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Collegiate Remediation: A Review of the Causes and Consequences

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Summary Notes

- Approximately a quarter of all students entering four-year institutions require some remediation, although there is strong evidence that this national statistic dramatically understates the need for remedial course-taking.
- The causal evidence on the impact of remediation on student outcomes is quite mixed, suggesting that students in need of remediation do no better (and at times slightly worse) than similar students who are not referred to remediation.
- Early information about college readiness and improved alignment between K–12 and higher education has been demonstrated to reduce remediation need, indicating great promise in the current movement toward the Common Core State Standards.

Remedial education in postsecondary schooling aims to improve the basic literacy skills (primarily in math, reading, and writing) of students who arrive at college unprepared to do college-level work. Some scholars and educators prefer to use the term "developmental" education, rather than "remedial." This avoids creating a deficit framework of what students do not know, instead favoring a developmental approach that suggests a continuum of learning. In this review, however, we use the terms remedial and developmental education interchangeably.

This brief describes what we know about the causes and consequences of remediation in college and outlines the important implications for policy and practice. We begin by providing a brief description of what developmental courses tend to look like in higher education and describing trends in collegiate remediation from a variety of sources. Next, we describe what might be the leading causes of the high rates of remediation observed across college and universities in the U.S. We then describe the consequences of remediation and discuss evidence of the causal impacts of remediation policies in several states where quantitative, research-based evidence is available. Finally, we offer important implications of these policies for education leaders and policymakers and discuss how to better assess the impact of remediation at postsecondary institutions.

Remediation at a Glance

The content and format of remedial or developmental instruction varies dramatically across and even within institutions. At some institutions,

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Table 1: Rates of Remedial Course-Taking at Two-Year and Four-Year Institutions for the High School Class of 2004, by Race/Ethnicity

	4-Year Institutions			2-Year Institutions		
	Reading	Writing	Math	Reading	Writing	Math
Total	16.2%	24.8%	25.8%	26.9%	29.8%	38.7%
By Race/Ethnicity						
White	15.1%	24.1%	23.7%	22.8%	27.2%	36.6%
African American/Black	16.2%	19.9%	29.7%	34.5%	30.6%	40.5%
Hispanic	22.2%	30.9%	36.2%	32.1%	34.5%	44%
Asian	21.4%	33.5%	28.4%	40.1%	44.2%	46.4%

Source: U.S. Department of Education, National Center for Education Statistics, *Education Longitudinal Study of 2002* (ELS: 2002). Estimates in this table are based on spring 2004 high school seniors who had enrolled in postsecondary education by 2006.

developmental courses are housed in separate units that administer basic skills courses. At others, developmental courses in math or writing are part of their respective departments. The most common approach to remedial education at community colleges is one that Grubb and Associates (1999) call the "skills and drills" approach, which focuses on specific procedures in arithmetic, grammar, and writing. Many scholars are quite critical of this approach, favoring content and methods that are more student-centered (Grubb, 2001; Levin & Calcagno, 2008; Bailey, 2009; Boylan, 2002). There are several other novel forms that remedial or developmental course work can take. Most notable are formats such as learning communities, where students' developmental courses are bundled together in order to provide a cohort-based experience, and, importantly, to integrate other study skills and work habit methods into curricular instruction (Brock & LeBlanc, 2005; Price, 2005).

Trends in College Remediation

How pervasive is remedial course-taking at colleges and universities? Estimates in Table 1, based on the most recent national longitudinal study of high school graduates who entered postsecondary studies, suggest that approximately a quarter of all students entering four-year institutions require some remediation — some combination of reading, writing, and/or math (Snyder, Tan, & Hoffman, 2004). Rates are higher for some groups, particularly black and Hispanic students, and remedial course-taking is generally higher at two-year, open-access institutions, where many students begin their postsecondary studies.

