

# Student Engagement and Institutional Graduation Rates: Identifying High-Impact Educational Practices for Community Colleges

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Philanthropists, researchers, policymakers, and practitioners are increasingly focused on a college completion crisis in the United States. Collectively and independently, they have called for increasing the number of adults with postsecondary certificates and degrees as a national imperative. Using the 2007 administration of the Community College Survey of Student Engagement (CCSSE), this article explores the statistical relationships between student engagement, as measured by the CCSSE, and institutional graduation rates reported to the Integrated Postsecondary Education Data System (IPEDS). Both bivariate correlations and hierarchical multiple regression analyses yielded results that reinforce the salience of student engagement as an important predictor of college completion. Specifically, the CCSSE student engagement benchmarks of active and collaborative learning and support for learners are positive predictors of institutional graduation rates. The article concludes with suggestions around instructional practices and institutional policies to consider for community college leaders committed to the completion agenda.

According to the National Center for Higher Education Management Systems (NCHEMS), without a significant increase in degree attainment patterns, the United States will fall 16 million degrees short of the number necessary to match leading nations and to meet the workforce needs of 2025 (Jobs for the Future, 2007). More than 22% of the adult population in the United States, or 37 million Americans, have attended college but not completed a degree (Lumina Foundation for Education, 2010). Large numbers of students in every state drop out at key transition points all along the education pipeline that runs from high school through college: on average, for every 100 students who are in the ninth grade, less than half will enroll in college within four years, and only about 20% will earn a college degree (Davies, 2006). The most recent *National Collegiate Retention and Persistence to Degree Rates* report (American College Testing, 2011) noted that the national first-to-second year retention rate for public community colleges was 55%. Likewise, an examination of Integrated Postsecondary Education Data System (IPEDS) data put this figure

at 60% for full-time students and 40% for part-time students across the nation (Snyder & Dillow, 2011). Moreover, the retention rates for African American, Latino, American Indian/Alaskan Natives, and East Asian students are reportedly lower than those of White and Asian students (Swail, Redd, & Perna, 2003). These reports and data point to a college completion crisis in the United States.

During the past several years, business leaders, philanthropic organizations, researchers, and policymakers have converged around the idea that more Americans need to enroll and succeed in college by earning a postsecondary credential. For example, the Lumina Foundation is calling for the United States to increase higher education attainment rates so that 60% of adults 25–64 years of age have a college credential by 2025. Similarly, the Bill and Melinda Gates Foundation wants to double the numbers of low-income youth, 16–26 years of age, who obtain a college credential. Six leading national higher education organizations have joined in a completion commitment, setting the goal to produce an additional five million postsecondary certificates and associate degrees by 2020 (see <http://www.cccompletionchallenge.org/>). The organizations include Phi Theta Kappa Honor Society, American Association of Community Colleges, Association of Community College Trustees, League for Innovation in the Community College, National Institute for Staff and Organizational Development, and Center for Community College Student Engagement.

A significant majority of business leaders (over 75%) believe that improving postsecondary completion will have an extremely or very positive impact on the economy and workforce productivity (Bridgeland, Milano, & Rosenblum, 2011). Most notably, President Obama has stated his goal for the United States to have the highest proportion of students graduating from college in the world by 2020. These groups have defined a college credential broadly to include short-term certificates as well as associate and baccalaureate degrees.

This convergence is supported by data regarding returns on a college education for individuals, as well as by data indicating that the jobs of the future increasingly require education and training beyond high school. Data on employment projections suggest that by 2018, 63% of new and replacement jobs will require at least some postsecondary education (Carnevale, Rose, & Cheah, 2011). A survey conducted for Business Roundtable revealed that almost two-thirds of U.S. employers will require all, most, or some new employees to have earned an associate degree or higher (Business Roundtable, 2010). The Georgetown University Center on Education and the Workforce estimates that, since 1999, the premium for a college education has grown to 84%: On average, a bachelor's degree is worth \$2.8 million over a lifetime. There is also a premium for people with associate degrees who earn, on average, one-third more than those with only a high school diploma (Carnevale, Rose, & Cheah, 2011). A recently released study also documents that postsecondary certificate holders earn 20% more than high school graduates without any postsecondary education (Carnevale, Rose, & Hanson, 2012). The bottom line is that employers need workers with college credentials, and college credentials yield higher earnings for people who attain them.

