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Readiness Matters:

The Impact of College Readiness on College Persistence and Degree Completion

Policy Report

February 2013

College readiness helps provide students with early momentum towards long-term college success.

Key Findings

This report highlights the importance of college readiness for persisting in college to timely degree completion. Primary findings suggest that:

- Being better prepared academically for college improves a student's chances of completing a college degree.
- Using multiple measures of college readiness better informs the likelihood of a student persisting and succeeding in college.
- College readiness reduces gaps in persistence and degree completion among racial/ethnic and family income groups.
- Early monitoring of readiness is associated with increased college success.

Helping more students become ready for first-year college courses in at least one more subject area has the potential to help our nation increase the number of its students with a college degree and build a more highly-skilled and productive workforce.

In terms of numbers of ACT-tested 2012 high school graduates, the estimated impact of all students being ready for first-year, credit-bearing college courses in one more subject area include:

- Nearly 92,000 ***more*** ACT-tested high school graduates would immediately enroll in college the fall following high school graduation.
- Of ACT-tested students expected to enroll in a two- or four-year postsecondary institution immediately after high school, about 124,000 ***more*** students would complete a college degree within six years of enrolling in college.

Having more students immediately enrolling in college after high school, fewer students requiring remedial coursework, and more students completing a college degree in a timely manner has the potential to help the nation meet President Obama's 2020 college degree completion goal and build a more highly-skilled and productive workforce.

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Introduction

Among ACT-tested 2012 high school graduates, more than 80% aspire to complete a bachelor's degree, and yet significant percentages of them are not ready for first-year, credit-bearing college courses:

- 33% for English Composition
- 54% for College Algebra
- 48% for social sciences courses
- 69% for Biology[1]

Today, a majority of high school graduates aspire to earn a college degree, and yet only 68% of them immediately enroll in a two- or four-year postsecondary institution after completing high school.[3] Even among students who do enroll in college many of them fail to complete a degree—only about 60% of students at four-year institutions complete a bachelor's degree within six years of initially enrolling, and degree completion rates at two-year institutions are even worse.[4]

But, given what we know about the current condition of the college and career readiness levels of high school graduates nationally, are these low degree completion rates really that surprising? Results from standardized test scores that are aligned to college readiness standards (such as the ACT® Test) assist in identifying the gaps that exist between the knowledge and skills students have acquired in high school and those that are needed to be successful in college.[5] Many students do not persist in college to degree completion because they are ill-prepared for college and require remedial coursework.[6] Many students also lack the academic behaviors and goals that are needed to succeed in college.[7]

The ACT longitudinal assessment system includes ACT Explore® (taken in grade 8 or 9), ACT Plan® (taken in grade 10), and the ACT Test (taken in grade 11 or 12) that measure educational achievement in four content areas (English, mathematics, reading, and science). Based on extensive research into what postsecondary educators expect from entering college students, each assessment measures what students are able to do with what they have learned in school.

States, districts, and schools are looking for solutions to help improve the college and career readiness of their high school graduates. Forty-five states and the District of Columbia have formally adopted the Common Core State Standards. Some states, districts, and schools have implemented additional college readiness assessments, such as those that comprise the ACT longitudinal assessment system, to monitor students' progress towards becoming college and career ready and to increase their awareness of, preparation for, and access to higher education.[8] Many states are also adopting more rigorous graduation requirements, as well as end-of-course exams to help ensure course quality.[9] States and districts are also working on actions to improve teacher preparation and evaluation.[10]

In this report, we examine the impact of college readiness on students' likelihood of persisting in college and completing a degree.[11] This issue is examined from the following four angles:

1. The effects that high school academic preparation has on students' chances of long-term college success.
2. The benefits of using multiple measures of readiness to inform the likelihood of students persisting and succeeding in college.
3. The extent to which college readiness reduces gaps in college success rates among racial/ethnic and family income groups.
4. The positive role that early monitoring of college and career readiness plays in increasing the likelihood that students will persist in college and complete a degree.