There is strong evidence that these national statistics grossly understate the need for remedial course-taking among college students. This is, in large part, because national studies such as the *Education Longitudinal Study* rely on students' self-reports to determine course-taking metrics. In fact, figures from large, moderately selective public university systems, such as the California State University system,

suggest that 60–65 percent of entering freshmen require some developmental course work in English, math, or both (Kurlaender, Jackson, & Howell, 2011). Moreover, remediation is much more prevalent at community colleges than the self-reported data suggest (Perin, 2006). Reports from the Community College Research Center indicate that it is "reasonable to conclude that two-thirds or more of community college students enter college with academic skills weak enough in at least one major subject area to threaten their ability to succeed in college-level courses" (Bailey, 2009).

Other college readiness metrics based on high school preparation suggest that only one-third of graduating high school students have completed the course work and rigor necessary for success at four-year colleges and universities. Utilizing the National Assessment of Educational Progress (NAEP) 1998 study of 12th-grade students, Greene and Forster (2003) conclude that 32–36 percent of high school graduates in the class of 1998 demonstrated college readiness. Even more troubling are the disparities in college readiness indicators by race/ethnicity, presented in Table 2.

Assessing Remediation Need

Most colleges utilize a variety of approaches to determine student proficiency for college-level work. At four-year institutions, students can typically demonstrate proficiency utilizing college entrance exams such as the SAT® or ACT, or by meeting AP® thresholds. When entrance exam scores do not meet proficiency thresholds, students may be given assessments in math and English (reading and writing) in order to determine course placement (at some campuses these are given in addition to entrance exams). While such assessments and placement procedures are standardized in some public higher education systems, they are very institution (or even department) specific at others. Colleges utilize different assessments and different cutoff scores for determining proficiency, and for determining the level of remediation necessary (Merisotis & Phipps, 2000; Bettinger & Long, 2007). At most four-year colleges, remediation is a one- or two-course sequence in math or English, respectively. At community colleges, however, students may be referred to developmental courses that may be three levels below college-level work (Bailey, 2009; Grubb, 2001).

Compliance in Remediation Course-Taking

For a variety of reasons, many students referred to developmental courses do not enroll in them. First, some institutions do not enforce enrollment in developmental courses or make them a prerequisite for enrolling in credit-bearing college-level courses, even for students who are directed into these courses following assessment. Evaluating data from the community colleges participating in *Achieving the Dream*, Bailey (2009) finds that 21 percent of students referred to developmental math and 33 percent referred to developmental reading do not enroll in these courses within three years of first registration. Second, some institutions — particularly community colleges, where there is a great demand for developmental courses — do

Table 2: High School Senior College Readiness Levels

	Measure 1 *College-Ready Transcripts*	Measure 2 *College-Ready Transcripts and Basic Reading Score*
Total	36%	32%
White	39%	37%
African American/Black	25%	20%
Hispanic	22%	16%
Asian	46%	38%

Source: National Assessment of Educational Progress (NAEP), 1998. From Greene and Forster (2003).

not offer enough sections of developmental skills courses to accommodate all the students who need them. Finally, many students who enroll in developmental courses fail to complete them (Jenkins & Boswell, 2002).

How many students complete a remedial course sequence? Again, from the sample of *Achieving the Dream* community colleges, 44 percent of students enrolled in developmental reading and 31 percent enrolled in developmental math actually completed the developmental course sequence (Bailey, 2009). Utilizing data on members of the high school class of 1992 who enrolled in college, 68 percent of students needing remediation passed developmental writing requirements, 71 percent passed developmental reading courses, and 30 percent passed developmental math courses (Attewell et al., 2006). In postsecondary systems where remediation is an enforced prerequisite to college-level course-taking, compliance is greater. For example, students in the California State University system who do not meet proficiency requirements are required to enroll in basic skills courses. Thus, compliance is closer to 80 percent (Garcia, 2012).

The Causes of High Remediation Rates

There are several plausible explanations for why some students might arrive in college unprepared to do college-level work.

K–12 Schooling Experiences

The accumulation of academic skills and preparation in high school is the single best predictor of college outcomes (Long, Iatarola, & Conger, 2008; Adelman, 1999, 2006). Yet, some students arrive at college having attended elementary and secondary schools of low quality or with weak academic rigor. Students who attend poor-quality schools may not receive the necessary grounding in core subjects such as English and math to engage successfully in college-level work (Achieve, 2004). Of course, students may also come to college with deficiencies in core subjects even if they have attended adequate or superior schools, because of existing learning disabilities or a lack of attention to their studies, or perhaps because they are English language learners.