The challenge with this completion agenda is that no single solution is a panacea. Several strategies will likely be needed to address this challenge including increasing the academic preparation of students who graduate high school; aligning high school and adult education curriculum to college and career readiness standards; facilitating stronger connections between workforce education and training and postsecondary education system; leveraging student financial aid more effectively; and improving educational practices by colleges so more students already enrolled

actually earn a postsecondary credential. None of these—or other—strategies can meet this challenge alone; rather, *all* of them must be addressed if the United States is to successfully meet this challenge.

Community colleges will play a critical role in the national agenda to improve the number and percentages of adults with postsecondary credentials. Recent developments in the area of student engagement and learning outcomes can help facilitate this ambitious goal. This article will present research findings that highlight the impact of student engagement, and the corresponding educational practices and policies, on graduation rates at community colleges throughout the country. The analysis utilizes data from the Community College Survey of Student Engagement (CCSSE), a widely accepted instrument that colleges use to meet varying institutional needs including benchmarking, monitoring the effectiveness of institutional practices, identifying areas where institutions can improve students' educational experiences, accreditation, professional development, and institutional research. Given the widespread use of CCSSE by community colleges—between 2009 and 2011, 669 colleges in 48 states and the District of Columbia, five Canadian provinces, Bermuda, and Northern Marianas administered the survey to more than 440,000 students (data retrieved from the CCSSE website: <http://www.ccsse.org/survey/national.cfm>)—an analysis of the relationship between student engagement as measured by CCSSE and institutional graduation rates would seem a useful contribution to the community college field. (Both the NSSE and CCSSE have recently come under scrutiny by some researchers [see Nora, 2011, and the response from McCormick and McClenney, 2012]. Addressing these critiques is beyond the scope of this article.)

Our study examines the relationship between CCSSE benchmarks on student engagement and institutional graduation rates. Put simply, is there a statistical relationship between student engagement benchmarks as measured by CCSSE and institutional graduation rates? And if this relationship is statistically significant, what are the implications for educational practices and policies at community colleges? Prior to delving into our methodology, findings, and conclusions, we briefly discuss the research literature on community college student persistence and student engagement.

## REVIEW OF LITERATURE

According to the 2010 issue of the *Digest of Education Statistics*, community college students accounted for more than one-third of the 19.1 million students attending degree-granting institutions in fall 2008; during the fall 2009, 7.1 million students attended a public community college in the United States (Snyder & Dillow, 2011). Community colleges serve as the entry point into higher education for many impacted groups including traditionally underrepresented ethnic minorities like Black and Hispanic students, low-income, and first-generation college students. Unlike four-year college students, the vast majority of students at public community colleges attend on a part-time basis (about 60% in 2009) and on a more varied daytime/evening basis, work a significant number of hours per week, commute, and have family responsibilities such as child care, and are often financially strained (Cohen & Brawer, 2008; Gonzalez, 2000; Grimes, 1997).

Additionally, community college students are often unprepared for college-level coursework as evidenced by their reading, writing, and mathematics skills. A recent study conducted

by the National Center for Education Statistics found that just over 40% of students in the 2007–2008 National Postsecondary Student Aid Study reported taking remedial courses while at these institutions (Snyder & Dillow, 2011). A nationally representative study utilizing the National Education Longitudinal Study of 1988 dataset found that 58% of community college students took at least one remedial course (Attewell, Lavin, Domina, & Levey, 2006). Similarly, a study comprising institutions participating in the Achieving the Dream initiative found that 59% of students enrolled in at least one developmental course (Bailey, Jeong, & Cho, 2010).