This study is based on a nationally representative random sample of ~25,000 ACT-tested high school graduates who immediately enrolled in either a two- or four-year postsecondary institution after high school and were tracked for seven years using National Student Clearinghouse data.[2]

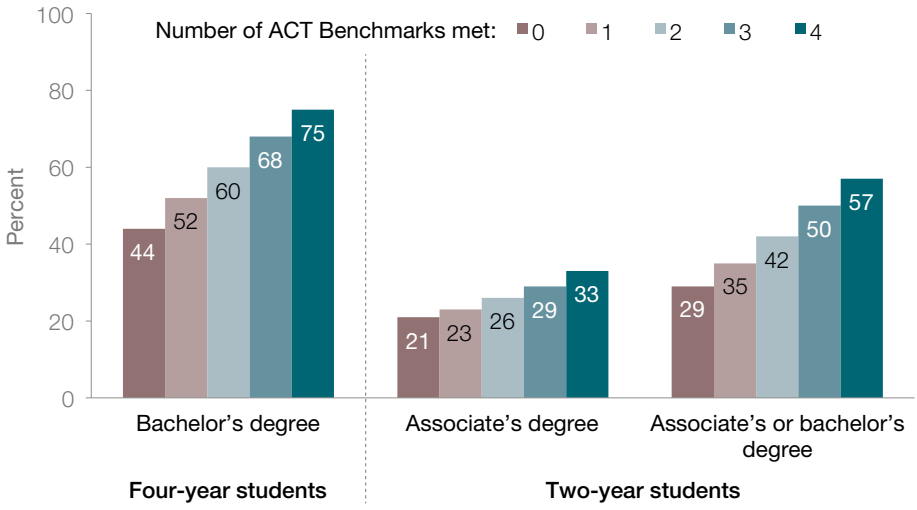
1. Students who are better prepared academically for college have a greater chance of persisting in college and completing a degree.

ACT developed its College Readiness Benchmarks to help students identify in which subject areas they are ready for college and career. The Benchmarks are the minimum scores on the ACT that represent the level of achievement required for students to have a high probability of success in first-year, credit-bearing college courses—English Composition, College Algebra, social sciences courses, and Biology.[12]

Students who meet the individual ACT Benchmarks have higher college persistence and degree completion rates than those who do not meet the Benchmarks (by up to 22 percentage points), after controlling for postsecondary institution attended. The largest differences in success rates are generally seen between students meeting and those not meeting the Benchmark in mathematics or English.[13]

Moreover, as the number of ACT Benchmarks met increases, students' likelihood of persisting in college and completing a degree also increases. In particular, students who are ready in all four subject areas have substantially higher college persistence and degree completion rates than students who are not ready in any of the subject areas.

Six-year degree completion rates by number of ACT Benchmarks met and institution type



For each additional Benchmark that is met, students' chances of completing a bachelor's degree by year 6 increase by 7 to 8 percentage points for students who initially enroll in a four-year institution (referred to as four-year students). A similar result holds for two-year students' chances of completing an associate's or bachelor's degree by year 6.

Given that about one-fourth of four-year students who are ready in all four subject areas are without a bachelor's degree six years later, there are clearly other student characteristics contributing to students' success in college.

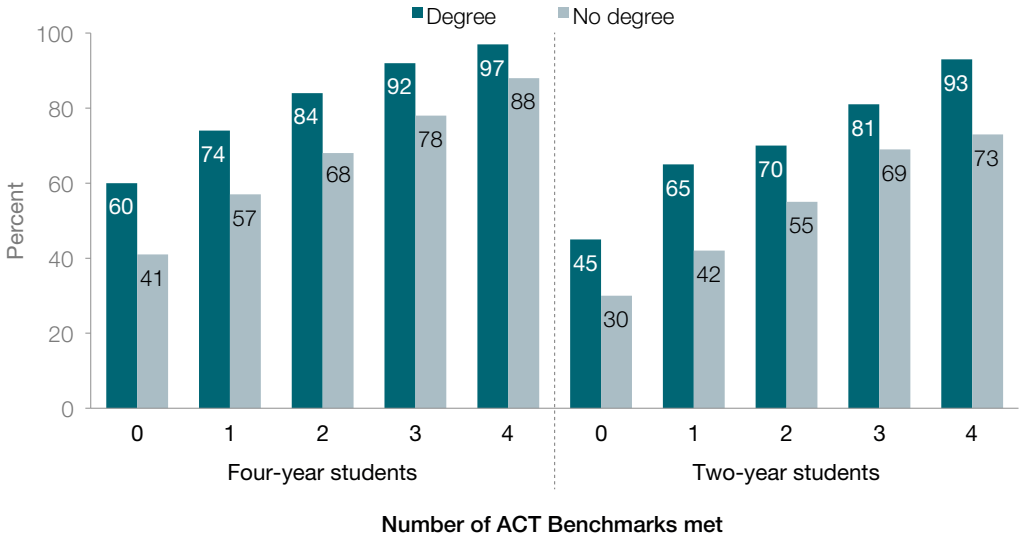
2. Using multiple measures of college readiness helps inform students' likelihood of college success.

