

Introduction

Andrew P. Kelly, Jessica S. Howell, Carolyn Sattin-Bajaj

For a half-century, American higher education policy has been focused on providing access to postsecondary education. Federal grants, loans, and tax credits are designed to ensure that financial barriers do not keep qualified students from attending college. The access agenda has paid dividends: while 50 percent of recent high school graduates enrolled in college by age twenty-four in 1980, that proportion had climbed to nearly 70 percent by 2010.¹ Racial gaps in college enrollment have narrowed somewhat over time, reflecting an increase in the high school graduation rate of minority students.² College enrollment reached an all-time high in 2010 and remains higher than pre-recession levels.³

But degree completion rates have remained stubbornly stagnant; about 60 percent of students who start a degree finish one, and completion rates are far lower among low-income students.⁴ Gaps in educational attainment between high- and low-income students have actually grown over time.⁵ White students are more likely than their minority peers to earn a degree, and that gap has not changed markedly over the past two decades.⁶ Though some studies find a payoff to earning some college credits, the real boost in economic opportunity comes from completing a degree or certificate.⁷ Recently released data on postgraduation outcomes show that at hundreds of institutions, more than half of alumni earn no more than high school graduates.⁸ Access without success often leaves students with debt and little else to show for it.

In light of these trends, higher education policy debates have shifted from a focus on access to a focus on student success, particularly for students from

disadvantaged backgrounds. The discussion has examined a distinct set of questions about the correlates of student success in college, variation in student outcomes across institutions, and explanations of such variation: Can interventions meaningfully change the odds of degree completion? What can students, colleges, and policy makers do to increase the likelihood of completion? These questions have moved to the forefront of scholarly and policy conversations in higher education.

One theme gaining traction is the idea that student success is not entirely a function of demographics and high school preparation, but that it varies meaningfully across higher education institutions as well. Indeed, observational and quasi-experimental research shows that similarly qualified students are much more likely to complete a degree at some institutions than others. In other words, it's not only *whether* you go to college that matters, but *where* you go.

Researchers have therefore homed in on the college choice process as a potential lever to improve student postsecondary success. Do prospective students consider and choose colleges where they are likely to be successful? If we could only encourage more students to do so, the argument goes, we could increase college completion rates. This question has led analysts and policy makers to focus on how much students know about their postsecondary options, the application process, and financial aid; whether their eventual choices align with their aspirations; and whether efforts to provide additional information and assistance can improve these outcomes.

Over the past decade, researchers have identified the “match” between students’ academic background and their choice of college as a key determinant of success in college. In particular, studies have shown that “undermatching”—that is, when students fail to apply to and enroll in the most selective institution they would be eligible to attend—decreases success rates. Undermatch has thus become a major issue in the emerging “completion agenda,” so much so that it has reached the White House. In a January 2014 gathering of colleges, President Obama argued that “. . . to restore the essential promise of opportunity and upward mobility that’s at the heart of America . . . young people, low-income students in particular, must have access to a college education.”⁹

Over time, we have gained a better understanding of which students are most likely to undermatch (for example, low-income and first-generation students), the major bottlenecks in the college admissions process that lead

to undermatching (for example, many qualified students do not even apply), and the types of interventions that might be able to assist students match to a college where they are likely to be successful (such as customized information about their options and college application fee waivers).¹⁰

Solving college match issues is intuitively appealing for a few reasons. First, the recent discussion from the White House on down has focused on a sympathetic group—low-income strivers in search of educational opportunity. Second, strategies for improving college match rates seem straightforward and inexpensive: evidence suggests that policy makers can improve educational attainment through low-cost informational interventions rather than costly new spending commitments or complicated school improvement policies.¹¹ Third, improving match would pay dividends for many students in the short term.

However, while researchers have made progress in understanding college match, existing research and current policy debates have been limited in three key respects. First, the most recent work has defined *match* narrowly as a comparison between students' academic qualifications and institutional selectivity and has focused on high-achieving, low-income students. There are likely other dimensions that are important to college match, like proximity to home, program offerings, and institutional size. Likewise, the focus on high-achieving, low-income students and elite colleges leaves out the vast majority of students. There is plenty of room for alternative conceptions of match that include a wider array of students, colleges, programs, and characteristics.

