

## ACT Research and Policy

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## Issue Brief

# Early Monitoring and Long-Term College Success in Oklahoma

January 2013

This study was a cooperative effort between ACT and the Oklahoma State Regents of Higher Education.

Oklahoma has been administering ACT Explore and ACT Plan on a state-funded voluntary basis since the mid-1990s. A majority of Oklahoma high school graduates also take the ACT each year.

The long-term college success of students is improved when states invest in an integrated, longitudinal data-driven system to inform and encourage coherence in school and district efforts to prepare *all* students for college and career.

## Key Findings

This report describes the differences in early and long-term college outcomes for Oklahoma ACT-tested students between those who were monitored early with ACT Explore® and ACT Plan® and those who did not take these two assessments prior to taking the ACT® Test.

Findings support that early monitoring of college and career readiness with ACT Explore and ACT Plan is associated with:

- increased college enrollment
- decreased remediation
- increased college achievement
- increased college persistence
- increased degree completion

In terms of numbers of 2012 ACT-tested high school graduates, the estimated effects of state-funded administration of ACT Explore and ACT Plan relative to all Oklahoma students taking only the ACT Test, include:

- nearly 4,700 *more* students immediately enrolling in college the fall following high school graduation<sup>1</sup>

Of 2012 Oklahoma high school graduates who immediately enrolled in an in-state two- or four-year postsecondary institution:

- between 600 to 700 *fewer* students requiring remediation in mathematics and between 300 to 400 *fewer* students requiring remediation in English
- between 800 to 1,000 *more* students completing a college degree within six years of enrolling in college (approximately 700 to 900 bachelor's degrees and 100 associate's degrees)<sup>2</sup>

As evidenced by more students immediately enrolling in college after high school, fewer students requiring remedial coursework in college, and more students completing a college degree in a timely manner, early monitoring with ACT Explore and ACT Plan along with

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intervening with students at risk of not being ready for college or career by the time they graduate from high school has the potential to help a state build up a more highly-skilled and productive workforce, which in turn, can impact the state's economic growth.

## Introduction

Students must be prepared to compete in today's technology-based economy, where many well-paying jobs now being created require some postsecondary education training or at least the skills and knowledge equivalent to those of first-year college students. Most students aspire to some college study, but discrepancies exist between their educational aspirations and the coursework they complete in high school. In 2007–08, over one-third of all college freshmen had entered college underprepared and needed to take at least one remedial course (Aud et al., 2011). Because remedial courses are typically not credit-bearing, taking them often delays completing education programs. In fact, 70% of students who take one or more remedial reading courses fail to earn a college degree or certificate within eight years of enrolling (Adelman, 2004).

All three tests from the ACT longitudinal assessment system are supported by the ACT College Readiness Standards™ and share a common score scale. ACT College Readiness Standards were instrumental in the development of the Common Core State Standards, and reflect what students know and are able to do in grades 8 through 12.

ACT research suggests that early monitoring with ACT Explore and ACT Plan is associated with increased college and career readiness and increased college enrollment, first-year achievement, and persistence to the second year (ACT, 2012b). Early monitoring has also been found to promote educational and career planning, including encouraging students to take more college preparatory courses in high school.

As a result of many students graduating from high school underprepared for college and career, states, districts, and schools are increasingly implementing policies 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 early and often students' progress towards becoming college and career ready and to increase their awareness of, preparation for, and access to higher education (ACT, 2009a).

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). Each test has its own set of College Readiness Benchmarks, allowing student progress toward college and career readiness to be tracked across time. The ACT College Readiness Benchmarks are the minimum ACT test scores 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 (Allen & Sconing, 2005).

Oklahoma has administered both ACT Explore and ACT Plan on a state-funded voluntary basis since the mid-1990s, meaning Oklahoma public schools have elected to participate in ACT Explore and ACT Plan testing of all grade 8 and grade 10 students, respectively.<sup>4</sup> Since then other states have followed suit. More than 70% of Oklahoma high school graduates also take the ACT each year. By the Oklahoma State Regents of Higher Education (OSRHE) funding ACT Explore and ACT Plan statewide, participating schools and districts in the state are able to monitor the college and career readiness of their students and intervene with students who are not on target to be college and career ready before they graduate from high school. Early monitoring allows schools and districts to provide guidance to students about the steps they need to take to achieve their career and educational goals.