Using multiple measures—such as both ACT scores and high school grade point average (HSGPA)—is generally more beneficial for predicting students' chances of college success than using a single measure.[14]

HSGPA likely measures aspects of both the cognitive and noncognitive components of college readiness, including academic behaviors.[15] ACT scores, on the other hand, more directly measure the cognitive knowledge and skills needed for college success. For students who meet the same number of ACT Benchmarks, degree completers are more likely than non-completers to have a HSGPA of 3.00 or higher.

Percentages of students with a HSGPA of 3.00 or higher by six-year degree completion status and the number of ACT Benchmarks met

For each Benchmark group, the percentage of students with a HSGPA of 3.00 or higher is greater for degree completers than for non-completers (by 9 to 23 percentage points).

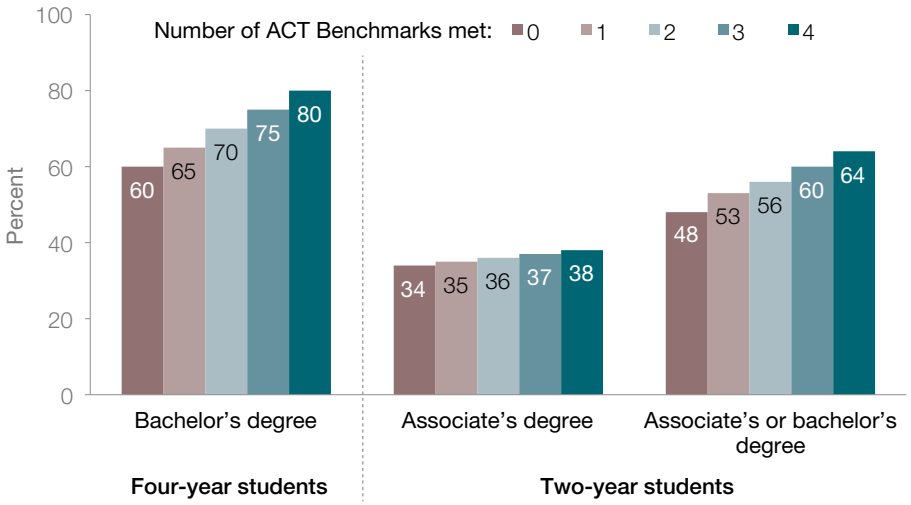


Note: Degree completion status is defined as completing a bachelor's degree for four-year students and completing an associate's or bachelor's degree for two-year students.

But, because of the large disparities between high schools in their grading practices and the rigor of their courses, simply earning higher grades in high school is insufficient to guarantee that students will be successful in college. A high-ranking or high HSGPA student from one school could differ substantially from a high-ranking or high HSGPA student from another school in his/her preparedness for college-level work. Differences in academic preparation, on the other hand, are generally reflected in ACT scores.[16]

Even among students who earn higher grades in high school (a HSGPA of 3.50 or higher), students who meet more of the ACT College Readiness Benchmarks have higher persistence and degree completion rates than those who meet fewer of them.

Six-year degree completion rates by number of ACT Benchmarks met and institution type for students with a HSGPA of 3.50 or higher



The number of ACT Benchmarks met provides additional differentiation in students' chances of persisting in college and completing a degree, over and above HSGPA.

Prior research has shown that academic behaviors (including motivation and academic discipline) provide information beyond measures of academic achievement that increases accurate identification of students who are at risk of poor grades in college and for dropping out.[17] Other student characteristics, including family environment (support and encouragement to succeed in college) and life situations (the need to work while in college, care for dependents), also help differentiate degree completers from non-completers.[18]

The psychosocial factors measured by ACT Engage® that are important for student success can be grouped into three domains:

- Motivation and Skills
- Social Engagement
- Self-Regulation

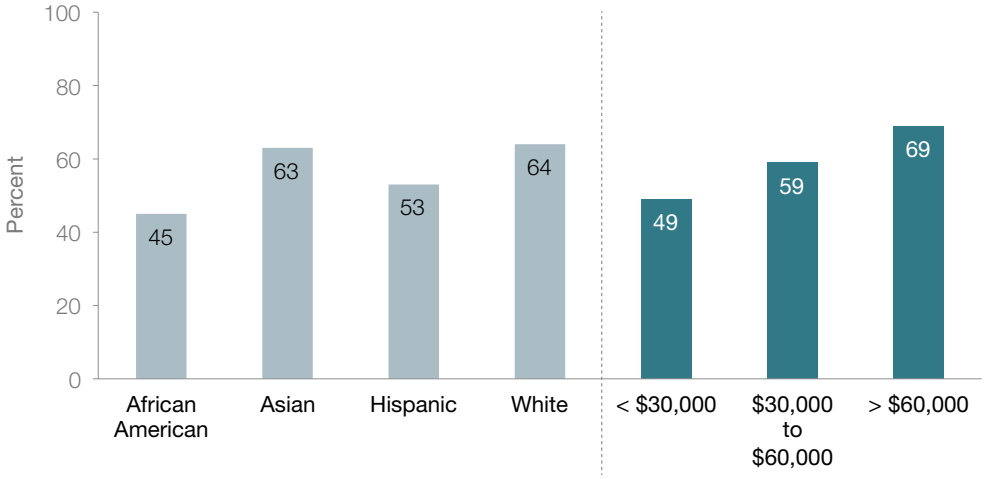
3. Racial/ethnic and family income gaps in college success rates are reduced when college readiness is taken into account.

Gaps exist in college readiness and success rates across racial/ethnic and family income groups. Underrepresented minority students and lower-income students are less likely to be academically prepared for college and career. College enrollment rates are also lower for African American and Hispanic students than for Asian and White students, and for lower-income students than for higher-income students.[19] And, of students who enroll in college, substantial numbers do not persist to a college degree, especially students from underrepresented minority groups and those from families with lower annual incomes.[20]

For the ACT-tested 2012 high school graduating class, 59% and 44% of African American and Hispanic students met none of the ACT Benchmarks, compared to 18% of White students doing so.

The likelihood of persisting in a four-year college to bachelor's degree completion is much lower for African American, Hispanic, and lower-income students than for White and higher-income students (by as much as 20 percentage points).

Six-year bachelor's degree completion rates for racial/ethnic and family income groups for four-year students

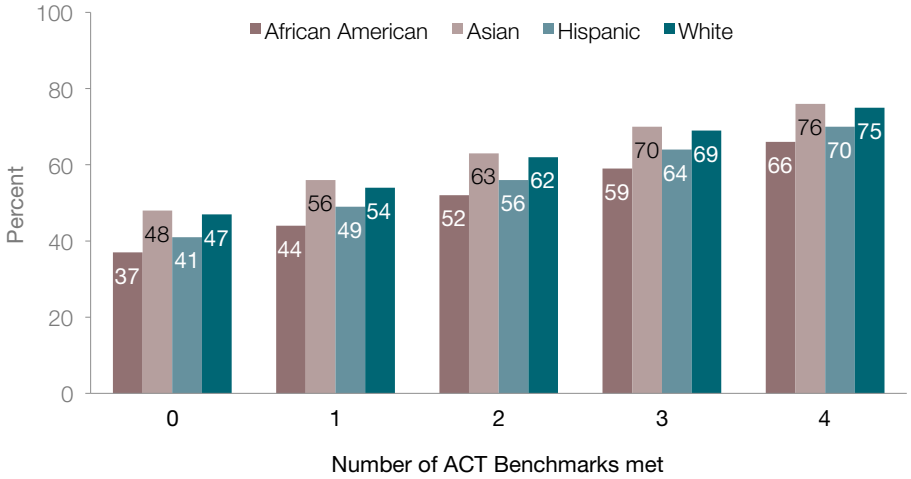


For each racial/ethnic and family income group, persistence and degree completion are substantially more likely to happen for students who meet more of the ACT Benchmarks than for those who meet fewer of them (by at least 26 percentage points between students who meet all four of the Benchmarks and those who meet none of them). And, compared to the overall racial/ethnic and family income differences in college success rates, gaps in rates among racial/ethnic and family income groups are smaller when students' college readiness levels are taken into account.