Second, existing work on undermatching tends to look at the question from the students' perspective: did they choose wisely? However, institutional behavior is equally important in shaping the opportunities available to students. Space and financial aid are finite, and competition for seats can be a zero-sum game. Focusing college match research on the demand side thus ignores important constraints on the supply side of higher education. For instance, we know very little about how selective colleges react when they get more applications from qualified low-income students. Do they expand? Or do those students displace others who might have gotten in? Capacity constraints, reinforced by rankings that reflect admissions selectivity, make it difficult for even the best-informed students to enroll in a good match. On the other side of the coin, existing research tells us almost nothing about the capacity of undersubscribed, less selective colleges to provide

the type of supports and financial help that students need to stay on track to graduation. Informing students about their options is worthwhile, but if the number of quality seats is more or less fixed, better student choices won't necessarily lift attainment rates.¹²

Finally, these supply-side issues raise broader questions about institutional practice and the federal and state policies that shape it. Which practices, structures, and policies are in place at the most successful postsecondary institutions across the selectivity spectrum? How might existing policies reinforce the constraints discussed above? What reforms could increase the supply of quality seats by encouraging institutional expansion and improvement?

Thus, while there is convincing evidence that the match between students' abilities and their choice of college impacts their likelihood of success, there are still many unanswered questions when it comes to what to do about it.¹³ Moving this discussion forward requires that we broaden our conception of college match to include the full spectrum of students and institutions, that we take supply-side constraints seriously, and that we acknowledge how institutional, state, and federal policies shape the behavior of students and institutions. Doing so will provide insight into how we can ensure that all students who are prepared for college—not just the top performers—have access to worthwhile postsecondary opportunities.

To that end, this volume uses new research from top higher education scholars to shed light on important, understudied college match questions. The chapters that follow consider how the research on college match has evolved over the past ten years and examine alternative definitions and measures of college match. They consider match across the range of academic qualifications and institution types and take a close look at the related supply-side issues; that is, how do the incentives facing colleges shape their capacity for growth and improvement? The final chapters look at how government policies—federal, state, and local—influence individual college choices and institutional behavior.

The goal here is to build on, add to, and synthesize the solid base of empirical research on college match and to fully explore the implications of that research for broader questions about college completion and educational attainment. To aid policy makers and institutional leaders, different chapters also lay out concrete, evidence-based policies and practices that can improve college match. Together, the book's chapters point out opportunities for improvement but acknowledge the limits of reforms to the demand side.

COLLEGE CHOICE AND COLLEGE MATCH

Students' choices of whether and where to attend college have a dramatic effect on the rest of their lives. It's logical, then, that the large body of research on college access focuses on the constraints—financial, geographic, academic, and informational—that shape student enrollment decisions. Using data from surveys and students' actual behavior, researchers have described college-going patterns and identified correlates of enrollment and student success: family income, academic background, high school quality, parents' education, and so on.

Researchers have also explored the ways in which college choice is not only a question of resources and background, but also the difficulties of decision making. Students must choose colleges based on imperfect information and navigate a tortuous series of procedural hurdles. Since college selection is generally a one-time event, students have few opportunities to learn from experience. The effect of this complexity varies predictably by socioeconomic status. Students with similar academic qualifications often make very different enrollment decisions. Low-income and minority students, in particular, are likely to lack the kind of information and social network support that more wealthy students rely on in searching for colleges, applying for financial aid, and matriculating. In other words, these differences are not only a function of their income and academic skills, but also their ability to navigate a complex, bureaucratic process.

Research has convincingly shown that similarly qualified students who attend different institutions often have very different rates of degree completion. Early work on the “community college penalty” argues that students who start at a two-year college actually reduce their chances of earning a degree compared with peers who start at a four-year college.¹⁴ Observational studies have pointed out how schools with similar admissions selectivity often have very different completion rates.¹⁵

The college match discussion grows out of the behavioral research on college access and choice, particularly its emphasis on imperfect information and procedural hurdles, and the evidence that institutions influence student success. Together, those two bodies of work suggest that helping students identify “good” colleges and overcome behavioral obstacles to applying to and enrolling in one will increase college completion rates, which begs the question: What exactly qualifies as a “good college?”

College match research evaluates student choices according to a specific criterion: Do students choose colleges whose admissions standards match their academic skills? If not, why not? Is it because they apply and fail to get admitted? Or because they do not apply at all?

The contemporary discussion of college match started nearly a decade ago, when researchers at the Consortium on Chicago School Research released a study of college-going behavior in students in the Chicago Public Schools (CPS). In their landmark report “Potholes on the Road to College,” Melissa Roderick and her colleagues set out to explain why so many students who aspired to a four-year degree ultimately enrolled in a two-year college or failed to attend at all. They found that roughly one-third of CPS students who aspired to complete a four-year degree enrolled in a college that matched their academic qualifications. The most highly qualified CPS students were as likely to not enroll or to undermatch (37 percent total) as they were to enroll in a very selective college (38 percent).¹⁶ The article laid the groundwork for subsequent studies that would look at the mismatch between aspirations, academic qualifications, and enrollment across the country, confirming many of the basic patterns found in Chicago.