In cooperation with the OSRHE, this brief examines the relationships between early monitoring of college and career readiness with ACT Explore and ACT Plan and long-term college outcomes through degree completion for Oklahoma students. The following sections, organized by college outcome, highlight the differences in college success rates between ACT-tested students who were monitored early with ACT Explore and/or ACT Plan and those who did not take these two assessments prior to taking the ACT Test.<sup>5</sup> Unless otherwise noted, students who took either all three assessments or just ACT Plan and the ACT are compared to those who took the ACT only.<sup>6,7</sup> In the charts, these groups are referred to as “Early monitoring” and “ACT only,” respectively.

The ACT longitudinal assessment system provides extensive information about students’ academic achievement and college and career readiness levels. However, this information is of little value if it is not put into action. The benefits of implementing ACT’s longitudinal assessment system depend on the quality of the 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 (ACT, 2012a). The specifics related to how Oklahoma schools used the system and types of activities they engaged in for student and school improvement were not identified in this study. Moreover, the extent to which the two groups of students differ on other student characteristics that are related to long-term college success and not controlled for in the models could influence the group differences reported here.

Prior research has suggested that states that have adopted ACT Explore, ACT Plan, or both statewide have experienced some of the following benefits over time:

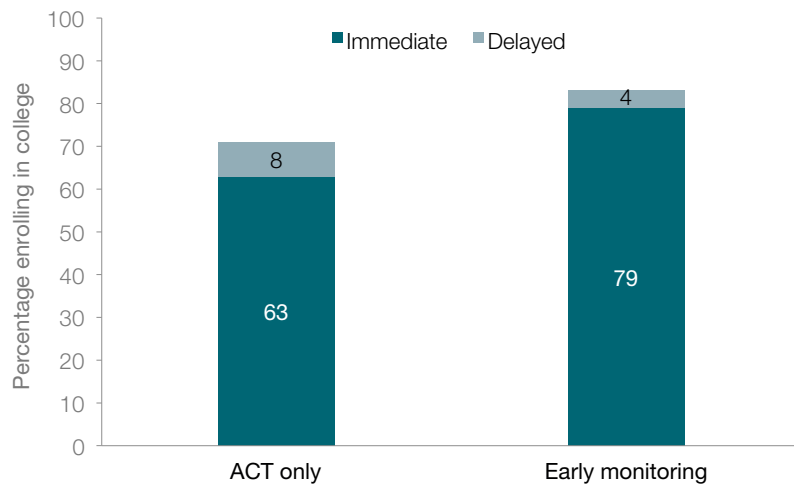
1. Higher average ACT Composite and subject area scores.
2. Increased percentages of students meeting ACT College Readiness Benchmarks.
3. Increased percentages of students meeting statewide minimum ACT scores for admission and/or course placement.
4. Increased percentages of high school graduates enrolling in college the fall following high school graduation.
5. Decreased percentages of students taking remedial coursework in college.
6. Increased percentages of ACT-tested first-year college students with GPAs of 3.0 or higher.

These findings were generally also seen for underrepresented minority students.<sup>3</sup> For more details, see *Readiness and Success: Statewide Implementation of EXPLORE and PLAN* (ACT, 2009a).

**Students who are monitored early enroll in college at higher rates.**

Students need to begin planning for college early, take rigorous courses, and monitor their progress toward becoming college and career ready. Students who are monitored early are more likely than those who are not (i.e., those who take the ACT only) to enroll in college, and are less likely to delay college enrollment, after controlling for ACT Composite score.<sup>8</sup> Students who delay enrollment are at a greater risk of not completing a postsecondary program.

**Percentages of students enrolling in college by program participation**



Students who are monitored early are more likely to enroll in college the fall immediately following high school graduation (by 16 percentage points, on average) than those who are not.

Students who are monitored early are less likely to delay college enrollment by a year.