Lack of Information

Students are also wildly misinformed about the skills necessary to succeed in college. A majority of high school students — regardless of their academic performance

— report that they will attend college. In fact, academic performance accounts for little of the variance in students' expected levels of educational attainment, suggesting that students' actual grades in school often do not correlate with their educational expectations. Reynolds et al. (2006) finds that, between 1976 and 2000, the percentage of high school seniors indicating that they probably or definitely would complete at least a baccalaureate degree increased from 50 percent to 78 percent. Rosenbaum and others have documented that high school seniors have little understanding of what it takes to succeed in higher education (Rosenbaum, 2001; Deil-Amen & Rosenbaum, 2002; Conley, 2005; Venezia, Kirst, & Antonio, 2004).

Misalignment Between K–12 and Higher Education

Given the high numbers of students who require remediation upon college entry, it is also becoming clear that the transition between high school and college is not a seamless one, and that our K–12 system is grossly misaligned with the expectations of colleges and universities (Hoffman, Vargas, Venezia, & Miller, 2007). Some fault the "wasted" senior year, during which many students experience less rather than more rigor in their academic program (Kirst, 2000; National Commission on the High School Senior Year, 2001). Others suggest that state performance standards are detached from those that might assist students in higher education (Venezia, Callan, Finney, Kirst, & Usdan, 2005). Still others point out that the current accountability regime has focused attention in K–12 on meeting basic competency — for example, on high school exit exams — perhaps at the expense of meeting the expectations of postsecondary schooling (Strong American Schools, 2008; Achieve, 2004). Recent efforts of the Common Core State Standards (further discussed below) suggest that this may be changing.

The Consequences of Remediation

There are important consequences of college remediation for both individuals and society. Remediation is costly, but the price of not assisting more young people in their pursuit of degree completion may be even higher. The earnings gap between college-educated and non-college-educated adults continues to grow (Baum, Ma, & Payea, 2010), as do the labor market demands for more highly skilled workers (Goldin & Katz, 2008).

Costs of Remediation

Remediation is expensive — to students and their families, colleges, and taxpayers. There are large direct costs of providing remedial instruction in higher education for skills that should have been mastered in high school (Phipps, 1998). Many argue that this effectively requires taxpayers to pay double for mastery of the same literacy skills (Strong American Schools, 2008). The direct costs for developmental instruction differ depending on the institution and on the personnel utilized to teach such courses. Developmental courses are often taught by low-paid adjunct or part-time instructors, and are cheaper at lower-cost institutions such as community colleges (Levin & Calcagno, 2008). But there are also many hidden costs to remediation (e.g.,

forgone earnings for remediated students who need a longer course of study to obtain their degrees) and potential social costs for remediated students, such as frustration or low self-esteem (Deil-Amen & Rosenbaum, 2002). There also exists the possibility of negative spillover effects for all students because of weaker average skills among enrolled students at any given postsecondary institution (Hanushek, 2002).

Somewhat dated estimates of the cost of remediation suggest that the total annual cost of remedial courses across all types of higher education institutions is between $1 billion and $2 billion (Breneman & Haarlow, 1998). More recent estimates put the annual cost of remediation at $1.9 billion to $2.3 billion at community colleges, and $500 million at four-year institutions (Strong American Schools, 2008).

Remediation and College Outcomes

Students who arrive at college in need of remedial or developmental course work are less likely to succeed — in their academic performance, persistence, and degree completion — in college. For example, less than one-quarter of community college students in the *National Education Longitudinal Study* (*NELS*) sample who enrolled in developmental education completed a degree or certificate within eight years of enrollment in college. By comparison, almost 40 percent of community college students in the *NELS* sample who did not enroll in any developmental education course completed a degree or certificate in the same time period. Although the disparities in outcomes are not as great at four-year colleges, here too we see that students who require developmental course work are less likely to finish and more likely to take longer if they do, when compared with their peers who did not require remediation (Horn & Kojaku, 2001).