The following year, William Bowen, Matthew Chingos, and Michael McPherson tied undermatching to the emerging national conversation about bachelor’s degree completion rates. In *Crossing the Finish Line*, they used data from four state higher education systems to examine college completion rates across racial and socioeconomic groups. They found compelling evidence that students were most likely to succeed when they attended institutions where the academic environment matched their own academic credentials. In addition, they found that matching rates varied by socioeconomic background, race/ethnicity, and student achievement.¹⁷

More recently, a study by Caroline M. Hoxby and Christopher Avery used data on SAT- and ACT-takers to show that the majority of high-achieving, low-income students do not apply to any selective college or university, while those who do apply are admitted to and enroll at comparable rates to their high-achieving, high-income counterparts. In the process, Hoxby and Avery put a spotlight on a small but important part of the college-going population that is particularly susceptible to undermatch.¹⁸

Taking a more expansive view, Jonathan Smith, Matea Pender, and Jessica Howell leveraged data from a nationally representative sample of students to examine undermatching among students across the achievement spectrum. They found that 41 percent of students undermatch in choosing a college,

and that undermatch rates were 15 percentage points higher among students from the lower-half of the socioeconomic status distribution than the upper half of the distribution.¹⁹ Another national study by Eleanor Dillon and Jeffrey Smith examined rates of over- and undermatch across a nationally representative sample of students. They found that a substantial proportion of students were mismatched, and, again, that undermatching was more prevalent among lower-income students (and vice versa for overmatching).²⁰

The most recent wave of research has moved toward developing and testing interventions to eliminate undermatch. In 2013, Caroline Hoxby and Sarah Turner conducted a randomized control trial with nearly fifty thousand students to see if semi-customized information and college application fee waivers could improve college match rates among the high-achieving, low-income student population. The results showed that recipients of the low-cost (\$6) intervention were more likely to apply and be admitted to more colleges, and to colleges with higher graduation rates, more academically able peers, and greater resources than students in the control group.²¹ The College Board is now taking this intervention to scale in an effort to reduce the undermatch rates, particularly among disadvantaged student populations.²²

THE LIMITS OF “UNDERMATCH”

The existing research on undermatch has made a significant contribution to our understanding of where students enroll and what happens after they do. Thanks to readily available data (from the College Board and ACT) and a dimension that is simple to measure with those data (the gap between a student’s SAT score and the typical SAT scores at the colleges they apply to and an enroll in), the study of undermatch has made a significant contribution to our understanding of where students enroll and how they fare at different types of institutions. The research has also helped to identify simple, inexpensive solutions in the effort to raise college attainment among low-income students—a rarity in education research, where policy interventions tend to be complex and resource-intensive.

While progress has been made, major systemic questions remain: Is improving college match simply a question of increasing the flow of information to prospective students? Or are there other constraints on raising attainment that would apply even if more students successfully applied to more and better matched colleges? Likewise, the current conception of and narrative around undermatch—with its emphasis on high-achieving,

low-income students—has felt far too narrow in the face of significant college dropout rates and mounting student debt. It also represents a departure from earlier work on college match, which focused on a broader swath of students.

In short, the existing work on college match has been limited in three key areas. First, recent research has relied on a narrow definition of match—the comparison between academic qualifications and institutional selectivity—for a narrow segment of students—high-achieving, low-income students. While certainly worthwhile, such a focus ignores the experiences of the largest share of college-going students and the institutions they attend: average achievers who choose from among less selective or open-access colleges. What does match mean for these students? Are there dimensions other than academic selectivity that matter for student outcomes?

For instance, we know that college graduation rates vary dramatically across institutions within the same selectivity categories, especially among less selective institutions.²³ Students could conceivably be better matched at a college with a track record of success than one with higher admissions standards but lackluster outcomes. Measuring match according to institutional selectivity also excludes other dimensions that are likely to influence student success, such as fit, choice of major, and the cost of tuition. At two-year colleges, choice of program arguably has a larger effect on student outcomes—completion and labor market success—than choice of institution. In other words, a focus on admissions selectivity and student test scores downplays other characteristics that are linked to student outcomes like on-time college completion and choice of a quality program.