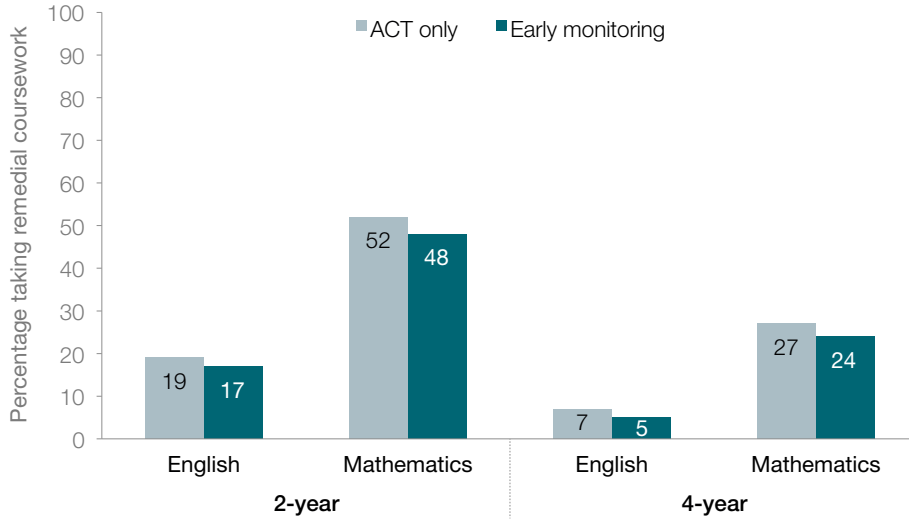
**Early monitoring is associated with lower remediation rates.**

Oklahoma college students must take a remedial course in English, mathematics, and/or reading or pass a different assessment, if their corresponding ACT subject area score is below 19. Because remedial courses are not credit-bearing for many institutions and states, remedial coursework can delay students' completion of educational programs and increase the cost of completing these programs.

But some students benefit from taking remedial coursework (Noble & Sawyer, 2013; those who receive an A (or sometimes a B) grade in the remedial course, part-time students, and students with scores closer to the cutoff score). Research clearly shows that students who are better prepared academically are more successful in college than those who are less prepared (Radunzel & Noble, 2012).

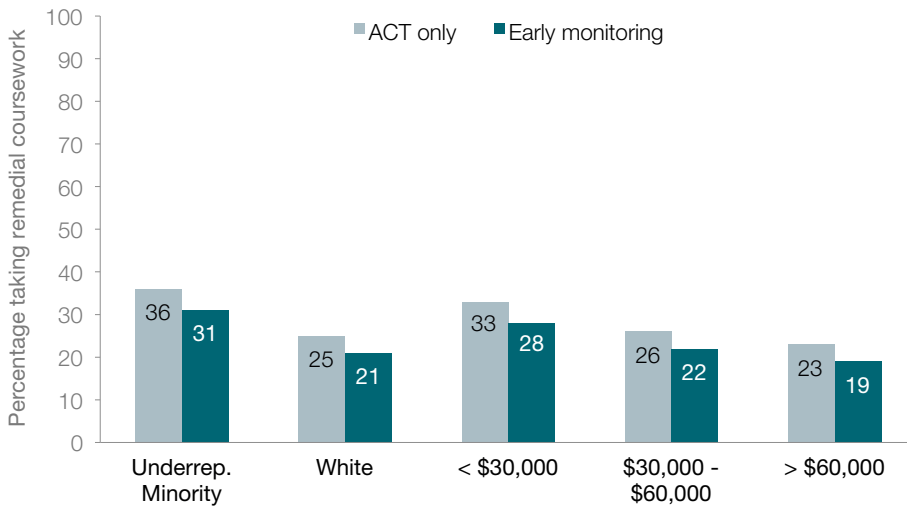
Students who are monitored early are less likely than those who are not to take remedial coursework in English or mathematics, regardless of the type of institution attended.<sup>9</sup>

**Percentages of students taking remedial coursework by program participation and type of institution**



Students who are monitored early are 2 percentage points less likely to take remedial coursework in English, and 3 to 4 percentage points less likely to take remedial coursework in mathematics, than those who are not monitored early.

