The Bridgespan Group

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Reclaiming the American Dream

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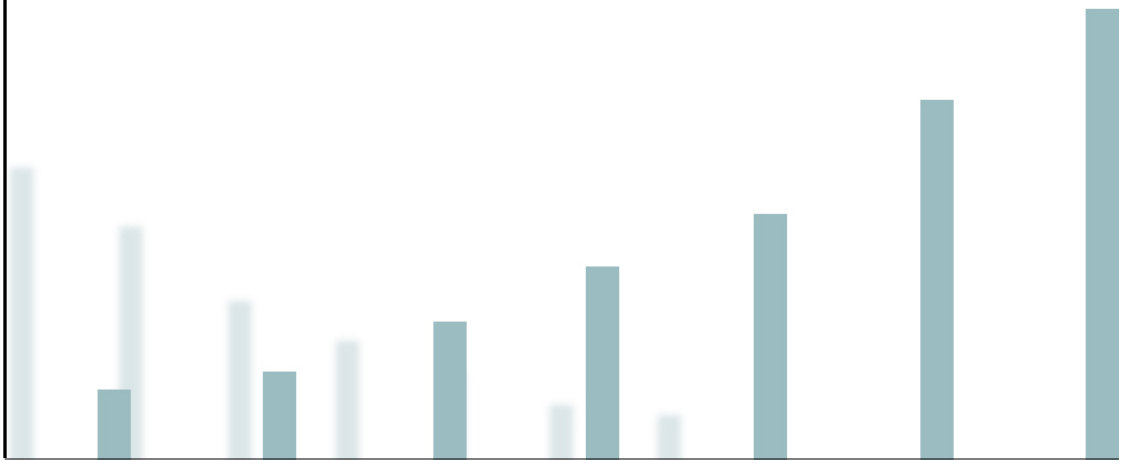
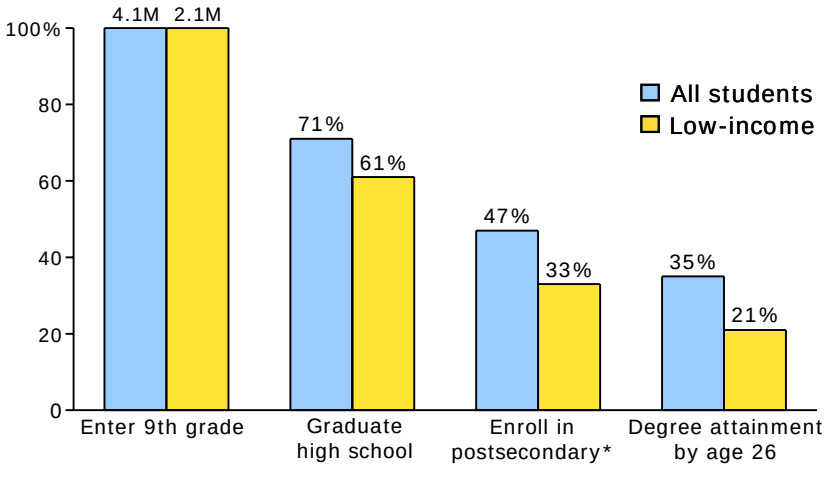


The contrasts are stark. In the United States today, a high school dropout is four times as likely to be unemployed as a college graduate is. Assuming he does find a job, he will earn nearly 60% less than his college-educated counterpart. He will be half as likely as his college-educated peers to take part in the democratic process by casting a vote, and half as likely as his high-school educated peers to feel he is in excellent or very good health. As if that weren't enough, he is 2.5 times more likely to be arrested than a high-school graduate is—odds that may help to explain why 82% of the inmates in the criminal justice system are dropouts.

The transformative effects of higher education are clear; yet access to college is one of the most serious educational and social issues facing the U.S. today. Despite widespread agreement that a college degree leads to better life outcomes for individuals and to a better society overall, only half of students who enter ninth grade eventually enroll in college. Of those who do enroll, 75% eventually earn an associate's or bachelor's degree. In other words, only one in three students who enter high school will receive a college degree.

Disturbing as these aggregate numbers are, the picture for low-income students is even more distressing. Only 60% of America's low-income youth (defined as students eligible for free and reduced meals) can expect to graduate from high school. One in three can expect to enroll in college. Only one in seven will earn a bachelor's degree. (Exhibit 1 shows the loss of students in the educational pipeline.)

Exhibit 1: The loss of students in the education pipeline



*By fall of their high school graduation year

Note: There are many ways to calculate the education pipeline (this figures uses NELS data, updating the high school grad rate with more recent high school data (Urban Institute, Manhattan Institute, NCES). Most methodologies show a similar picture.

Statistics like these make speeches about the American dream ring hollow. For a country in which education is the premier means for promoting equal opportunity and social mobility, increasing college access and success for low-income students is a moral, social and economic imperative. The good news is that efforts to address this issue are multiplying, from charter schools focused on ensuring that low-income students receive a college education, to the efforts of the world's largest foundation, dedicated to preparing all high school students for college and work. The problem is that we don't know which activities have the greatest impact on a student's ultimate success in college, and therefore probably are not focusing public and private resources where they can do the most good.

The analysis presented here was designed to address this question. Our goal was to identify the supports that appear to make the greatest difference in helping low-income youth enroll in and complete college. Taken together, the findings indicate a clear action agenda for everyone who is committed to improving U.S. schools and the quality of their outcomes for every student.

The power of academic preparation

Educators, parents, and policy makers who want to increase the college graduation rate of the nation's young people have myriad options from which to choose. Even a brief review of the literature on college access makes it clear how many factors enter into the equation: students' level of academic preparation; students' expectations about attending college (or not), as well as their parents' and teachers' expectations for them; peer culture and the presence (or absence) of parental and school support; information and awareness of admissions and applications processes; and affordability—real and perceived.

Moreover, each of these categories encompasses multiple kinds of support and related activities. For example, consider just a few of the options that fall under the rubric of information and awareness: helping students select their high school courses; giving them time off for college visits; providing help with application and financial aid forms.

Among all these categories, however, one stands head and shoulders above the rest: Academic preparation is the most effective means of increasing the odds that students will graduate from high school ready for college, matriculate, and eventually receive their degrees. Cliff Adelman, a Department of Education researcher, has found that, "A rigorous high school curriculum has greater impact on bachelor's degree completion than any other pre-college indicator of academic preparation, regardless of socioeconomic status or race."[1] These results have been confirmed specifically for low-income students by A. F. Cabrera, who reports that low-income students enroll and progress in college at much higher rates when they graduate high school academically-prepared.[2]

Although there is, as yet, no universally-accepted definition of academic preparation, there is general agreement that rigor is the crux of the matter. The academic intensity of the curriculum a student takes in high school counts more than grades or test scores. Absent first-hand observation of the teaching and learning that are taking place in a classroom, rigor can be difficult to ascertain. The freshman English classes at two high schools may share a name but cover completely different material in markedly different depth. But there are some well-accepted curricular markers. The level of math taken in high school correlates strongly with a student's likelihood of completing college, for example, with "the tipping point of momentum towards a bachelor's degree now firmly above Algebra 2."[3] The number of units in lab science courses is a similarly good predictor. Finally, some educators have set stakes in the ground to define academic rigor—although sadly their contributions are often ignored. The public university system in California, for example, has defined a sequence of 15 required (and three more recommended) high school courses known as the A-G curriculum. Any student wishing to

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[1]Clifford Adelman, "Answers in the tool box: Academic intensity, attendance patterns, and bachelor's degree attainment," Washington, DC: U.S. Department of Education, 1999.