Next, existing work on undermatching tends to look mainly at the demand side of college enrollment, overlooking the ways in which institutional behavior shapes the supply side of postsecondary opportunity. Implicit in the policy debates about undermatching is the notion that if we could only get qualified low-income students to apply to an institution where they are well matched, completion and attainment rates would rise. However, this conclusion ignores complex supply-side issues that affect the opportunities available to students. Selective colleges expand very slowly, if at all. At the other end of the spectrum, less selective colleges may have an ample supply of seats but insufficient financial, academic, and support services that students need to stay on track to graduation. For schools in the broad middle, the competition for prestige creates incentive to increase admissions standards and let fewer students in.

These constraints suggest that simply improving college match via the demand side may not automatically boost attainment rates. Even if more qualified students applied and enrolled at colleges that were a good match academically—or where student success rates were higher—they would likely displace others. Those displaced students might then wind up at institutions where student success rates are low, creating a zero-sum game. Though these supply-side constraints are central to drawing implications from existing research on undermatch, they have not received the attention they deserve.

Last, the questions surrounding the supply of quality postsecondary opportunities point to how little we know about both effective institutional practices and the ways in which federal and state policies affect the behavior of both students and institutions. The traditional measurement of match essentially treats institutions as a black box, using admissions selectivity as a proxy for “quality.” But the variation in student outcomes and new evidence from randomized studies suggests that some colleges have adopted ideas that help students succeed in spite of their academic background.²⁴ Knowing more about the internal practices, structures, and policies in place at successful postsecondary institutions across the selectivity spectrum can help improve our understanding of how to improve both the supply and demand sides.

Colleges are creatures of the policy environment in which they operate, and the incentives to expand enrollments or adopt promising practices and the resources necessary to do so are often absent. Incentives and resources are, of course, a function of state and federal policy. How might existing policies reinforce the supply constraints discussed above, and what reforms could increase the supply of quality seats? The same question applies to the demand side: where do existing policies help or hinder students’ ability to learn about their options? While some of the work on college match has placed state policy at the center of its analyses, a comprehensive look at how state and federal policy shape the supply and demand sides is still missing.²⁵

Clearly, the match between a student’s academic abilities and the admissions standards of her college is of critical importance. But that is true for all students, not just those at the top. That suggests a need to broaden the discussion of college match to include the full spectrum of students and institutions. Likewise, that students are free to choose an option that fits their needs and budgets does not imply that all students are able to; institutional behavior constrains the supply of seats. A closer examination of the institutional, state, and federal policies that shape these constraints is essential. A

more complete picture will provide insight into how we can ensure that all qualified students, not just the top performers, can access educational opportunity. The goal of this volume is to bring new evidence, analysis, and policy recommendations to bear on these questions of growing national concern.

THE CHAPTERS AHEAD

The first two chapters of this volume examine the evolution of the college match concept and raise important questions about how best to define and measure it. In chapter 1, Jenny Nagaoka and her colleagues—some of the Chicago Consortium researchers who first developed the concept—revisit their original results and provide an update on the status of college match rates in CPS almost a decade later. The chapter then focuses on the use of college match as an indicator and considers how such indicators can function to effectively bridge research and practice in schools. In their conclusion, the authors set the stage for subsequent chapters by identifying some limitations of measuring match based solely on academic indicators and arguing that supply-side factors such as geographic constraints and insufficient quality must be included in analyses of the options available to students.

In chapter 2, Jessica Howell, Matea Pender, and Amal Kumar of the College Board extend the measurement discussion by evaluating the relative importance of nonacademic dimensions in college choice and postsecondary success. Drawing on data from seven cohorts of SAT-takers, they introduce the concept of “nonacademic fit” and examine the relationship between students’ stated preferences for college attributes—proximity to home, size, the level of the institution (two- or four-year), and others—and their actual choice. Their results reveal that application and matriculation choices are influenced by financial, geographic, academic, and sociodemographic factors. The authors also find a positive relationship between several measures of student-college fit and collegiate outcomes. The chapter makes a strong case for considering nonacademic fit alongside traditional academic measures.

Chapters 3 and 4 expand the match concept to cover a broader array of students, institutions, and definitions. In chapter 3, Awilda Rodriguez and Christian Martell spotlight the characteristics, college application behaviors, and match rates of average-performing students who comprise the majority of the college-going population. Their analysis of a nationally representative data set finds significant evidence of mismatch between average-performing

students and the postsecondary educational institutions they attend on multiple dimensions. Their results illustrate the limitations of relying solely on institutional selectivity and test scores to study match, particularly for this student population. Rather, they suggest considering a combination of career aspirations and academic interest; nearby college options; affordability; and likelihood of completion to generate a richer measurement of match.