**Percentages of students taking mathematics remedial coursework by race/ethnicity, family income, and program participation for four-year institutions**

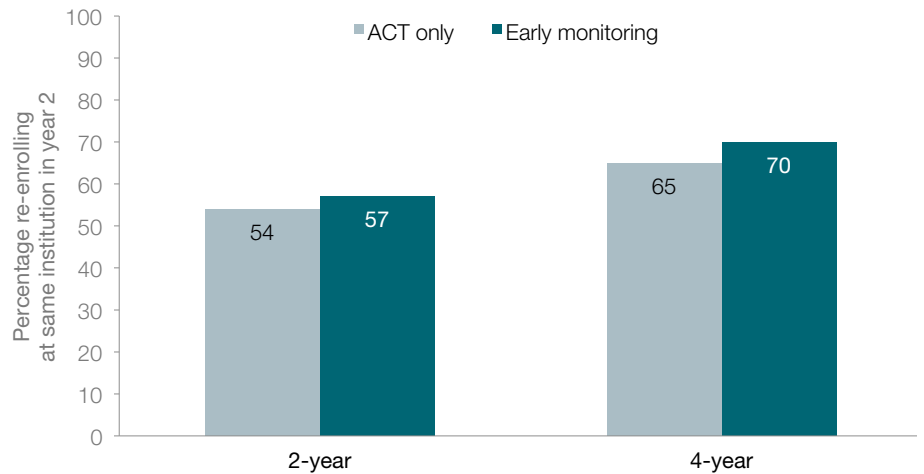


Across racial/ethnic and family income groups, remediation rates for English and mathematics are consistently lower for students who are monitored early than for those who are not (illustrated for remediation in mathematics at four-year institutions).

**Students who are monitored early persist in college at higher rates over time and are more likely to be successful in their college coursework.**

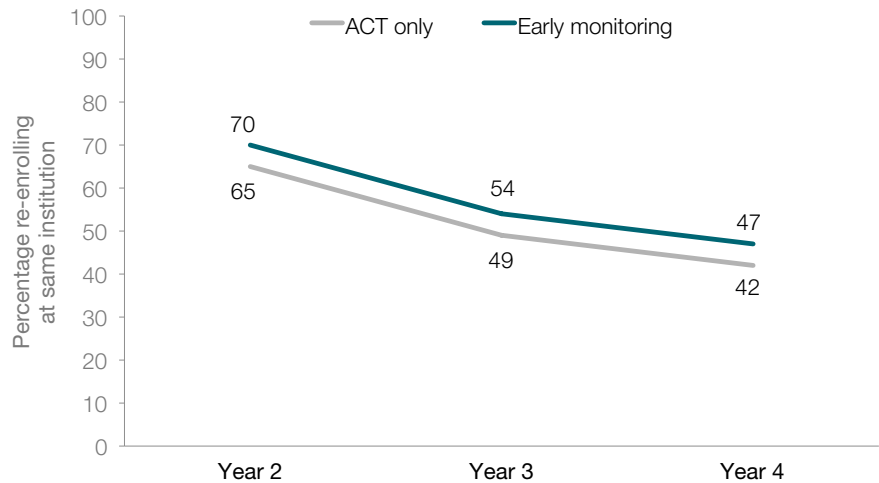
Not only are students who are monitored early more likely to return to the same institution their second year, they are also more likely to remain enrolled at the same institution in subsequent years, after controlling for ACT Composite score and the college attended.

**Percentages of students re-enrolling at the same institution in year 2 by program participation and type of institution**



Students who are monitored early are more likely to return to the same institution their second year (by 3 to 5 percentage points) than those who are not.

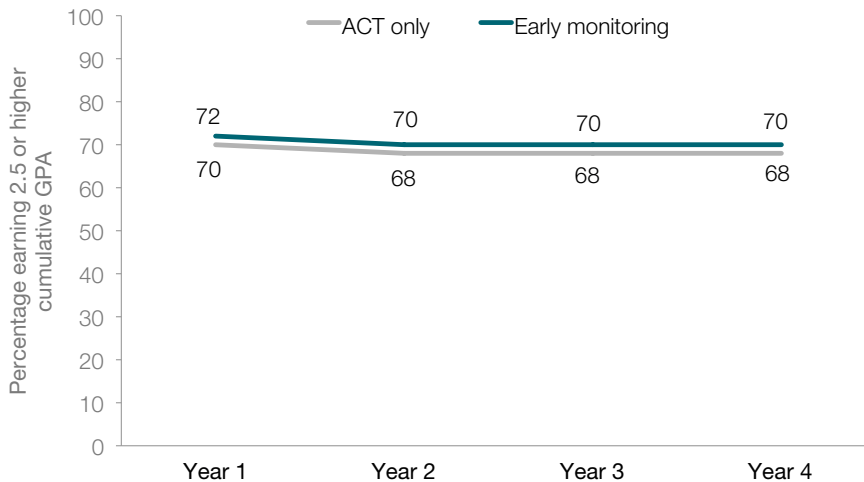
**Percentages of students re-enrolling at same institution over time by program participation for four-year institutions**