[2] Alberto F. Cabrera, Kurt R. Burkum and Steven M. La Nasa, "Pathways to a Four-Year Degree: Determinants of Degree Completion Among Socio-Economically Disadvantaged Students," Washington, DC: U.S. Department of Education, 2003.

[3] Clifford Adelman, "The Toolbox Revisited: Paths to Degree Completion From High School Through College," Washington, DC: U.S. Department of Education, 2006.

study at a four-year public college in California must complete these courses. Yet only a handful of California high schools actually require that all students pass the A-G requirements in order to graduate.[4] By definition, these students do not have access to the type of curriculum that is going to prepare them for college.

Even when the standard of academic preparation is defined fairly loosely, its effect on college degree attainment is impressive. In the National Educational Longitudinal Study (NELS: 88, 2000), for example, students are defined as "minimally qualified" for college if they meet one of five criteria:

- Rank at or above the 54th percentile in their class;
- Have a GPA of 2.7 or higher in academic courses;
- Have a combined SAT score of 820 or above (approximately the 35th percentile);
- Have an ACT composite score of 19 or higher (approximately the 40th percentile);
- Score at the 56th percentile or above on the 1992 NELS math and reading composite aptitude test.

A student who graduates from high school having met this very lenient definition of academic preparedness has an 85% chance of entering college and a 50% chance of receiving a bachelor's degree. In contrast, students who fall short have only a 14% chance of completing college.

Shockingly, only 46% of high school graduates meet even this minimal level of academic preparation. When the criteria are ratcheted up, the picture becomes even more dispiriting. Jay Greene, at the Manhattan Institute, defines college readiness in terms of "the minimum standards of the least selective four-year colleges."[5] By this measure, only 37% of high school students graduate academically prepared. ACT, whose test

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[4] It is worth noting that the Los Angeles Unified School District's board recently voted to adopt A-G as the high school graduation requirement by 2012.

[5] Jay P. Green and Greg Foster, "Public High School Graduation and College Readiness Rates in the United States," New York: The Manhattan Institute.

constitutes an even more stringent definition, finds only 26% of students academically prepared.[6]

Again, these are aggregate figures for U.S. high school students overall. Low-income students are even less well prepared. Research shows that they have more limited access to rigorous courses, and that they still lag far behind in taking advanced math and science. As a result, only one in three low-income students meet the NELS definition of "marginally qualified."

Importantly, the consequences of poor academic preparation extend well beyond college-going and degree attainment. The American Diploma Project and others have asserted for years that the requirements necessary to prepare students for postsecondary education, successful careers, and effective citizenship are all largely congruent. A recent study by ACT provides empirical evidence that "whether planning to enter college or workforce training programs after graduation, high school students need to be educated to a comparable level of readiness in reading and mathematics." The same level of academic preparation is necessary for college and "entry-level jobs that require less than a bachelor's degree, pay a wage sufficient to support a family, and offer the potential for career advancement."[7]

The moral is simple: if American high schools could do one thing and one thing only to transform students' opportunities, it would be to make a rigorous academic curriculum the default curriculum in every school for every student.

Looking beyond academic preparation

Crucial as it is, academic preparation is necessary but not sufficient in helping low-income students enroll in and graduate from college. Even when such students graduate from high school sufficiently prepared, they complete college at significantly lower rates

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[6] ACT, Inc., "Ready for College and Ready for Work: Same or Different," April 2006.

[7] ACT, Inc., "Ready for College and Ready for Work: Same or Different," April 2006.

than their wealthier peers. While over 80% of the academically prepared students from higher-income families (i.e., families with income greater than $75,000) will attend a four-year college (and 96% will attend either two or four-year institutions), only 50% of their low-income counterparts will matriculate. Over 60% of academically-prepared students from higher-income families will earn a bachelor's degree, but only 20% of low-income students will do the same.[8] In fact, the best-prepared students from the lowest socio-economic quartile have the same chance of attending college as the least-prepared students from the highest quartile.

When low-income students do matriculate, moreover, they are likely to attend less-selective colleges. According to a 2004 Century Foundation study, 74% of students at the 146 most selective institutions came from the top income quartile, while only 3% were from the lowest income quartile and only 10% were from the lower half of the income spectrum.[9] This discrepancy is more than an issue of equity: Less-selective colleges are typically unable to provide enough of the kind of support that low-income students need to make a successful transition to college life, both academically and socially, often resulting in lower graduation rates.

Given these disparities, what more needs to be done?

To answer this question, we have to look at the other kinds of support that help students get into and through college: expectations, culture and social supports, information and awareness, and affordability. As noted earlier, the research literature on college access is rich. But for the most part, it does not attempt to set priorities that decision makers could use to allocate efforts and funds. Rather, it tends to focus on one particular category of support (the Lumina Foundation's excellent work on affordability is a fine example); and

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[8] Advisory Committee on Student Financial Assistance, "Empty Promises: The Myth of College Access in America", Washington, 2002

[9] Richard D. Kahlenberg, "Left Behind: Unequal Opportunity in Higher Education," New York: The Century Foundation, 2004.

demographic characteristics (such as socio-economic status) are often woven into the discussion, making actionable implications hard to draw out. Difficult as it might be to change financial aid practices and policies, changing a student's socio-economic status pre-college would be virtually impossible.

This research landscape created an opening we believed Bridgespan could usefully fill. With the support of the Bill & Melinda Gates Foundation, our goal was to produce an analysis that would allow educators and policy makers to set priorities *across* categories of support (e.g., the relative importance of expectations as compared to information and awareness) and *within* categories (e.g., whether parent or peer support has a greater impact). To this end, we identified three questions the analysis would have to answer.

- What is the increased likelihood of college matriculation or completion if a given category of supports is in place for an individual student?
- How prevalent are those supports among the low-income student population?
- What, if any, positive feedback effects might exist between a particular college-access support and achievement of a higher level of academic preparation at the high school level?

The first question addresses how to increase the odds of a low-income student getting into and through college. The second clarifies how many students are in need of a specific support. The third highlights the correlation of each support with greater levels of academic preparation among low-income youth.