Taken together, the above characteristics place public community college students at risk of not succeeding academically (Tovar & Simon, 2006) or dropping out of college before completing a certificate or degree. Consequently, these students require intentional assistance from community colleges to support their success. The *Digest of Education Statistics* reported that one in five of the 2005 first-time, full-time degree-seeking students attending public community colleges obtained an associate degree or certificate within 150% of the expected normal time, or three years (Snyder & Dillow, 2011). This percentage differed markedly by race/ethnicity: about 30% for nonresident aliens, 26% for Asian/Pacific Islanders, 23% for Whites, 18% for American Indian/Alaskan Natives, 16% for Hispanics, and 12% for Blacks. With respect to gender, men graduated at a slightly lower rate than women (20% versus 21%, respectively). Thus, meeting the credential attainment challenge is especially critical for community colleges, whose students traditionally experience a variety of barriers to degree attainment (Cohen & Brawer, 2008; Kim, Sax, Lee, & Hagedorn, 2010).

Numerous theoretical frameworks have been proposed and advanced over the course of the past four decades to explicate why attrition occurs at two-year colleges and universities (e.g., Bean, 1982; Bean & Eaton, 2000; Nora, Barlow, & Crisp, 2005; Spady, 1970, 1971; Swail et al., 2003; Tinto, 1975, 1993), but less so for how to effectively address it (Tinto, 2006). Vincent Tinto's model of student departure (1993) has received the most attention. This model emphasizes the need for students to separate from their former communities to successfully transition to college, thus enabling them to partake of the programs and services available at the college. Furthermore, the model promotes the central role of academic and social integration experiences, inside and outside the classroom, as cornerstones to student retention and persistence. Tinto's model has been criticized for placing significant onus on the student while deemphasizing the role of the institution and institutional agents—faculty, staff, administrators—in promoting or impeding student success and retention (Bensimon, 2007). Additionally, it has been noted that Tinto's model does not sufficiently explain the experiences of historically underrepresented groups such as ethnic minorities, first-generation to college, and low-income students, or students attending community colleges (Bensimon, 2007; Cejda & Hoover, 2010; Rendón, Jalomo, & Nora, 2000; Tierney, 1992).

In recent years, Tinto himself has come to acknowledge the limitations of his model: that the process of retaining students differs by institutional type, and that breaking connections to student's former communities (e.g., home) is not necessary to successfully transition and succeed in college (Tinto, 2006). Most recently, Tinto (2012) has also emphasized the need to refocus institutional action (intervention) around four key conditions that foster student success: setting high expectations; providing academic, social, and financial support; engaging in frequent and timely assessment and feedback; and creating opportunities for student involvement. Each of these conditions is under direct institutional control.

Recent research substantiates the key role that institutional faculty, staff, and administrators play in facilitating or impeding student success, both in and out-of-the classroom (Barnett, 2010; Braxton & McClendon, 2001; Cejda & Hoover, 2010; Deil-Amen, 2011; Karp, Hughes, & O’Gara, 2010; Lundberg & Schreiner, 2004; Stanton-Salazar, 1997; Tinto, 2012). Both Deil-Amen and Cejda and Hoover found that for community college students, student-faculty interactions of an academic and social nature served as vehicles for imparting important information to students, increased their comfort in college, and were precursors to student retention. The importance of these interactions as perceived by students is that they occur simultaneously. These *socioacademic integrative moments* transpire during events or activities when students interact with institutional agents and other students (Deil-Amen, 2011).

The study of student engagement has gained considerable attention over the last decade, primarily in response to demands from the public, legislators, and accreditors that colleges and universities demonstrate the link between college attendance and student outcomes. Engagement, as described by Kuh (2009), is characterized as the amount of time and effort that students place in their involvement in educationally beneficial practices that promote their learning and development. Engagement also refers to the intentional efforts institutions place in investing and in promoting these activities to affect student success and academic attainment (Kuh, 2009; McClenney, 2004; McClenney, Marti, & Adkins, 2006).