Persistence rates over time at the same institution for students who are monitored early are consistently higher than those for students who are not monitored early (by 5 percentage points at four-year institutions and 3 to 4 percentage points at two-year institutions, example shown for four-year institutions).

Students who are monitored early are consistently more likely to earn a college grade point average (GPA) of 2.5 or higher over time than those who are not, after controlling for ACT Composite score and the college attended.

#### Percentages of students earning cumulative GPA of 2.5 or higher over time by program participation for four-year institutions



The chances of earning a cumulative college GPA of 2.5 or higher at a four-year institution are 2 percentage points higher for students who are monitored early than for those who are not.

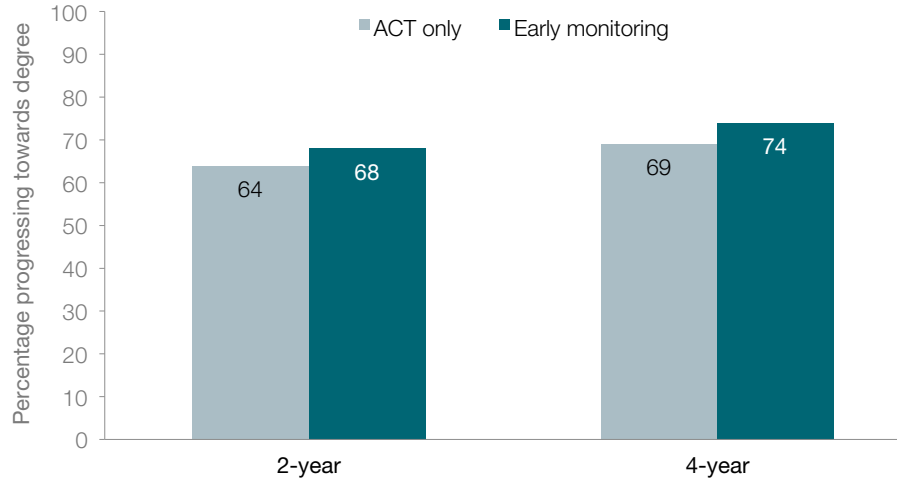
#### Students who are monitored early progress towards and complete a college degree at higher rates.

As important as enrollment, persistence, and academic success are, degree completion is the ultimate goal of most college students. Progression towards a degree can be monitored by evaluating the cumulative hours earned at the end of each spring term.<sup>10</sup>

Students who are monitored early are more likely to progress towards completing a degree than students who are not monitored early, after controlling for ACT Composite score and the college attended.

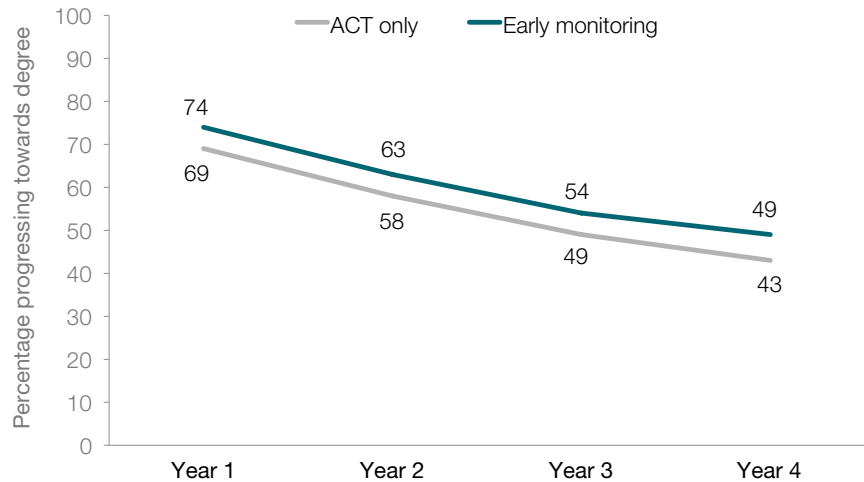
**Percentages of students progressing towards a degree by the end of their first year by program participation and type of institution**

The chances of earning 24 or more credit hours at a four-year institution by the end of the first year, or 18 or more credit hours at a two-year institution, are 4 to 5 percentage points higher for students who are monitored early than for those who are not.