For our analysis we used a longitudinal database that tracks students' progression into and through college.[10] We limited the database's population to low-income students and, for the first question only, further limited it to students who graduated from high school academically prepared.[11] We then identified a small number of variables that could serve

[10] A more thorough discussion of the methodology is located in the Appendix of this paper.

[11] When examining the effect of specific supports on college matriculation and completion, we controlled the sample for academic preparation. Given evidence shared in earlier sections, academic preparation

as proxies for the full set of college-access supports in a specific category. For example, we chose the proportion of friends planning to go to college, which provides insight on subtle peer relationships, as a variable for peer culture. (Exhibit 2 shows the set of variables used as proxies.) Finally, for each variable we separated the sample into two groups: one that answered affirmatively (i.e., students for whom the support existed) and one that answered negatively (i.e. students for whom the support was lacking).

Exhibit 2: Variables used as proxies for supports

Expectations	Culture and support	Information and awareness	Perception of affordability
Student expects to attend college	Parent encourages student to take SAT/ACT	Student expects to take a college-prep high school curriculum	Affordability is important factor in college choice
Student believes that college is necessary for his/her career	Parent and student visit colleges	Counselor help with choice of high school curriculum	Attendance at financial aid info session
Parents expect the student to attend college	Parents check student's homework	High school help with college admission application	Application for financial aid
Teacher expects the student to attend college	Student's friends' plan to go to college	High school help with aid application	Application for loans
	Student's friends value learning	High school time off for college visits	
	Parent discussed college application with student		

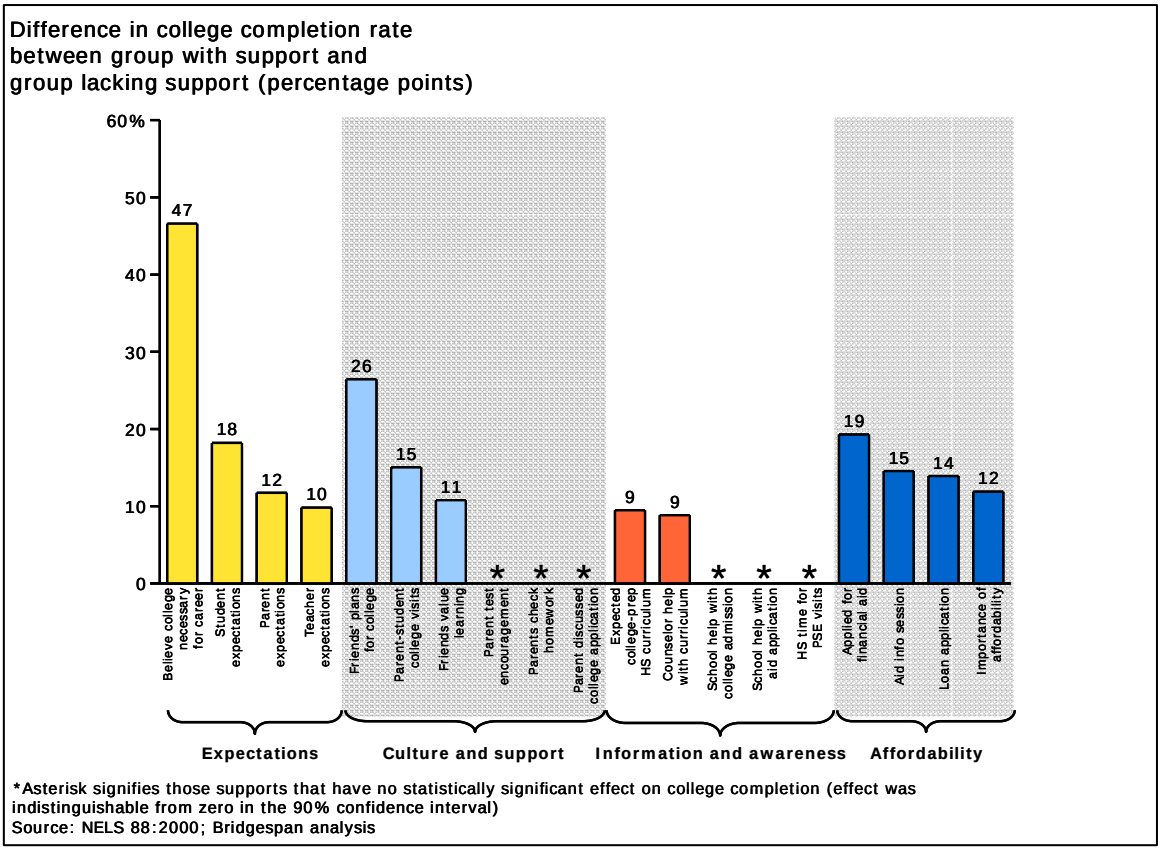
What helps an individual student enter and complete college?

To answer this question, we calculated the progression rate of each group into and through a four-year college for each support. We then took the difference to determine

is the predominant support that students can obtain. The team controlled for it in this sample to limit the extent to which it would skew the effects of other college access supports.

the incremental effect on college matriculation and completion rates of having each support in place.[12] Exhibit 3 presents the results of this analysis.

Exhibit 3: The effect of specific supports on college completion



*Asterisk signifies those supports that have no statistically significant effect on college completion (effect was indistinguishable from zero in the 90% confidence interval)
Source: NELS 88:2000; Bridgespan analysis

[12] A note on correlation and causation: This analysis does not and cannot establish causality between any of the supports and the outcomes (college completion, college matriculation, or academic preparation). However, the sequential nature of these events (e.g., student expectations of college-going in eighth grade necessarily precede actual college going or completion) lends credence to the proposition that they are linked. A more rigorous analysis that could investigate the existence of such links would be welcomed.

Expectations are important, especially when they relate to the link between a postsecondary education and the student's ability to pursue a planned career.

Every variable we studied in the category of college expectations had a statistically significant effect on college completion. Nevertheless, one in particular stood out: the student's expectation that he or she would need a bachelor's degree to pursue the career he or she wished to have at age 30. When this expectation was in place, a student had a 46 percentage point higher rate of obtaining a bachelor's degree. This number is astonishing and, in effect, binary: students who make the connection between college and career graduate at a rate of 55%; those who don't at a rate of 9%. In other words, even when academic preparation is held constant, high school graduates who subscribe to this belief are more than *six times* as likely to earn their bachelor's degrees.

Peer culture is more influential than parental encouragement. The most important thing parents can do for students is to make college tangible.

In the general category of culture and social supports, the factor most likely to bump up a student's odds of completing college was having a significant portion of friends who were also planning to attend college. Having friends who "value learning" also improves the odds, although the effects are less pronounced. These findings reinforce the views of the American Council on Education, which reports that students are four times more likely to enroll in college if a majority of their friends also plan to attend than if their friends do not.[13] Put simply, cohorts of students matter.

By contrast, only one of four parental supports was statistically significant: the parent and student visiting at least one college together. Unlike other forms of parental support, such as checking homework, encouraging students to take the SAT or ACT, and discussing college applications, campus visits appear to make college and its accessibility much more tangible.