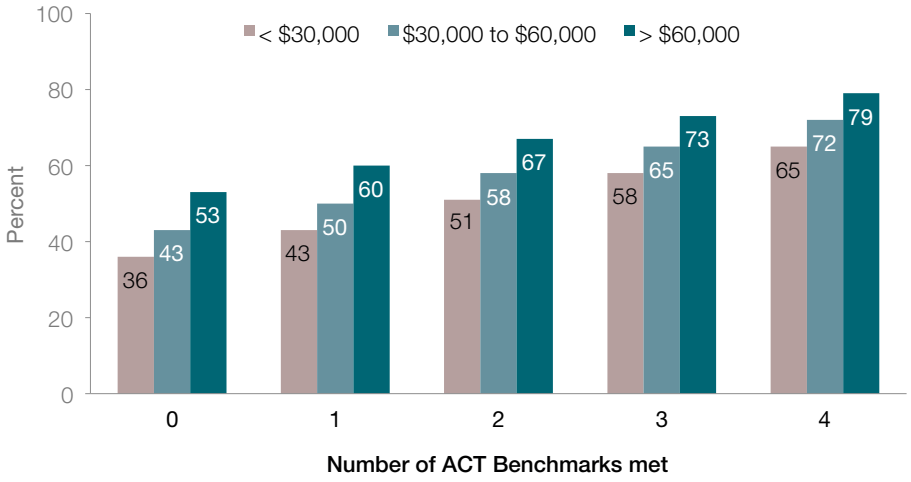
As the number of Benchmarks met increases, the six-year bachelor's degree completion rate also increases for each racial/ethnic and family income group.

The gap in six-year bachelor's degree completion rates between White and African American students is reduced from 19 percentage points (regardless of number of Benchmarks met; 64% vs. 45%, respectively) to 9 percentage points for students who meet all four of the Benchmarks (75% vs. 66%).

Six-year bachelor's degree completion rates by race/ethnicity and number of ACT Benchmarks met for four-year students



Six-year bachelor's degree completion rates by family income group and number of ACT Benchmarks met for four-year students



The difference in six-year bachelor's degree completion rates between higher- and lower-income students is reduced from 20 percentage points (regardless of number of Benchmarks met; 69% vs. 49%, respectively) to 14 percentage points for students who meet all four of the Benchmarks (79% vs. 65%).

Reductions in family income gaps in college success rates are generally smaller than those in racial/ethnic gaps. Lower-income students are more likely than their peers to be first-generation students and to have non-academic obligations (need to work and/or have family responsibilities). These factors can influence their study habits and chances of long-term college success, highlighting the obstacles that lower-income students face, even among those who are better prepared academically for college.[21]

4. Early monitoring of readiness is associated with increased college success.

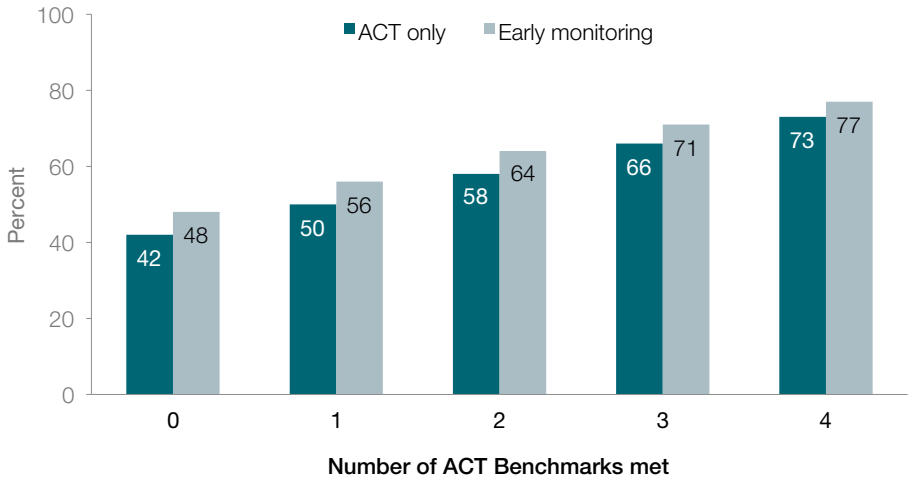
ACT research has repeatedly shown that students benefit from participating in an early monitoring system.[22] Besides evaluating readiness and providing opportunity for early intervention, early monitoring with ACT Explore and ACT Plan also lets students explore their career interests early and helps them plan more effectively to achieve their college and career goals. Considering long-term college success, students who are monitored early are more likely to persist in college and complete a degree than students who are not (i.e., those who take the ACT only), after controlling for the number of ACT Benchmarks met and the postsecondary institution attended.[23]

ACT data support that early monitoring is associated with increased:

- college and career readiness
- college enrollment
- college achievement
- college persistence
- degree completion

Four-year students who are monitored early are also more likely to complete a bachelor's degree by year 6 than those who are not monitored early (by 4 to 6 percentage points).