Student engagement as is now conceptualized is rooted in the works of Pace (1980, 1984) on quality of effort, and Astin’s (1984) theory of student involvement; and it also largely reflects Chickering and Gamson’s (1987) seven principles of effective educational practice in undergraduate education. Given its prominence in educational circles, the construct of engagement has been promulgated significantly via the development of a few student engagement surveys administered nationally (and in select countries) including the National Survey of Student Engagement (NSSE) and the CCSSE. These instruments are composed of dozens of items ingrained in the higher education literature that correlate highly with educational outcomes (e.g., learning, retention, grades), are reflective of institutional practices and student and faculty behaviors, and provide colleges and universities with actionable data to improve the college student experience.

In the case of the CCSSE, which is the basis for the present study, the following are the five student engagement benchmarks: active and collaborative learning; student effort; academic challenge; student-faculty interaction; and support for learners. Research on the CCSSE has been conducted using single-institution datasets (e.g., Akin, 2009; Balog & Search, 2006; Reynolds, 2007; Schuetz, 2008), as well as multiple-institution, multistate, or national datasets (e.g., Lynch Ervin, 2010; McClenney, 2007; McClenney & Marti, 2006; Roman, Taylor, & Hans-Vaughn, 2010). Furthermore, the Center for Community College Student Engagement (CCCSE) at the University of Texas-Austin regularly analyzes and disseminates findings on student engagement to the public at-large.

Taken altogether, research studies using CCSSE generally find that student engagement in educationally effective practices has a positive effect on outcomes such as retention, persistence, grade point average, and in some instances, on degree completion. For example, a multiyear study encompassing CCSSE benchmark scores for students enrolled across the Florida Community College System (reported in McClenney & Marti, 2006) found a moderate effect of student engagement as measured by the five benchmarks on grade point average (GPA): Student engagement accounted for well over 30% of the variance after controlling for a variety of background variables. Likewise, small effects were found for the active and collaborative learning

benchmark on course completion ratio. With respect to associate degree attainment, the study also found small effects for the active and collaborative learning, student effort, and the support for learners' benchmarks. The active and collaborative learning benchmark also significantly predicted persistence to the following term and the second year. What is particularly notable in this study is a set of conditional effects found showing that increased levels of engagement significantly improved GPA for academically underprepared students, but not for college-ready students, and for African American students. Similarly, conditional effects on course completion ratios were found for both African-Americans and Hispanics: That is, increased levels of engagement improved course completion ratios for these two groups of students. A second national study comprising 24 community colleges participating in the Achieving the Dream Initiative (2002–2004) found that three of the CCSSE's five benchmarks (active and collaborative learning, academic challenge, and student-faculty interaction) positively correlated with degree or certificate attainment.

In summarizing findings from three independent studies sponsored by CCSSE, McClenney and Marti (2006) observed that the benchmarks most closely associated with degree/certificate attainment were active and collaborative learning, academic challenge, and student-faculty interaction (with bivariate correlations ranging from .07 to .11). All except the support for learners' benchmarks significantly correlated with cumulative GPA. In addition, active and collaborative learning, followed by faculty-student interaction and support for learners, were most closely related to persistence to second term and to second year of college.

## METHODOLOGY

### Data Sources

#### *Community College Survey of Student Engagement*

Data for this study were provided by the Center for Community College Student Engagement at The University of Texas-Austin; they encompassed 166,031 student-level records from the 2007 administration of the CCSSE. A total of 279 institutions participated in this administration; however, only 261 community colleges met criteria for inclusion in this study by reporting graduation rates for 2009 via their annual IPEDS (Integrated Postsecondary Education Data System) submission. The missing 18 institutions either (a) did not report a 2009 graduation rate; (b) were part of a university system that reported combined graduation rates for its four-year and two-year programs; or (c) was not a U.S. based-institution. The 261 colleges accounted for 162,394 (97.8%) students taking the 2007 CCSSE.