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[13] Susan P. Choy, "Access & Persistence: Findings from 10 Years of Longitudinal Research on Students," American Council on Education, 2002.

The importance of expecting—and taking—a college preparatory curriculum in high school was reinforced: it proved the only type of information and awareness to demonstrate significant increases in the rates of matriculation and completion.

Schools provide many kinds of information to increase college awareness among low-income youth: highlighting curricular requirements for entrance and ensuring knowledge of procedural requirements for admission and financial aid are two examples. Our analysis found that when a student expects to take a college-prep curriculum, there is a significant beneficial effect. Similarly, benefits were seen with counselor assistance related to high school curricular choices. Other common in-school supports, such as providing assistance with college and/or financial aid applications, or time off to visit colleges, showed no significant effect.

Supports that addressed the issue of affordability proved important across the board.

Both applying for financial aid and applying for college loans improve the likelihood a student will obtain a bachelor's degree. So does a student's or parent's attendance at an information session on financial aid benefits. Likewise, students who believe affordability does not affect their choice of college have an improved chance of attaining bachelor's degrees. These findings mirror a study of high school graduates in Oregon, examining the reasons students gave for not attending college: affordability-related constraints ranked first, third, and eighth in that list.[14]

[14] "Where Have Oregon's Graduates Gone? Survey of the Oregon High School Graduating Class of 2001." Oregon University System: 2002.

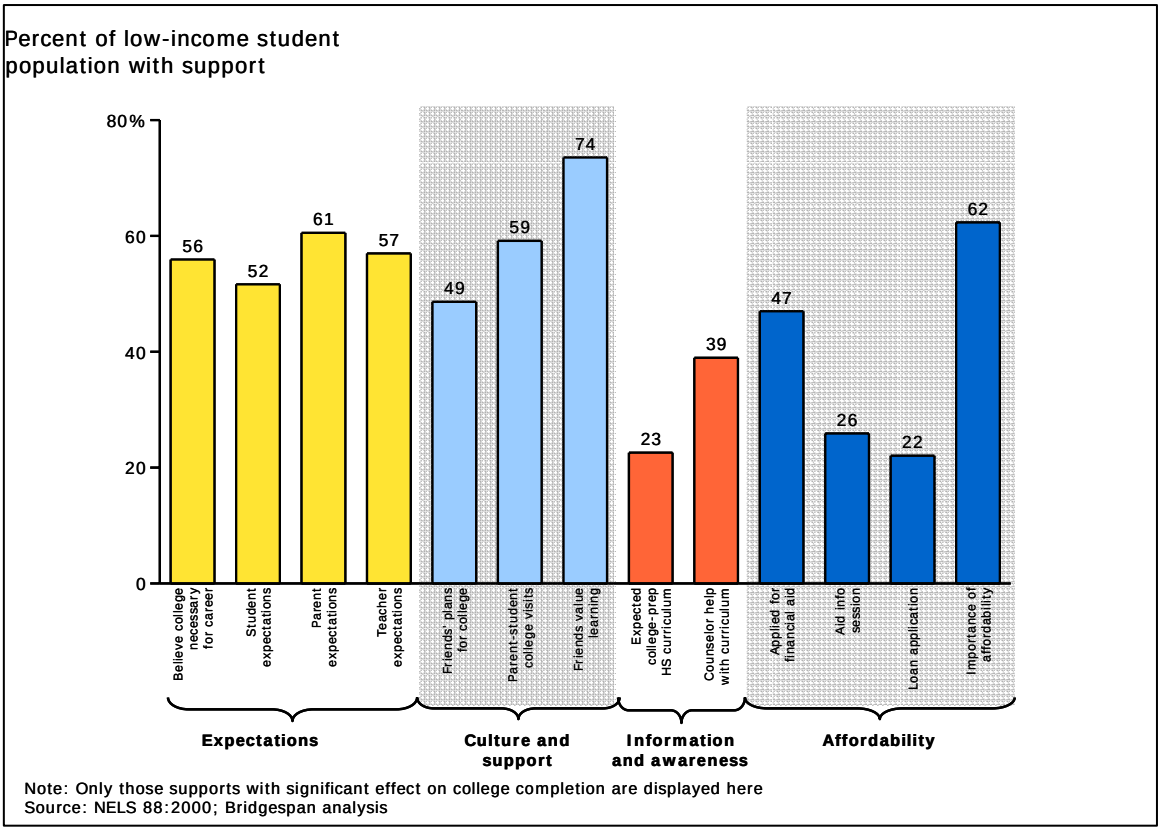
Neither college-going procedural assistance on the school's part nor parental involvement without a clear link to college showed a significant effect on college matriculation and graduation for low-income students.

One of the primary benefits of an analysis such as this is that it provides guidance on what *not* to prioritize. So it is worth pausing to reconsider the supports that did not, in and of themselves, improve a student's odds of getting a bachelor's degree: parental involvement outside of actions that make college tangible to the student, and school assistance with college-going procedures. Although these elements undoubtedly have some influence on student choices, particularly as part of a larger system of supports (e.g., application assistance as part of a larger college counseling effort), they appear to have limited effect on their own. College access practitioners with limited resources might want to incorporate them only when there is a clear rationale as to their usefulness.

How prevalent are college-access supports among all low-income students?

Now that we understand the effect of college access supports in increasing the likelihood of college matriculation and completion at the level of an individual student, we can turn to our second driving question: How prevalent is each of these supports across the low-income student population? Unlike the previous analysis, in which we controlled for academic preparation so that we could isolate the impact of each of the other supports, here the control is removed. The reason is that when we think about the extent to which low-income students collectively lack these additional supports, we have to consider the entire low-income population. Exhibit 4 shows the results of this analysis.

Exhibit 4: Proportion of students who demonstrate access to specific supports



Note: Only those supports with significant effect on college completion are displayed here
Source: NELS 88:2000; Bridgespan analysis

A large group of students expect to go to college, but they do not plan to take the courses that will prepare them to get into college and succeed there.

Comparing the different kind of expectations students have for themselves in the eighth grade exposes a sharp disconnect. In the 1988 survey of students, parents, and teachers that forms the basis for the NELS dataset, a majority (52%) of students said they expected to attend college, with parents and teachers expecting students to go at slightly higher rates (61% and 57% respectively).

However, students' plans for their course of study in high school do not correspond to these numbers. While it would be reasonable to expect that any eighth grader planning to attend college would also expect to take a college-preparatory curriculum in high school, the data show this is far from true. Although 52% of low-income students

expected to go to college, only 23% of the eighth graders expected to pursue a college-prep curriculum*. Put simply, at least one-third of all low-income students expect to go to college but do not plan to take the coursework that will enable them to pursue that path.*

To make matters worse, this gap in expectations may have widened. In the 18 years since the NELS survey, college-going messaging, particularly at the aspirational level, has been a constant force. Indeed, a recent survey by the Ad Council pegs low-income student expectations of college degree attainment at 91%, a dramatic increase from 1988.[15] As a result*, today, nearly all low-income students expect to attain a college degree*. While this is undoubtedly good news, similar efforts have not been made on the high-school curricular front. So it is unlikely that the number of low-income students expecting to take a college-preparatory curriculum has tracked this growth in college aspirations. This disconnect is a tragic irony—well worth concentrated attention from both educators and policymakers.