Six-year bachelor's degree completion rates by program participation and number of ACT Benchmarks met for four-year students



Note: Students who took all three assessments or just ACT Plan and the ACT Test are compared to those who took the ACT Test only. In the chart, these groups are referred to as "Early monitoring" and "ACT only," respectively.

Results from Oklahoma, a state that administers ACT Explore and ACT Plan on a state-funded voluntary basis, support this latter finding: students who are monitored early consistently out perform in college those who take only the ACT Test.[24] Moreover, early indicators of readiness are predictive of students' likelihood of graduating from high school ready for college and of their chances of persisting in college to degree completion.[25] It has also been shown that the chances of college success increase with improvement in Benchmark attainment between grades 10 and 11/12.

Conclusions and Recommendations

Findings from this study highlight the positive effects that college readiness has on persistence in college to timely degree completion for students attending either two- or four-year postsecondary institutions. But, without real reforms in K–12 education, we will continue to see too many high school graduates entering college ill-prepared for credit-bearing college coursework and too few students earning a college degree. We will also continue to see large gaps in college readiness and success rates among racial/ethnic and family income groups. Implementation of college readiness standards is a step in the right direction. But, in order for the US to have a properly skilled workforce able to meet the workplace demands of the 21st century, multiple strategies and programs for increasing the college and career readiness of high school graduates are needed.

ACT's research supports the following actions for states, districts, and schools to bolster the academic preparation and college readiness of their students.

1. Evaluate the rigor and content of high school courses in English, mathematics, reading, and science and align the curricular content with college readiness standards (such as the ACT College Readiness Standards™ and the Common Core State Standards) and the skills that are needed to be successful in college and career.
2. Monitor early and often students' progress towards becoming ready for college and intervene with students who are not on target while there is still time for them to catch up before they graduate from high school.
3. Help students develop strong academic behaviors that can enhance student success.
4. Provide all students with educational and career guidance by doing the following:
   - Help them to understand how preparing well now academically is critical for accomplishing their future career goals.
   - Encourage them to explore personally relevant career options based on their own skills, interests, and aspirations.
   - Make available useful information and resources about the college admissions process and financial aid process to them and their parents, and assist them with these processes.
5. Establish longitudinal K–career data systems to monitor closely student performance at every stage of the learning pipeline, from elementary school through middle and high school, and all the way through college and career to support alignment and cohesion of the education system.

To meet the economic demands for our nation, we need a more highly-skilled and better prepared workforce.[26] The majority of jobs in the next decade will require some form of postsecondary education.[27] As a result, we must do a better job of preparing and equipping students to succeed in college and career.

Endnotes

1 ACT, *The Condition of College and Career Readiness 2012–National* (Iowa City, IA: Author, 2012).

2 Primary data for this study included a nationally representative random sample of 24,850 ACT-tested 2003 high school graduates who enrolled in college immediately after high school and were tracked for seven years using National Student Clearinghouse data. Seventy-six percent of the students in the sample enrolled in a four-year institution in fall 2003 (18,860 four-year students from 1,119 four-year institutions; 5,990 two-year students from 603 two-year institutions). Weighted hierarchical logistic regression models were estimated to predict persistence and degree completion, while accounting for initial postsecondary institution attended. For more details about the study, see Justine Radunzel and Julie Noble, *Tracking 2003 ACT-Tested High School Graduates: College Readiness, Enrollment, and Long-Term Success*, ACT Research Report No. 2012-2 (Iowa City, IA: ACT, Inc., 2012).

3 US Department of Education and National Center for Education Statistics, *The Condition of Education 2006*, NCES 2006-071 (Washington, DC: US Government Printing Office, 2006); Thomas D. Snyder and Sally A. Dillow, *Digest of Education Statistics 2011*, NCES 2012-001 (Washington, DC: National Center for Education Statistics, Institute of Education Services, US Department of Education, 2012). More than 75% of high school seniors expect to complete some postsecondary education.