According to the Center for Community College Student Engagement, CCSSE provides information on students' engagement in educationally effective practices and student behaviors that are closely associated with student learning and student retention at community colleges (CCCSE, 2011). This includes the frequency with which students engage in classroom discussions; interact with faculty members in and out of class; participate in learning opportunities (e.g., internships, developmental education, learning communities); extracurricular activities; academic and student support services, etc. Students also report on the level of academic challenge they experience in college, assignments, and examinations, as well as on the mental activities in which they engage

(e.g., memorizing, synthesizing information). CCSSE is administered annually at participating institutions during the spring semester to randomly selected credit-bearing classes.

Subsequent to its administration, results are summarized in five standardized benchmarks reflective of the content noted above. According to Marti (2008), the five benchmarks, which together constitute a model of effective educational practice, were derived via confirmatory factor analysis based on psychometric and expert feedback. Marti further notes that CCSSE has demonstrated reasonable internal reliability across these measures: active and collaborative learning ( $\alpha = .66$ ), student effort ( $\alpha = .56$ ), academic challenge ( $\alpha = .80$ ), student–faculty interaction ( $\alpha = .67$ ), and support for learners ( $\alpha = .76$ ). Consistent with its goal, Marti goes on to state that CCSSE is a “reliable instrument that can be used to inform institutional decision making with regard to teaching practices, campus design, and institutional culture. . . . and can be used for research with community college students” (p. 2).

### *Integrated Postsecondary Education Data System*

A custom data file was downloaded from the National Center for Education Statistics IPEDS Data Center with graduation rates and institutional characteristics. The file contained multiple institutional characteristics, student enrollment statistics, and 2009 graduation rates variables for 1,769 Title IV, degree granting, two-year institutions in the United States. The IPEDS graduation rate measures the percentage of first-time, full-time students who earned a college credential at the same institution within three years of initial enrollment.

These two data sources (CCSSE and IPEDS) were merged to create an analytic file with colleges as the unit of analysis. We derived institutional-level variables by averaging responses for each student’s CCSSE benchmark and variable composing each benchmark. We first analyzed the degree of missing data for each variable and determined that missing data was a relatively minor issue. We then conducted multiple imputation in SPSS (five imputed sets) to replace missing values on the benchmarks, based on their pooled values (Marti, 2008). The pooled means were very close to the original means without imputation. Lastly, these data were subsequently merged with the IPEDS data above, thus forming our analytic working file for this research project.

### Data Analysis

Two sets of analyses were conducted to address our research questions. In the first set, we adjusted our analyses using an institutional weight variable computed by CCSSE that is based on the ratio of part-time to full-time students at the college. This set was comprised of full- and part-time students. We did not adjust outcomes in the second set, which was based on CCSSE benchmark scores for only full-time students.

For each of the analyses, we first ran bivariate correlation statistics to determine if the CCSSE benchmark and individual items comprising it were statistically associated with 2009 graduation rates for the institution and for specific groups of students (i.e., males, females, and for several race and ethnic groups). Given statistically significant correlations, we pursued hierarchical ordinary least squares (OLS) regression analysis. The dependent variable was the 2009 institutional graduation rate. Independent variables were entered in two blocks. The first block controlled for the effects of several institutional-level student demographic variables

obtained from IPEDS: variables were percentage of students that were female; Black (non-Hispanic); Hispanic; Asian/Pacific Islander; and attending full-time. Also included in Block 1 were institutional-level variables included in the CCSSE data file: variables were college size (small to extra-large, dummy coded); urbanicity (urban to rural, dummy coded); and percentage of survey respondents who had taken developmental English or math courses. Block 2 consisted exclusively of the CCSSE standardized benchmark scores: active and collaborative learning; student effort; academic challenge; student-faculty interaction; and support for learners.