Importantly, neither remedial programs nor developmental course work cause these weaker outcomes. Such programs are intended to overcome the deficiencies that many students face, and it is therefore likely that academically unprepared students would fare even worse if these programs did not exist. However, the research on the effectiveness of remedial education programs is inconclusive at best. Part of the difficulty in assessing the impact of remediation on collegiate outcomes is that students who require remediation are different from those who do not, making it challenging to isolate the effect of remediation on college outcomes from the other things that make these students different (e.g., weaker skills, less motivation). In research that controls for students' academic skills and other demographic characteristics, students in developmental courses at community colleges do as well as observationally similar students who never participate in developmental education (Adelman, 1998; Attewell et al., 2006). Attewell et al. (2006) find that, after controlling for student characteristics, students who enroll in reading developmental education are more likely to earn a degree than those who do not. Those who enroll in remedial math courses, however, are less likely to earn a degree than their peers

who do not enroll in remedial math. The same authors find that, at four-year colleges, participation in remedial course work has a 6–7 percent negative effect on degree completion. More recently, a body of work by social science researchers has attempted to overcome the difficulties in the correlation-based work that compares the outcomes of students placed in remediation to those who are not. This evidence is more compelling in many ways, but still has limitations.

Causal Evidence on Remediation Policies

There have been a handful of studies that utilize more rigorous quantitative methods and detailed student-level administrative data from specific states to isolate a causal effect of participating in remedial course work in college. The advantage of these studies is that they are able to overcome the main obstacle in evaluating remediation — a viable comparison group. As previously suggested, students are not placed in developmental courses arbitrarily; they often have a host of other characteristics that are associated with both their need for remediation and their likelihood of success in college. These studies overcome this problem by establishing a comparison group for remediated students based on students who were very close to the proficiency cutoff on the remediation placement exam. The assumption is that those who passed, but just barely so, are not that different from those who just barely did *not* pass and were therefore referred to remediation. As a result, the evidence is most applicable regarding whether remediation "works" or "does not work" for students at the margin of needing it in the first place. Nevertheless, this research yields our best guess about whether remediation policies benefit students in need of extra skills in a causal way that would be most instructive to policymakers.

Using scores on the state-mandated placement test to compare Texas students attending public institutions who scored just below and just above the cutoff for proficiency, Martorell and McFarlin (2007) find that students requiring remediation did not have better odds of passing a college-level math course, transferring from a two-year to a four-year college, or completing their degree. In a similar study of Florida institutions, Calcagno and Long (2011) compare students just above and just below the cutoff for developmental courses and find that students required to take developmental courses in math (compared to similar students not required to do so) accumulated more total credits, but were no more likely to complete college-level courses, to complete a certificate or associate degree, or to transfer to a four-year university. Still, a third study employing a similar approach at one large university campus in the Northeast finds a positive effect of remedial course-taking on later student outcomes (Lesik, 2007).

Bettinger and Long (2009) explore two-year and four-year colleges in Ohio, taking advantage of the fact that Ohio public institutions have different policies (e.g., test score cutoffs) for demonstrating proficiency. They find that placement into remediation increased the probability of college persistence when comparing

academically similar peers who were and were not required to take remedial courses. Most recently, Boatman and Long (2010) explore remediation placement at two-year and four-year institutions in Tennessee, finding important differences based on students' level of preparation. This study is able to explore multiple cutoffs for different placements, and finds that students in need of less remediation fare worse when compared to similar students who pass the proficiency threshold. However, for students further below proficiency, remediation actually does improve student outcomes, particularly persistence through college. These results suggest that remedial and developmental courses function differently depending on students' level of academic preparedness, and therefore policies that may be beneficial for some students with varying levels of academic preparedness may not be beneficial for others.

In sum, these studies reveal at best a mixed bag of results, suggesting that students in need of remediation do no better (and at times slightly worse) when compared to similar students who are not referred to remediation. The studies also suggest that perhaps the fact that we do not see consistent positive outcomes comparing students just above and just below proficiency cutoffs may imply that the assessments we use for identifying remediation are not useful or sufficiently nuanced (Scott-Clayton, 2012). Regardless, the findings from these studies as a whole suggest that educators and policymakers should proceed with caution when implementing remedial placements and in evaluating their impacts.