4 Paul Skomsvold, Alexandria Walton Radford, and Lutz Berkner, *Web Tables—Six-Year Attainment, Persistence, Transfer, Retention, and Withdrawal Rates of Students who Began Postsecondary Education in 2003-04*, NCES 2011-152 (Washington, DC: National Center for Education Statistics, US Department of Education, 2011). Only 16% of students at two-year institutions complete an associate's degree within six years of initially enrolling in college (ibid., 94, Table 3.1-C).

5 ACT, *ACT National Curriculum Survey® 2009* (Iowa City, IA: Author, 2009).

6 National Center for Public Policy and Higher Education and Southern Regional Education Board, *Beyond the Rhetoric: Improving College Readiness by Improving State Policy* (Washington, DC: Authors, 2010); Clifford Adelman, *Principal Indicators of Student Academic Histories in Postsecondary Education* (Washington, DC: US Department of Education, 2004).

7 David T. Conley, *Redefining College Readiness, Volume 5* (Eugene, OR: Educational Policy Improvement Center, 2011); Veronica A. Lotkowski, Steven B. Robbins, and Richard J. Noeth, *The Role of Academic and Non-Academic Factors in Improving College Retention* (Iowa City, IA: ACT, Inc., 2004).

8 ACT, *Readiness and Success: Statewide Implementation of EXPLORE and PLAN* (Iowa City, IA: Author, 2009).

9 Robin Chait and Andrea Venezia, *Improving Academic Preparation for College: What We Know and How State and Federal Policy Can Help* (Washington, DC: Center for American Progress, 2009), http://www.americanprogress.org/wp-content/uploads/issues/2009/01/pdf/academic_prep.pdf.

10 Sara Mead, *Recent State Action on Teacher Effectiveness: What's in State Laws and Regulations* (Washington, DC: Bellwether Education Partners, 2012), http://bellwethereducation.org/wp-content/uploads/2012/08/RSA-Teacher-Effectiveness.pdf; Blakely Elizabeth Whilden, *K–12 Education Reform: Implications and Opportunities for Public Colleges and Universities* (Washington, DC: American Association of State Colleges and Universities, April 2011). Actions include establishing new standards for teachers and preparation programs, better monitoring of teaching practices, and incorporating student achievement in the evaluation process.

11 Prior research has already demonstrated that students who are better prepared academically for first-year college courses are more likely than those who are not ready to enroll in college immediately after high school, to persist to their second year in college, and to achieve higher first-year college course grades. They are also less likely to require remedial coursework. For results from prior studies, see for example: Kasey Klepfer and Jim Hull, *High School Rigor and Good Advice: Setting Up Students to Succeed* (Washington, DC: Center for Public Education, 2012), http://www.centerforpubliceducation.org/Main-Menu/Staffingstudents/High-school-rigor-and-good-advice-Setting-up-students-to-succeed/High-school-rigor-and-good-advice-Setting-up-students-to-succeed-Full-Report.pdf; ACT, *Mind the Gaps: How College Readiness Narrows Achievement Gaps in College Success* (Iowa City, IA: Author, 2010); ACT, *What We Know about College Success: Using ACT Data to Inform Educational Issues* (Iowa City, IA: Author, 2008).

12 Jeff Allen and Jim Sconing, *Using ACT Assessment Scores to Set Benchmarks for College Readiness*, ACT Research Report No. 2005-3 (Iowa City, IA: ACT, Inc., 2005); ACT, *What are ACT's College Readiness Benchmarks?* (Iowa City, IA: Author, 2013).

13 Results for individual ACT Benchmark attainment are provided in Radunzel and Noble, *Tracking 2003 ACT-Tested High School Graduates,* 2012.

14 Justine Radunzel and Julie Noble, *Predicting Long-Term College Success through Degree Completion Using ACT Composite Score, ACT Benchmarks, and High School Grade Point Average*, ACT Research Report No. 2012-5 (Iowa City, IA: ACT, Inc., 2012); Jeff Allen and Steve Robbins, "Effects of Interest-Major Congruence, Motivation, and Academic Performance on Timely Degree Attainment," *Journal of Counseling Psychology* 57, no. 1 (2010): 23-35.

15 HSGPA is not only affected by level of content mastery, but is also often affected by a student's attendance and personal behaviors, such as whether the student is prudent about taking good notes, putting forth effort, participating in class, completing homework assignments, and preparing well for course exams.