Reliable information about college affordability and the financial aid process eludes many low-income students.

Half to three-quarters of low-income students don't apply for aid; they don't apply for loans; and/or they don't attend information sessions on postsecondary aid and its availability. Given how important these affordability-related supports are in increasing college matriculation and completion rates, many low-income students would benefit if they were made more widely accessible.

A majority of low-income students have access to the most important cultural and parental supports.

Interestingly, availability of peer and parent college access supports is high. Nearly 60% of all low-income students visit at least one college with their parent. Half of all low-income students report that most to all of their friends plan to go to college. However,

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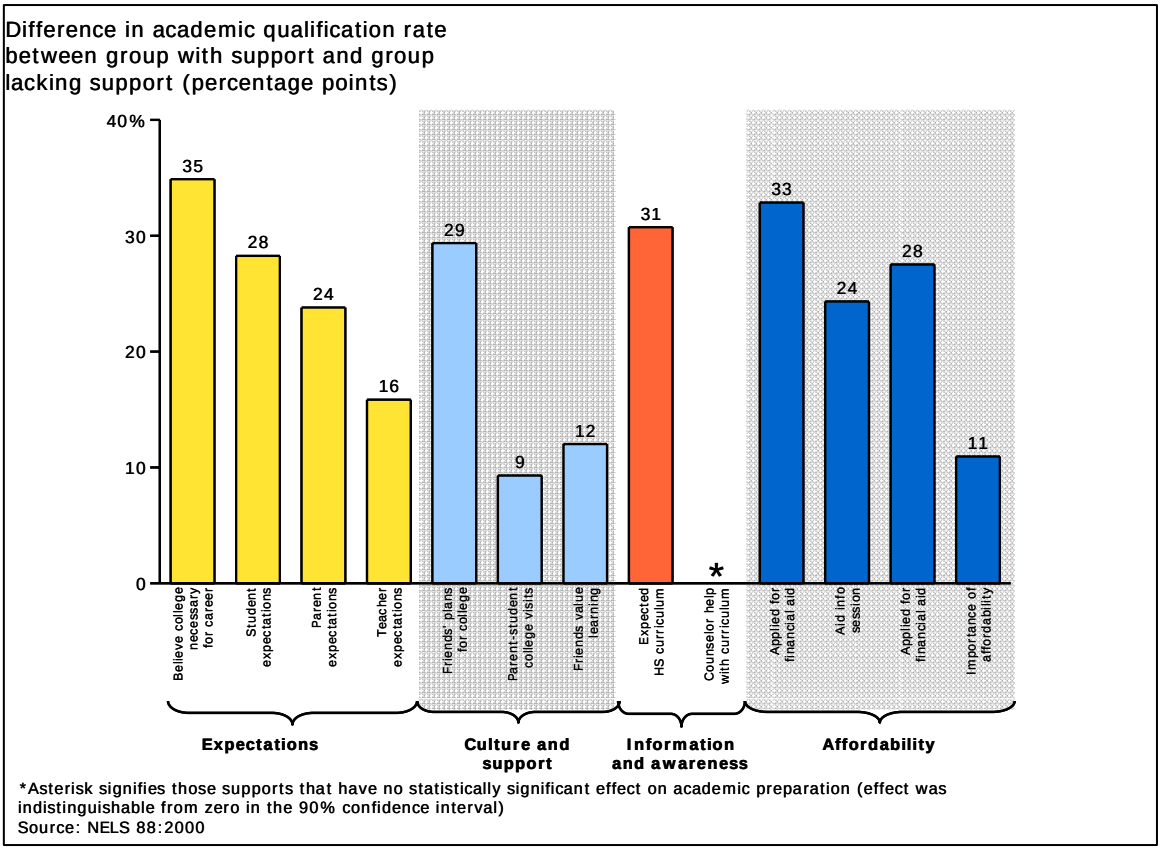
[15] Ad Council, "College Access: Results from a Survey of Low-Income Parents and Low-Income Teens," February 2006.

these numbers still leave many low-income youth unable to access these supports. The question for educators and policymakers alike is, "How can these supports be made even stronger to reach the rest of the low-income student population?"

Are there positive feedback effects between the supports that improve college completion rates and increased academic preparation at the high school level?

The importance of academic preparation in increasing college access is a recurring theme throughout this paper. With a prioritized list of other significant college-access supports now becoming clear, we can examine the potential for positive interaction among them and academic preparation. Again, we have included only those supports that have a significant effect on college completion rates. Exhibit 5 presents the data.

Exhibit 5: Correlation of specific supports with increased academic preparation



*Asterisk signifies those supports that have no statistically significant effect on academic preparation (effect was indistinguishable from zero in the 90% confidence interval)
Source: NELS 88:2000

The news here is unmistakably good. The supports that drive college completion also correlate strongly with increased levels of academic preparation. Even better, the specific supports that merit strongest prioritization in terms of increasing college completion rates lead the pack here as well. Education needed for career, friends planning for college, and affordability supports have the highest levels of positive feedback. Those working in the college–access field can expect to see a strong beneficial feedback loop between their work on these supports and on academic preparation.

One point of nuance remains: planning to enroll in a college-preparatory curriculum shows a more pronounced correlation with academic preparation (31 percentage points) than with college completion (14 percentage points). Intuitively, this makes sense. Since expecting to take college preparatory classes and becoming academically prepared are inextricably linked, the relationship between them should be strongest. We've chosen to underscore it, however, in light of our earlier findings about the high number of students who expect to go to college but don't plan to take the courses required to get them there. The need for more students to expect (and have access to) college preparatory curricula is truly urgent.

Setting priorities

Having reviewed each analysis in turn, we are now ready to answer the question, "What are the most effective ways to enable more low-income students to get into and through college?" College-access supports fall into three tiers based on their impact on increasing matriculation and graduation: most important, important, and less important. (See the following table.)