Chapter 4 argues that the selection of a major is an important and understudied element of matching at community colleges and broad-access four-year institutions. Authors Thomas Bailey and his colleagues at the Community College Research Center suggest that existing models of college (and major) match rely too heavily on static measures of students and institutions and that major selection is actually a dynamic learning process, though one that is severely constrained in many places by a lack of adequate advising. Bailey and colleagues describe what some colleges and universities are doing to improve the major selection process and draw out implications for the college match discussion writ large.

The next pair of chapters shift away from the demand side of the college match equation and center directly on questions of institutional supply, institutional quality, and the practices, policies, and incentive structures within universities that shape the higher education landscape. In chapter 5, Andrew Kelly paints an empirical picture of the supply side by examining where new undergraduate enrollments have flowed over the past decade. He disaggregates first-time, full-time enrollments by the institutional graduate rate to illustrate that the majority of new enrollments are happening at colleges with graduation rates below 60 percent. These results provide an empirical basis for emerging discussions about the problem of limited supply of quality seats. In chapter 6, Michael Bastedo examines the incentives that shape the admissions policies of colleges and their enrollment managers. In particular, he focuses on how those incentives affect the access of low-income, high-achieving students. Drawing on extensive fieldwork and existing literature, Bastedo describes how the mixture of institutional self-interest, prestige-seeking behavior, and capacity constraints largely determine college match on the institutional side, and presents a series of recommendations to revise institutional, state, and federal funding mechanisms to incentivize high-performing colleges to admit more low-income students. Bastedo also suggests additional experimental research that can help us better understand and remedy admissions officers' biases against admitting low-income applicants.

Chapters 7, 8, and 9 examine the impacts of existing local, state, and federal policies on the supply and demand sides of college match factors. In chapter 7, Lindsay Page and Jennifer Iriti take a detailed look into a locally funded, philanthropic initiative, the Pittsburgh Promise program, which provides eligible graduates from Pittsburgh Public Schools with scholarship funds of up to \$10,000 per year for up to four years of postsecondary education. Page and Iriti find that over time, students were more likely to attend college and less likely to undermatch, regardless of socioeconomic status. However, although students at the threshold of earning Promise funding (around 2.0 GPA) enrolled in college at higher rates than peers who just missed eligibility, the relative quality of their matches has not improved. Thus, this chapter points to the complexity of designing interventions that simultaneously address issues of college access, undermatching, and college success in the context of scarcity, particularly for students on the lower-performing end of the distribution.

Chapter 8 focuses on how four types of state-level policies might affect college quality and academic match: state funding of public colleges; need- and merit-based financial aid to students; mandates regarding college entrance exam taking; and state-imposed college admission criteria. Authors Joshua Goodman, Michael Hurwitz, and Jonathan Smith find that level, forms, and amounts of in-kind aid to students, as well as exam-taking policies, can have an important impact on the quality of college that students attend, and that geographic constraints and institutional capacity also factor into enrollment patterns. Goodman and colleagues argue that match quality itself matters relatively little for longer-run outcomes such as degree completion but that absolute college quality does matter, and they offer suggestions on state-level policies to maximize that quality.

In chapter 9, Robert Kelchen explores three potential policy mechanisms through which the federal government can strive to improve students' college choices. He argues that the federal government is uniquely positioned to disseminate information about colleges through venues such as the College Scorecard and emphasizes the tools of accountability and financial aid as possible avenues for increased federal government intervention. At the same time, Kelchen acknowledges a series of possible limitations to the power of the federal government to impact college match.

In the conclusion, we revisit the major themes, findings, and tensions that emerge from the chapters and discuss the implications of this volume for policy and future research. First, we discuss the benefits of adopting a

more expansive definition of college match that captures the behaviors and experiences of the increasingly heterogeneous student populations choosing colleges each year. Next, we review a set of new, empirically tested measures that can be used in analyses of college matching to better explain students' multidimensional preferences and the dynamic process between student selection and institutional characteristics. Finally, we raise a number of unresolved issues in the field, and suggest a research agenda moving forward. We argue that if the problem of college matching is essentially a problem of institutional quality and insufficient supply of seats in high-performing colleges at all selectivity levels, then the current focus on providing better information to consumers will have, at best, limited impact on improving college completion rates. Instead, there is a need for greater understanding of what is happening at the most successful institutions across the selectivity spectrum and what can be done to expand their capacity and replicate their institutional structures, policies, practices, and culture at other less successful sites. In addition, we consider the ideas about improving match on multiple dimensions and begin to think through what it might take to provide more comprehensive guidance to students before and during college. We lay out an extensive research agenda that includes a combination of new empirical studies, experiments, and policy initiatives we believe may offer the greatest promise in increasing understanding of the roles that students, policy makers, and higher education institutions could play in addressing college match and, in turn, responding to stagnant college completion rates.