successful so that more students can benefit. If interventions that build relationships between students and trained professionals are a key to solving undermatching, how, then, can these relationships, which will always be limited by human capacity, reach more students?

The answer may lie in part within the bounds of technology that has made some of the research included in this paper possible. In 1995, Arthur Levine and Jana Nidiffer published *Beating the Odds: How the Poor Get to College*, a seminal book which examined what critical factors made the difference for low-income students who successfully accessed higher education. The book looked at case studies of 24 students. In 2012, Caroline Hoxby and Christopher Avery were able to use standardized testing databases to examine the college application behaviors of every college-bound, low-income student in the country – a data set of hundreds of thousands. Their research showed that there were large pools of very high achieving, low-income students - even as admission offices at highly selective colleges across the country bemoaned that there were not enough qualified, low-income applicants from which to choose. Technology has allowed researchers to understand the phenomenon of undermatching through data sets that Levine and Nidiffer could never have accessed in 1995. Perhaps technology, then, is also the key to formalizing and strengthening these crucial relationships to eliminate undermatching for high potential students.

As research and policy efforts in the college match space continue to evolve, we are all challenged to change and evolve with them. In the executive summary, we note that serving underrepresented students requires us to do things differently, because we want different results. TCASN will continue to closely follow new research, policy initiatives, and promising practices that can reduce undermatching. We are also actively pursuing solutions to this complex and urgent issue. To learn more about our efforts, please visit our website at [www.tncollegeaccess.org/](http://www.tncollegeaccess.org/).

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