**Percentages of students progressing towards a degree by program participation for four-year institutions**

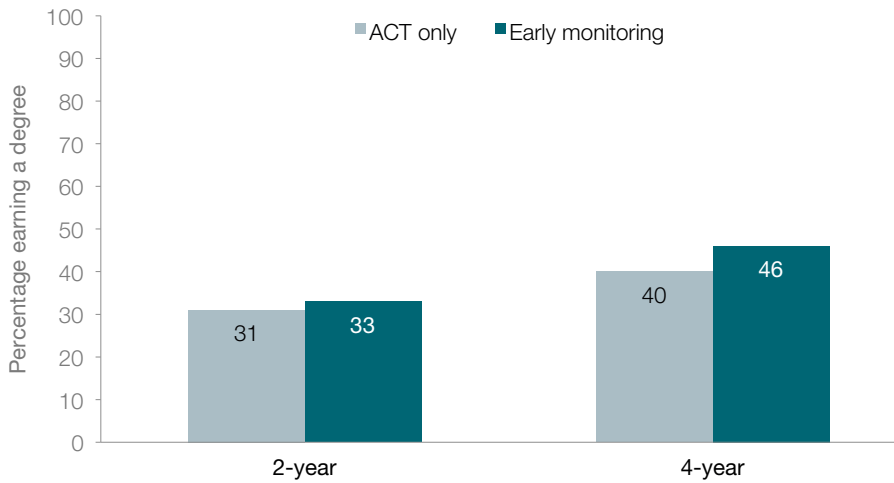
Over time, progress to degree rates for students who are monitored early are consistently higher than those for students who are not monitored early (by 5 to 6 percentage points at four-year institutions and 3 to 4 percentage points at two-year institutions; example shown for four-year institutions).





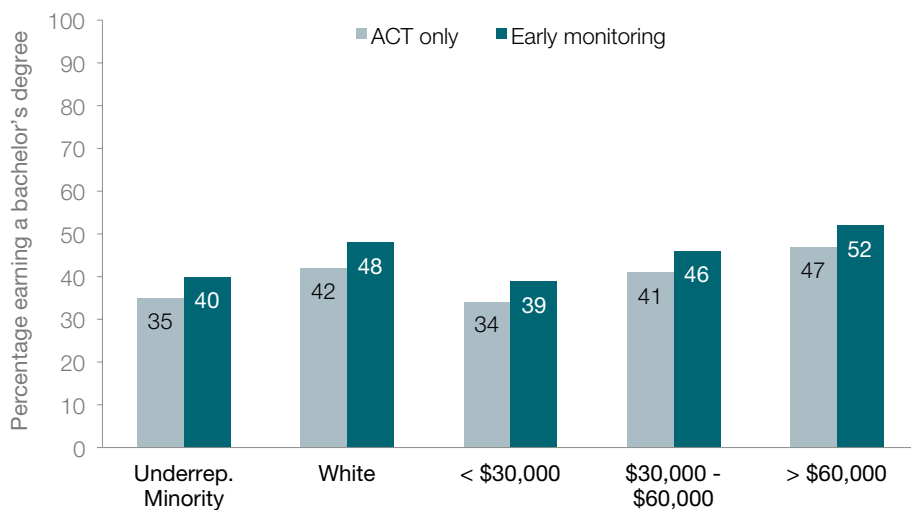
Students who are monitored early are also more likely to complete a degree than students who are not, after controlling for ACT Composite score and the college attended.

**Percentages of students completing a degree within six years by program participation and type of institution**



Students who are monitored early are more likely than those who are not to complete either an associate's degree (by 2 percentage points) or a bachelor's degree (by 6 percentage points) within six years.