Support	Rationale
Most important	
Understanding the link between education and career aspirations	Single largest impact on an individual student's likelihood of completing college. Also links strongly to better academic preparation
Cohort of peers planning for college together	Second-largest increase in the likelihood of college completion; absent for half of all students
Expecting a college-preparatory curriculum	The disconnect between this expectation and general college aspirations means that many students are unaware of what they need to do to prepare for college. It is strongly correlated with levels of academic preparation
Taking steps to make college affordable	Financial aid application and information is strongly important at every stage, affecting levels of academic preparation, college matriculation, and college completion
Important	
General expectations of college-going among student and influential adults	Strong increase in the likelihood of college completion. More recent evidence suggests such expectations are present for nearly all students
Parent involvement that makes college real to the student	Moderate but significant effect of college visits at every stage
Less important	
Procedural assistance alone	Statistically insignificant in increasing college completion rates
Parent involvement absent a clear college link	Statistically insignificant in increasing college completion rates

Taken together, these findings argue strongly for creating schools with an effective college-going culture. Simply put, this means that the school functions with the expectation that its ultimate goal is to prepare students for college, and that a student who will not attend some sort of post-secondary institution is the exception rather than the rule. Creating this culture in America's high schools is what will begin to turn the tide in improving college matriculation and graduation for all students, and low-income students in particular. The analysis presented here has specific implications for educators, policy makers, and parents who want to do just that.

1) Academic preparation is the most important lever for increasing college access.

Although we have consistently highlighted this point, it is worth reprising. Students who lack sufficient academic preparation in high school, particularly low-income students, have exceptionally little chance of attending and completing college. What is more, regardless of how academic preparation is defined, very small numbers of low-income students are graduating high school with sufficient academic preparation.

The implication of these facts is simple: any actions focused on providing other kinds of support should be weighed against additional efforts to improve academic preparation. While other factors are indeed important in affecting the outcomes of low-income students, they will have little effect on a population that is simply not ready to perform college-level work.

The most effective way to drive effective academic preparation in high schools is to set a rigorous, college-preparatory curriculum as the default for all students and provide the support necessary for them to pursue it. Anything less, by definition, defeats the purpose of a college-going culture. Over 90% of students currently entering high school state an expectation to attend college. By putting students in courses that do not prepare them for college, however, schools effectively make the choice for them and dash their dreams. Moreover, as the recent ACT study demonstrates, a college-preparatory curriculum is the same curriculum that will prepare students for a successful working life, even if they decide not to attend college. In most circumstances, to offer students any curriculum less than this not only fails the objective of preparing a student for college, but also fails to prepare them for life and work.

2) College expectations are important, but linking expectations to an anticipated need for a college degree is most effective.

All of the college-related expectations we examined had a significant positive impact on a student's chances of successfully completing college. However, the one that had a truly profound impact was anticipating the need for a degree in order to pursue a chosen career. A student who makes this connection between college and his or her life goals is a full *six times* as likely to attain a degree as one who doesn't. A recent survey by Public

Agenda found that 77% of college students say they are attending college because the jobs they want specifically require it.[16]

The value of strengthening links between post-secondary education and the "real world" is reinforced by the fact that parents' taking time to visit a post-secondary institution with their child also had a positive impact on college going and success. This means ensuring that students and their families have access to information early (pre-high school) and consistently regarding college requirements, financial aid availability, and other general college awareness information such as the benefits of a college education and the links to the "real world." It also implies a need for more career-awareness information, which could come in the form of curricula, coordinated internship programs, or career guidance. However the information is delivered, it should be incorporated in ways that reinforce a college-going culture: the expectation that college is a real option for all students and that it is linked to the kind of lives they want to lead once they graduate from high school.

3) Friends have a significant influence on a student's decision to attend college.

As students progress through high school, peers have an increasing effect on their life decisions, including their plans to attend college. Given this, it is not surprising that the college-going views of a student's friends have a significant impact on their own chances for success in college. A low-income student's chances of completing college are particularly likely to increase when friends value learning and plan to attend college themselves.

Although the implementation of this finding is certainly not straightforward, the implication is clear: schools need to provide social support and reinforce college-going norms within peer groups. This is, in fact, the goal of creating a college-going culture in high schools overall. The more widely such a culture spreads, the more it will reinforce college-going norms and drive up the college-attendance rates for the school.

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[16] Jean Johnson and Ann Duffett, "Life After High School: Young People Talk About Their Hopes and Prospects," New York: Public Agenda, 2005.

Taken to its logical conclusion, this implies that the most successful college access programs will target as many high-school students as possible (i.e., they will be whole-school models). This is not to say that college access programs targeting specific groups of students can not or will not be effective. Many have proven quite the opposite. However, this does suggest that a similar program, which includes the entire school, could be significantly more effective. This puts a substantially higher burden on schools to create a college-going culture that pervades the entire school, rather than a program that targets a select sub-population.

4) High school curriculum expectations and information are the most crucial part of information and awareness.

The disparity between college aspirations and curriculum aspirations is one of the most disheartening aspects of this study. We can interpret this disconnect in one of two ways. Either students are saying they expect to go to college because they know this is the answer that's expected of them, or they truly do expect to go to college but don't know what's required to get there. Given the volume of research around college expectations, the former is an unlikely, although possible, explanation which would require a revised methodology for assessing college expectations. Assuming for the moment that the latter is the more likely, schools need to act to close this critical information gap.

A default college-prep curriculum for all students is the most straightforward way to fix the problem. Absent such a change, schools need to take steps to ensure that students understand early in their school careers (eighth grade or earlier) what curriculum is necessary to prepare them for college-level work and future careers. In a true college-going culture, discussions of grades, class schedules, academic progress, and the like would all revolve around the requirements for college, whether students are on track to achieve that goal, and if there are any deficiencies what steps they need to take to get back on track.

5) Both perceived and real affordability influence completion.

Not surprisingly, real affordability matters in determining a student's chances of attaining a bachelor's degree. This is likely to be true in terms of students' chances of matriculating, their views on whether they can afford to go, and their behavior while in

school (for example, the amount of time a student spends working while in college). Factors that affect the perception of affordability also have an effect on rates of matriculation and completion. Low-income students who attended financial aid information sessions and subsequently applied for financial aid were much more likely to attend and complete college, presumably because they understood both the true cost of college and the types of aid available to them.

The simple fact is that in order to make college affordable, low-income students need more financial aid. While the amount of financial aid that is available has grown over the past decade, it has not kept pace with the rising costs of college. The College Board reports that the net cost of a four-year degree (after accounting for financial aid) has increased 29% since 1995.[17] Additionally, over half of the increase in financial aid has come through the growth of loans. Need-based aid has not even kept up with inflation.

This has had a dramatic effect on low-income students and their views on college. An examination of college costs and expected financial aid contributions shows that a family in the lowest income quartile would need to spend 42% of their income to send a child to a four-year public university; the number grows to 64% for a private university. As a result, low-income students who attend college are pushed toward lower-cost options such as community colleges, which can be a great entry point for many students, but shouldn't be their only option. Public Agenda's survey data found that nearly 60% of African-American and Hispanic college students (who are often also low-income) would have chosen a different school had financial considerations not been an issue.[18] Current financial aid packages are simply not sufficient to make college affordable for low-income youth. Changes to financial aid at the state and federal level are the only way to address such a critical structural issue.

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[17] Sandy Baum and Kathleen Payea, "Trends in College Pricing," Washington, DC: The College Board, 2005.