16 ACT, *Courses Count: Preparing Students for Postsecondary Success* (Iowa City, IA: Author, 2005).

17 Allen and Robbins, "Effects of Interest-Major Congruence, Motivation, and Academic Performance on Timely Degree Attainment," 2010; Jeff Allen, Steven B. Robbins, Alex Casillas, and In-Sue Oh, "Third-Year College Retention and Transfer: Effects of Academic Performance, Motivation, and Social Connectedness," *Research in Higher Education* 49 (2008): 647-664; Steven B. Robbins, Jeff Allen, Alex Casillas, Christina Hamme Peterson, and Huy Le, "Unraveling the Differential Effects of Motivational and Skills, Social, and Self-Management Measures from Traditional Predictors of College Outcomes," *Journal of Educational Psychology* 98 (2006): 598-616.

18 Conley, *Redefining College Readiness*, 2011; Jenny Nagaoka, Melissa Roderick, and Vanessa Coca, *Barriers to College Attainment: Lessons from Chicago* (Washington, DC: Center for American Progress, 2009), http://www.americanprogress.org/wp-content/uploads/issues/2009/01/pdf/ChicagoSchools.pdf; Jennifer Engle and Vincent Tinto, *Moving Beyond Access: College Success for Low-Income, First-Generation Students* (Washington, DC: The Pell Institute, 2008); Carmen Tym, Robin McMillion, Sandra Barone, and Jeff Webster, *First-Generation College Students: A Literature Review* (Round Rock, TX: Texas Guaranteed Student Loan Corporation, 2004), http://www.tgslc.org/pdf/first_generation.pdf. Other psychosocial, family environment, and life situational characteristics were not available for the students included in the current study.

19 Susan Aud, William Hussar, Grace Kena, Kevin Bianco, Lauren Frohlich, Jana Kemp, Kim Tahan, and Katie Mallory, *The Condition of Education 2011*, NCES 2011-033 (Washington, DC: US Department of Education, National Center for Education Statistics, 2011); ACT, *Mind the Gaps*, 2010.

20 Thomas D. Snyder and Sally A. Dillow, *Digest of Education Statistics 2010*, NCES 2011-015 (Washington DC: National Center for Education Statistics, Institute of Education Sciences, US Department of Education, 2011).

21 Engle and Tinto, *Moving Beyond Access*, 2008; Sylvia Hurtado, Thomas F. Nelson Laird, and Thomas E. Perorazio, *The Transition to College for Low-Income Students: The Impact of the Gates Millennium Scholars Program* (Ann Arbor, MI: University of Michigan Center for the Study of Higher and Postsecondary Education, 2010), http://www.gatesfoundation.org/learning/Documents/Final-TransitiontoCollege-Hurtado.pdf.

22 ACT, *Staying on Target: The Importance of Monitoring Student Progress toward College and Career Readiness* (Iowa City, IA: Author, 2012). The benefits of implementing the ACT longitudinal assessment system depend on the quality of behaviors and activities implemented, the purpose(s) for which the system and related behaviors are being implemented, and the context in which they are implemented. For more on this, see ACT, *Making Effective Use of ACT's Longitudinal Assessment System* (Iowa City, IA: Author, 2012). In the current study, the specifics related to how schools and students used the system and the types of activities they engaged in for student and school improvement were not identified.

23 Findings hold true even after also statistically controlling for HSGPA and annual family income range. The extent to which these two groups of students differ on other student characteristics that are related to long-term college success could affect the results.

24 ACT, *Early Monitoring and Long-Term College Success in Oklahoma* (Iowa City, IA: Author, 2013).

25 ACT, *Catching Up to College and Career Readiness* (Iowa City, IA: Author, 2012); ACT, *The Forgotten Middle: Ensuring that All Students Are on Target for College and Career Readiness before High School* (Iowa City, IA: Author, 2008).

26 John Raidt, "Enterprising Innovations for a Competitive National Workforce," *Business Horizon Quarterly*, Summer (2012): 46-55.

27 Institute for a Competitive Workforce, *Current Research and Practice,* posted August 26, 2011, accessed December 4, 2012, http://icw.uschamber.com/content/current-research-and-practice; Anthony P. Carnevale, Nicole Smith, and Jeff Strohl, *Help Wanted: Projections of Jobs and Education Requirements through 2018* (Washington, DC: Georgetown University Center on Education and the Workforce, 2010).