The CCSSE benchmarks together reflect a “model of effective educational practices” (compare to Marti, 2008, p. 2); thus, it seemed plausible that an institution scoring favorably on one benchmark could also score favorably on other benchmarks. From a statistical perspective, that means CCSSE benchmarks could be multicollinear. We examined this possibility in two ways. First, we reviewed multicollinearity statistics and standardized residuals. This review resulted in two cases with excessive residual values ( $> \pm 3.29$ ) (Tabachnick & Fidell, 2006), so we removed them from the analytic file. The result from this decision is that tolerance and variance inflation factor (VIF) values are well-within acceptable levels of  $> .2$  and  $< 4.0$ , respectively (Garson, 2012). Second, we examined multicollinearity diagnostics and inter-variable correlation. This review indicated eight of 14 dimensions with condition indices greater than 15; however, among these dimensions, no two variables within a dimension had correlations greater than .50 (Garson, 2012; Tabachnick & Fidell, 2006). Given the results of these two approaches, we concluded that multicollinearity is not an issue for our analysis, and thus our regression coefficients are not biased.

### Limitations

A limitation of this study is that IPEDS graduation rate data measure only first-time, full-time students at a college who graduate at the same institution within three years, while CCSSE is administered in the spring term to all college students. Thus, the student responses used to create institutional-level student engagement benchmarks are not necessarily from the same students who would be counted in the IPEDS graduation rate data. This limitation resulting from access to aggregate data only on a national basis is widely applicable to most educational studies because the nation’s postsecondary institutions lack a student unit record data system that could be used by researchers to explore patterns of student progress and completion in college more precisely. The consequence of this limitation is that researchers have to develop and use proxy measures to indirectly assess student progress (Ewell & Jones, 1993). Accordingly, the results from this analysis should be considered a proximate estimate of the relationship between student engagement and graduation rates.

## RESULTS

Table 1 presents a summary of institutional characteristics for the community colleges composing our study, and it shows how these compare to public two-year degree-granting institutions in the United States. This table excludes all private colleges because the vast majority (96%) of CCSSE participants were public two-year institutions. With respect to student characteristics, CCSSE colleges tended to be much larger in total enrollment, full-time, and part-time enrollment; and they have a slightly higher percentage of Hispanic and nonresident alien students but a lower

TABLE 1  
2007 Institutional Characteristics for Public Associate Degree-Granting Colleges: CCSSE Participants  
Versus Nonparticipants

<i>Institutional Characteristic</i>	<i>CCSSE Student Participants (N = 162,394)<sup>a</sup></i>	<i>CCSSE Institutions (N = 249)<sup>b</sup> Mean</i>	<i>Non-CCSSE Institutions (N = 805)<sup>b</sup> Mean</i>	<i>All Public Institutions (N = 1,053) Mean</i>
Institutional student enrollment				
Total enrollment***		8131.31	5737.47	6304.08
Full-time equivalent enrollment: Fall 2007***		4816.40	3414.86	3746.59
Full-time enrollment***		3090.76	2230.38	2434.02
Part-time enrollment***		5040.55	3507.09	3870.05
Percent of total enrollment that are:				
White, non-Hispanic	62.3	65.88	64.03	64.47
Black, non-Hispanic*	11.3	12.05	15.00	14.30
Hispanic*	14.0	11.43	9.38	9.86
Asian or Pacific Islander	5.7	3.43	4.00	3.87
American Indian or Alaskan Native	1.5	.96	1.58	1.43
Race/ethnicity unknown	4.3	4.98	5.17	5.13
Nonresident alien***	—	1.19	.74	.85
Women	59.2	58.54	58.89	58.81
Under 18	—	9.07	8.96	8.98
18–24*	68.0	52.92	50.86	51.35
25–64**	31.6	37.31	39.30	38.83
Over 65	.4	.59	.83	.77
Receiving any grant aid*		44.85	48.28	47.45
Receiving Pell grant		28.57	29.60	29.35
Current year GRS cohort as a percent of entering class***				
Attending full-time	69.7			
Attending first semester	11.0			
Completed 1–29 credits	53.8			
Completed 30+ credits	35.2			
Took Developmental Math or English	47.7			
English is first language	85.7			

<sup>a</sup>Source: CCSSE 2007.

<sup>b</sup>IPEDS Data Center: Fall 2007.

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$  (Differences examined for IPEDS derived data only).

percentage of Black students. Students 18–24 years of age tended to also be overrepresented at CCSSE colleges, but those 25–64 years of age were somewhat underrepresented. Lastly, fewer of the students attending CCSSE colleges received any type of grant aid financial assistance.