The Need for Better Evaluation of Remediation Policies and Practices

Despite the lack of consensus about whether remediation causally improves students' collegiate outcomes, researchers have offered useful principles or conditions to consider in implementing and evaluating practices for remedial or developmental courses in higher education.

Early Information and K–12 Alignment

Given the causes and consequences of remediation, it is obvious that waiting to address college readiness until students arrive at the college door is too late. Students demand better and earlier information about what it takes to succeed in college, and there is evidence that such information can reduce their likelihood of needing remediation (Howell, Kurlaender, & Grodsky, 2010). We need much better communication between K–12 and higher education about the demands of college and about the skills required to do college-level work. This does not happen by accident, and in the current accountability regime, there is little opportunity for K–12 teachers to invest in understanding what their students will face when they enter college. Moreover, until schools are held accountable for teaching such skills and for graduating students who are deemed college ready, there is little reason to think remediation rates will decline (Callan et al., 2006). However, there exists great promise in the current movement toward the Common Core State Standards, which make college and career readiness skills an integral part of the high school standards.

Content and Format
There is no reason to believe that the same instructional approaches that many students struggled with in K–12 will be more effective in a college environment. It is imperative to adopt instructional reform that moves away from the "drill and skill" pedagogy that students often struggled with in the first place, and toward one that applies basic skills to real-life problems and applications (Grubb, 2001; Levin & Calcagno, 2008). Additionally, there is a critical need for an integrated institutional approach that is attentive to the other support students may require to persist and succeed in college; these include basic skills in time management, study habits, etc. (Bailey & Alfonso, 2005; Levin & Calcagno, 2008; Conley, 2005, 2008).

Assessment and Assignment
Universities should be cautious when assessing proficiency and assigning students to remedial courses. Placement tests often have high stakes for students and should therefore be implemented with greater care than is frequently the case. Recent research suggests that perhaps the cutoff for compulsory remediation is too high and should be adjusted downward so that fewer students *not* in need of developmental instruction are compelled to participate (Hughes & Scott-Clayton, 2011; Scott-Clayton, 2012). Given the current lack of evidence from quasi-experimental studies on placement methods, "developmental placement should be reconsidered and perhaps replaced with an approach that tries explicitly to determine what a student will need to succeed in college generally rather than one that aims to identify a somewhat narrow set of skills a student possesses at a given point" (Bailey, 2009).

Monitoring and Evaluation
Colleges and universities need to monitor more rigorously the remedial and developmental programs for their students who enter with weak academic skills (Levin & Calcagno, 2008), asking:

- What are the goals and instructional strategies of such classes and programs?
- How is assignment to remedial or developmental courses and programs determined?
- Who participates, and who opts out? How do students who participate fare over time — do they complete the developmental course work, persist in college, succeed in credit-bearing college courses, and graduate?

To answer these questions correctly, it is effective to construct a reasonable comparison group (e.g., when assignment to remedial courses is mandatory, students who just barely passed the proficiency threshold could be used for the control group; when assignment is voluntary, the control group could consist of students who do not participate, but who otherwise have similar academic and demographic characteristics). Finally, interventions have different costs attached to them, and these costs need to be compared along with effectiveness to determine whether an intervention is worthwhile (see Levin & McEwan, 2001, for suggested cost-benefit analytical tools).

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Notes

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About the College Board
The College Board is a mission-driven not-for-profit organization that connects students to college success and opportunity. Founded in 1900, the College Board was created to expand access to higher education. Today, the membership association is made up of over 6,000 of the world's leading educational institutions and is dedicated to promoting excellence and equity in education. Each year, the College Board helps more than seven million students prepare for a successful transition to college through programs and services in college readiness and college success — including the SAT® and the Advanced Placement Program®. The organization also serves the education community through research and advocacy on behalf of students, educators and schools. For further information, visit **www.collegeboard.org.**

The College Board Advocacy & Policy Center was established to help transform education in America. Guided by the College Board's principles of excellence and equity in education, we work to ensure that students from all backgrounds have the opportunity to succeed in college and beyond. We make critical connections between policy, research and real-world practice to develop innovative solutions to the most pressing challenges in education today. For further information, visit **advocacy.collegeboard.org.**

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