**Percentages of students completing a bachelor's degree within six years by program participation for four-year institutions**



Across racial/ethnic and family income groups, six-year degree completion rates are consistently higher for students who are monitored early than for students who are not (illustrated for bachelor's degree completion at four-year institutions).

Of students who are monitored early, degree completers are substantially more likely than non-completers to have met the ACT Explore College Readiness Benchmarks (by as much as 16 percentage points) in grade 8 and, on average, to have had larger gains in Composite scores from ACT Explore to ACT Plan (by 0.3 score point) and from ACT Plan to the ACT Test (by 0.6 score point).

If students are on target to be ready for college and career in grade 8, their chances of being ready for college and career by high school graduation are substantially increased (ACT, 2008). And, students who graduate from high school ready for college or career are more likely than those who are not to be successful in their college coursework, to persist beyond their first year, and to progress towards and complete a degree (Radunzel & Noble, 2012; Noble & Radunzel, 2007).

## Conclusions

Results from this study indicate that early monitoring activities with ACT Explore and ACT Plan benefit the early and long-term college success of students in a state. Oklahoma students who are monitored early are consistently outperforming in college those who are not monitored early. These findings hold true for all students, regardless of their race/ethnicity or family income.

This study compared college outcomes for Oklahoma students who did and did not participate in ACT Explore and ACT Plan before taking the ACT, after controlling for ACT Composite score and/or the college attended. Student demographic characteristics, educational aspirations, high school grade point average, and coursework taken in high school were similar between the two groups of enrolled students. However, the extent to which these two groups differ on other, related characteristics could affect the results. Due to limitations in the available data, we were unable to control for other such variables.

OSRHE is using ACT Explore, ACT Plan, and the ACT Test as an integrated, longitudinal data-driven system to help state educators determine how effectively their students are acquiring the higher-order thinking skills in English, mathematics, reading, and science needed for postsecondary education or the workplace. The system is also being used by the state as part of their Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR UP). OSRHE encourages their teachers, counselors, and administrators to utilize associated support materials and reporting services provided by ACT and to participate in workshops and training programs designed to help educators maximize the use of their assessment information. In conjunction with assessing student progress, ACT Explore, ACT Plan, and the ACT Test provide comprehensive information about the

As the Common Core State Standards are implemented, monitoring growth toward college and career readiness takes on greater importance for schools, districts, and states.

relationships among students' interests, academic skills, and career choices. Encouraging students to think about possible career areas early on allows them to plan more effectively to take the academic courses they will need to achieve their career goals. State educators are also being encouraged to use the system to evaluate how well their programs are helping individual students reach their educational goals.

Results from collaborations with other states also support the findings illustrated here. Another study based on a nationally representative sample of ACT-tested high school graduates provides additional evidence for the utility of early monitoring of readiness for increasing college enrollment and college persistence through degree completion (Radunzel & Noble, 2012). In particular, students who make progress towards becoming college and career ready by grade 12 increase their chances of persisting in college and completing a degree.<sup>11</sup> On the other hand, students who do not remain on target through grade 12 decrease their chances of being successful in college.

In conclusion, early monitoring of student progress toward college and career readiness and intervening with students not on track to graduate from high school ready for college or career is important and beneficial for all in a state. With ACT Explore, ACT Plan, and the ACT Test, schools, districts, and states can assess student achievement in grades 8, 10, and 11 or 12 while monitoring student, school, and state growth toward college and career readiness. Data from ACT Explore, ACT Plan, and the ACT Test together can also be used as the foundation for state accountability systems (ACT, 2009b).

Students also benefit if they accelerate their time to college degree completion by immediately enrolling in college after high school, eliminating time spent in remedial coursework, and achieving higher grades in credit-bearing courses.

States, districts, schools, and students benefit from an integrated, longitudinal data-driven system that is aligned to college and career readiness standards when it is used regularly to trigger and direct any needed instructional interventions in a timely manner to better prepare all students for college and career (ACT, 2012b; National Center for Educational Achievement/ACT, 2011 and 2012).