[18] Jean Johnson and Ann Duffett, "Life After High School: Young People Talk About Their Hopes and Prospects," New York: Public Agenda, 2005.

The perception of affordability is something that can be better addressed in the high school setting. A school which successfully institutes a college-going culture needs to ensure that its students are well-informed about the costs of college, the types of aid available to them, and the knowledge that many students take loans to pursue higher education (and are able later to repay them). Successful examples include standard practices such as information sessions or even requiring students to apply for aid. But some schools are also experimenting with more creative methods such as working with students on building financial planning skills, which can help all students, including those who do not eventually attend college, as well as highlighting the financial tradeoffs associated with not obtaining a college degree.

Mobilizing for change

When things are moving strongly—a sports team on a winning streak, an idea gaining prominence in public opinion—people tend to talk about "momentum." Unfortunately, the word that comes most readily to mind with respect to the U.S. public education system is not momentum but inertia. The crisis that provoked the analysis described in this paper has been building for years. And as physics teaches us, an object at rest will remain at rest until it is acted upon by sufficient outside force.

Recently, there have been some promising signs that momentum may be building in public education. The simple idea of "No Child Left Behind," that every child deserves a quality education, is a huge step forward. The National Governors Association is implementing an "Action Agenda for Improving America's High Schools," which includes upgrading curricula and developing assessments that are aligned to the demands of college and career. The Secretary of Education's Commission on the Future of Higher Education recently called for more rigorous high school course requirements, better alignment of high school graduation requirements and college expectations, and an overhaul of teacher preparation.

Efforts such as these demonstrate growing recognition of the economic and moral imperative to expand opportunities for all students and help them rise to meet new challenges, but they are not enough. Building the external forces to bring about real

change in public education will require continued action on multiple fronts simultaneously.

Federal policy-makers: Make college affordable for low-income students.

The current financial aid system is failing low-income students. Reforming the Pell Grant program is an essential first step. Pell Grants are the largest source of aid for low-income students; but the program needs changes to make it more relevant to the circumstances low-income students face today. The necessary changes include increasing the size of grants and altering the program to encourage college preparation (perhaps by making higher amounts available for students who have completed a college preparatory curriculum). Beyond Pell, consider other creative need-based aid programs such as loan forgiveness incentives for low-income students who complete their degrees.

State policy-makers: Adopt and implement college-ready curriculum for high schools.

U.S. high schools are not preparing a majority of their students for college or work, largely because the students are not taking the right classes. In California, where the state university system has already defined the requirements for a college-ready curriculum, only 35% of high-school students complete this curriculum. State lawmakers are in the position both to define a college-ready curriculum and to ensure that it becomes the default in their schools.

School districts: Provide the infrastructure to support the transition to a college-ready curriculum.

Shifting students to a college-ready curriculum will be a difficult transition: Many, if not most, low-income students enter high school below grade level, unprepared for the demands of a college preparatory curriculum. Implementing it as the default will require effective remediation strategies, additional professional development opportunities and supports for teachers, and the systems to track and support the implementation of the new curriculum (specifically, systems to identify students who need extra time and support and to provide the resources and supports, for both students and teachers, to bring them to grade level).

Schools: Create a college-going culture.

The duty of creating a school culture in which college is not only a possibility but also an expectation among all students falls squarely on the schools themselves. We have presented the key aspects of creating such a culture here; but we know it is the countless “little things” that take place in classrooms every day that make a difference in the lives of students. The high school environment needs to provide students with high expectations and strong teaching, as well as offering strong support for both teachers and students. While policy-makers and districts need to create the atmosphere in which a college-ready culture can exist, it will always be the schools themselves that define their culture and have the greatest impact on the lives of low-income children.

Community-based organizations: Create the environment for change.

Inertia is particularly difficult to overcome when people are unaware that a problem exists or that the potential for solving it is real. Community-based organizations can play a unique role in addressing both of these situations. Community-based organizations have historically played significant roles in accelerating the pace of change on many issues by ensuring that neighborhood residents are informed and involved in creating a sense of urgency. In public education, they also have the opportunity to take the lead in creating the environment for change: A growing number of community-based organizations have developed successful schools across the country that not only demonstrate what a college-going culture looks and feels like, but also model "best practice" solutions such as college-going supports to students in high school, professional development for teachers, and support for low-income students when they arrive at college. In so doing, these organizations not only provide necessary support to a great many students who need it, but also build a body of proof to show that these reforms can and do work.

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Appendix: Methodology

To develop an analysis that could provide insight into the most important college-access supports, we used the best publicly-available source, the National Educational Longitudinal Study of 1988 (NELS: 88). This dataset is a longitudinal study tracking a nationally representative sample of students from the eighth grade through eight years after high school graduation. Data was collected at multiple points in each student's academic career (in the eighth, tenth, and twelfth grades, as well as two and eight years out of high school). The data consist of student answers to questionnaires on a variety of subjects, NELS-administered tests, coursework and grades, and answers to parent, teacher and school-administrator questionnaires. The result is a rich, deep dataset that makes it possible to investigate the relationship between a student's experience in high school and his or her progression into and through college[19].

We conducted the analysis in several stages beginning with definition of the population. We limited the sample by using two filters. The first filter narrowed the sample to low-income students, which was the group under investigation.[20] The second filter narrowed the sample to students who graduated from high school academically prepared.[21] As reported in the paper, academic preparation is by far the most crucial enabler of college-going and college completion, and we wanted to minimize the covariance between this variable and the others under examination.

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[19] In order to examine the correlation of college graduation with as many variables as possible, we used student's self-reported description of "highest degree attained" in the NELS dataset, rather than a transcript analysis, which is somewhat limited in the publicly available dataset.

[20] Low-income was defined using the standard for education-related analyses: Eligibility for Free And Reduced Meals (FARM), which is equivalent to family income less than or equal to 185% of the Federal Poverty Line.

[21] The threshold definition for academic preparation was a classification of "somewhat qualified" or better on the NELS college qualification index. This threshold is a composite variable, which uses a student's single highest score on one of five assessments to determine preparation: class rank, GPA, SAT, ACT, or NELS twelfth grade test score.

Selecting proxy variable was the second stage of the analysis. In each category of college-access supports, we selected four to six variables from among the hundreds in the NELS dataset. Throughout the selection process, we kept our ultimate objective—prioritizing college-access supports both *across* categories and *within* them—in mind. The list of variables selected appears below.