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- 1 Results were applied to the Oklahoma 2012 ACT-tested high school graduating class of over 29,000 students.
- 2 Calculations were based on the number of students expected to have immediately enrolled in an in-state Oklahoma college in fall 2012. Calculations do not account for differences in numbers of enrolled students by participation group.
- 3 Underrepresented minority students include racial/ethnic student groups that are typically underrepresented in postsecondary education – African American, American Indian, and Hispanic students. A separate racial/ethnic category for Native Hawaiian/Other Pacific Islander students was not available in the data sources used for this study.
- 4 Oklahoma began pilot testing ACT Explore and ACT Plan in 1993-94, but full administration of these programs on a state-funded voluntary basis was not in effect until 1996-97 for ACT Explore and 1994-95 for ACT Plan (as determined by substantial increases in numbers of tested students).
- 5 Primary data for this study included 33,510 ACT-tested Oklahoma 2001 and 2002 high school graduates who immediately enrolled in an in-state college the fall following high school graduation (61% of the total 54,627 Oklahoma 2001 and 2002 high school graduates, respectively; 40 Oklahoma postsecondary institutions were represented). Hierarchical logistic regression models were developed to estimate college success rates by program participation group, accounting for ACT Composite score (as a measure of prior achievement) and the variability across colleges. These models were used for all outcomes except college enrollment and remediation. Ordinary logistic regression models were used for college enrollment. Due to state remediation policies based on ACT scores, hierarchical models for remediation did not include ACT Composite scores. Separate models were generally developed by year of enrollment for each relevant outcome and by institution type (2- vs. 4-year; type determined at time of initial enrollment). Predicted probabilities for college success rates were estimated from the models using the average ACT Composite score for enrolled students by institution type.
- 6 Early monitoring participation includes students who participated in ACT Explore (grade 8), ACT Plan (grade 10), and the ACT (grade 11/12) or just ACT Plan (grade 10) and the ACT (grade 11/12). College success rates for students who were monitored early were compared to students who took the ACT only. Program participation for the primary data source included: 18,927 students who participated in all three programs (56%), 7,890 students who participated in ACT Plan and the ACT, not ACT Explore (24%), and 6,693 students who participated only in the ACT (20%). Students who participated in early monitoring took ACT Explore in 1996–1998 and/or ACT Plan in 1998–2000.
- 7 In 2011–12, 92% of all Oklahoma eighth-graders took ACT Explore and 96% of all Oklahoma tenth-graders took ACT Plan (based on Western Interstate Commission for Higher Education (WICHE) estimates of both public and non-public Oklahoma students). Nearly all (98%) of Oklahoma public school students took ACT Explore and ACT Plan in 2011–12.
- 8 Data to examine college enrollment included 26,574 ACT-tested 2003 high school graduates from Oklahoma. Enrollment figures were based on National Student Clearinghouse data, as well as state college data. Immediate enrollment was defined as enrolling in college the fall following high school graduation (i.e., fall 2003). Delayed enrollment was defined as delaying enrollment into college for a year (i.e., until fall 2004). Predicted probabilities for college enrollment rates were estimated from the models using the average ACT Composite score for Oklahoma high school graduates.
- 9 Remediation in English or mathematics was based on the coursework students took over a five-year period at any in-state, public institution (nearly 90% of the remedial coursework was taken during the first year). English remedial coursework included such courses as Basic Grammar, English Fundamentals, Basic Composition, Developmental Writing, Spelling, and Vocabulary. Remedial coursework in mathematics included such courses as Arithmetic Skills, Elementary Algebra, Intermediate Algebra, Developmental Math, and General College Math.
- 10 For four-year institutions, end-of-year cumulative hours thresholds were 24, 48, 72, and 96 earned credit hours for years 1, 2, 3, and 4, respectively, approximating bachelor's degree completion in about five years. For two-year institutions, end-of-year cumulative hours thresholds were 18, 36, and 54 credit hours earned for years 1, 2, and 3, respectively, approximately associate's degree completion in slightly over three years.
- 11 Students who are on target early in grade 8 to becoming college and career ready and remain on target through grade 12 have the highest college success rates, and students who are not on target in grades 8 and 10 and do not graduate from high school college and career ready have the lowest rates.

ACT is an independent, not-for-profit organization that provides assessment, research, information, and program management services in the broad areas of education and workforce development. Each year we serve millions of people in high schools, colleges, professional associations, businesses, and government agencies, nationally and internationally. Though designed to meet a wide array of needs, all ACT programs and services have one guiding purpose—helping people achieve education and workplace success.