Exhibit A1: Variables used as proxies for categories of college-access supports (with NELS variable number)

Expectations	Culture and support	Information and awareness	Perception of affordability
Student expects to attend college (BYPSEPLN)	Parent encourages student to take SAT/ACT (F2P62A)	Student expects to take a college-prep high school curriculum (BYS49)	Importance of affordability in college choice (COLLAFF1)
Student believes that college is necessary for their career (F2S65)	Parent and student visit colleges (F2P67R)	Counselor help with choice of high school curriculum (F2S12BBR)	Attendance of financial aid info session (F2P45BR)
Parent expects their student to attend college (F1PAREXP)	Parents check student's homework (BYS38A)	High school help with college admission application (F2S57A)	Application for financial aid (F2P88)
Teacher expects their student to attend college (F1S47F)	Student's friends' plan to go to college (F2FRCOLL)	High school help with aid application (F2S57B)	Application for loans (F2P86A)
	Student's friends value learning (F1FRSTUD)	High school time off for college visits (F2S57D)	
	Parent discussed college application with student (F2P63)		

The final stage was conducting the analysis. The web-based Data Analysis System on the NCES website provided access to the NELS data.[22] Specific data runs provided information on each proxy variable. For each variable, students were divided into two groups: those for whom the support was present and those for whom it was not. For

[22] NCES: National Center for Education Statistics (http://nces.ed.gov)

example, in the category of student expectations, students who expected to attain a Bachelor's Degree or higher comprised one group, while the other was composed of those who expected to earn an associate's degree or less (including no postsecondary education). We then calculated the rates of college entrance (to both two-year and four-year schools) and college graduation (with associate's and bachelor's degrees) of these students by group. Next, we took the difference between the two groups to calculate the increase in a student's likelihood of completing either of those steps if he or she had access to the support. Finally, we calculated the proportion of the entire low-income student population (removing the academic preparation control) to understand the prevalence of each support across the target population.

In addition to examining specific variables' effects on college matriculation and completion, we also analyzed their correlation with increased levels of academic preparation. The analytical procedure was nearly identical, save two things. First, we expanded the population to the entire low-income student population. Second, we calculated the rates of academic preparation for each variable (and its corresponding groups of students).

As NELS is a sample, to extrapolate its results to entire populations one must discuss errors. At each step along the way, we calculated standard errors. We used a confidence interval of 90% to determine statistical significance. We considered those variables for which the error ranges encompassed zero "effect" to be statistically insignificant results. The error ranges for each proxy variable are shown in the tables that follow, by calculation.

Error table 1: Effect on college completion					
Category	Proxy variable	College completion rate increase with support	Standard error	90% confidence interval (1.65 standard errors)	
				Lower bound	Upper bound
Expectations	Student expectations	18%	6%	9%	27%
	Believe college necessary for career	47%	4%	40%	53%
	Parent expectations	12%	5%	3%	21%
	Teacher expectations	10%	5%	1%	18%
Cutlure and support	Parent encouragement	3%	5%	-5%	11%
	Parent-student college visits	15%	5%	7%	23%
	Parents check homework	7%	7%	-5%	18%
	Friends' plans for college	26%	4%	20%	33%
	Friends value learning	11%	6%	0%	21%
	Parent discussed college application	-1%	6%	-10%	9%
Information and awareness	Expected HS curriculum	9%	5%	1%	18%
	Counselor help with curriculum	9%	5%	1%	17%
	School help with college admission	4%	4%	-3%	11%
	School help with aid application	4%	5%	-4%	12%
	HS time for PSE visits	2%	5%	-6%	10%
Affordability	Importance of affordability	12%	5%	4%	20%
	Aid info session	15%	5%	7%	22%
	Applied for financial aid	19%	5%	11%	28%
	Loan application	14%	5%	5%	22%

Error table 2: Effect on college matriculation					
Category	Proxy variable	College matriculation rate increase with support	Standard error	90% confidence interval (1.65 standard errors)	
				Lower bound	Upper bound
Expectations	Student expectations	19%	5%	11%	27%
	Believe college necessary for career	48%	5%	39%	57%
	Parent expectations	19%	6%	9%	28%
	Teacher expectations	12%	5%	3%	21%
Cutlure and support	Parent encouragement	9%	5%	0%	18%
	Parent-student college visits	16%	4%	10%	23%
	Parents check homework	13%	8%	-1%	27%
	Friends' plans for college	29%	4%	23%	36%
	Friends value learning	15%	8%	3%	28%
	Parent discussed college application	16%	6%	7%	25%
Information and awareness	Expected HS curriculum	14%	4%	7%	21%
	Counselor help with curriculum	6%	4%	0%	12%
	School help with college admission	8%	4%	1%	15%
	School help with aid application	8%	5%	0%	15%
	HS time for PSE visits	10%	4%	2%	17%
Affordability	Importance of affordability	6%	4%	0%	13%
	Aid info session	23%	4%	17%	30%
	Applied for financial aid	35%	5%	27%	43%
	Loan application	27%	4%	20%	34%

Error table 3: Proportion of students with supports					
Category	Proxy variable	Proportion with support	Standard error	90% confidence interval (1.65 standard errors)	
				Lower bound	Upper bound
Expectations	Student expectations	52%	1%	50%	53%
	Believe college necessary for career	56%	1%	54%	58%
	Parent expectations	61%	1%	59%	62%
	Teacher expectations	57%	1%	55%	59%
Cutlure and support	Parent encouragement	66%	1%	64%	67%
	Parent-student college visits	59%	1%	57%	61%
	Parents check homework	91%	1%	90%	92%
	Friends' plans for college	49%	1%	46%	51%
	Friends value learning	74%	1%	72%	76%
	Parent discussed college application	65%	1%	63%	66%
Information and awareness	Expected HS curriculum	23%	1%	21%	24%
	Counselor help with curriculum	39%	1%	37%	41%
	School help with college admission	47%	1%	45%	49%
	School help with aid application	45%	1%	43%	48%
	HS time for PSE visits	42%	2%	38%	46%
Affordability	Importance of affordability	62%	1%	60%	64%
	Aid info session	26%	1%	25%	27%
	Applied for financial aid	47%	1%	45%	49%
	Loan application	22%	1%	20%	24%

Error table 4: Effect on academic preparation					
Category	Proxy variable	Academic preparation rate increase with support	Standard error	90% confidence interval (1.65 standard errors)	
				Lower bound	Upper bound
Expectations	Student expectations	28%	2%	25%	31%
	Believe college necessary for career	35%	2%	31%	39%
	Parent expectations	24%	2%	21%	27%
	Teacher expectations	16%	2%	13%	19%
Cutlure and support	Parent encouragement	12%	2%	9%	14%
	Parent-student college visits	9%	3%	5%	14%
	Parents check homework	-3%	4%	-10%	4%
	Friends' plans for college	29%	2%	26%	33%
	Friends value learning	12%	2%	9%	15%
	Parent discussed college application	20%	1%	18%	22%
Information and awareness	Expected HS curriculum	31%	3%	26%	36%
	Counselor help with curriculum	2%	2%	-1%	6%
	School help with college admission	10%	2%	6%	14%
	School help with aid application	13%	3%	9%	17%
	HS time for PSE visits	13%	3%	9%	17%
Affordability	Importance of affordability	11%	2%	7%	15%
	Aid info session	24%	2%	20%	28%
	Applied for financial aid	33%	2%	29%	36%
	Loan application	28%	2%	23%	32%