### Correlations: The Relationship Between Student Engagement and IPEDS Graduation Rates

As shown in Table 2, bivariate correlation analysis indicated that three of the five student engagement benchmarks were correlated to a statistically significant degree with IPEDS graduation rates

TABLE 2  
Correlations Between 2009 IPEDS Graduation Rates With Weighted and Unweighted CCSSE Benchmark Scores

	<i>CCSSE Benchmark (and Number of Benchmark Variables Significantly Correlated With Respective Graduation Rate)</i>				
	<i>Active &amp; Collaborative Learning (7 Variables)</i>	<i>Student Effort (8 Variables)</i>	<i>Academic Challenge (10 Variables)</i>	<i>Student-Faculty Interaction (6 Variables)</i>	<i>Support for Learners (7 Variables)</i>
Weighted graduation rate: All students					
Total cohort	.25*** (6)	.05 (5)	.01 (2)	.22*** (2)	.19** (5)
Men	.29*** (6)	.06 (3)	.05 (3)	.23*** (3)	.17** (6)
Women	.23*** (6)	.08 (4)	.09 (2)	.16** (2)	.18** (4)
White, non-Hispanic	.21*** (5)	-.03 (3)	.07 (1)	.23*** (2)	.12* (3)
Black, non-Hispanic	.03 (0)	.04 (1)	.04 (1)	.09 (2)	.12‡ (2)
Hispanic	.15* (3)	-.06 (0)	-.02 (0)	.18** (3)	-.01 (1)
Asian/Pacific Islander	.06 (1)	-.03 (1)	-.04 (0)	.06 (0)	.05 (0)
American Indian or Alaskan Native	.15* (3)	.09 (1)	.12 (3)	.21*** (2)	.17** (3)
Unweighted graduation rate: Full-time students only					
Total cohort	.22*** (4)	-.04 (3)	.08 (3)	.17** (3)	.20*** (5)
Men	.26*** (5)	.00 (2)	.02 (2)	.20*** (2)	.18** (4)
Women	.20** (4)	-.03 (2)	.06 (1)	.11‡ (2)	.18** (5)
White, non-Hispanic	.18** (4)	-.12* (2)	.05 (2)	.19** (3)	.15* (3)
Black, non-Hispanic	.05 (0)	.06 (1)	.08 (2)	.06 (2)	.08 (0)
Hispanic	.16** (3)	-.08 (0)	.05 (1)	.16** (3)	.02 (2)
Asian/Pacific Islander	.10 (1)	.02 (1)	.04 (0)	.09 (1)	.08 (2)
American Indian or Alaskan Native	.14* (2)	.11 (1)	.09 (0)	.18** (3)	.18** (4)

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$ , ‡ $p < .10$ .

for the institutions participating in this study: benchmarks were active and collaborative learning, student-faculty interaction, and support for learners. Additionally, we examined correlations between student engagement benchmarks and institutional graduation rates for specific groups of students. Bivariate correlations were statistically significant for both men's and women's graduation rates and for graduation rates of Whites, non-Hispanics, Hispanics, and American Indian/Alaskan Natives. However, these bivariate correlations did not hold for graduation rates of Black, non-Hispanics, or Asian/Pacific Islanders. While none of the benchmarks correlated significantly with graduation rates for Black and Asian/Pacific Islander students, an analysis of the individual variables composing each benchmark revealed that a few items did correlate with their respective graduation rates. (These data are not reported in this article.)

The pattern of correlations was also consistent across the weighted and unweighted CCSSE benchmark scores. However, the magnitude of the correlations was marginally higher (.01-.05) for the active and collaborative learning and student-faculty interaction benchmarks for the weighted scores, but it was lower (.0-.03) for the support for learners benchmark in comparison to the correlations for the unweighted scores. The strongest correlation was between the men's

graduation rate and the active and collaborative benchmark for all students (weighted) and for full-time students only (unweighted),  $r = .29$  and  $r = .26$  respectively. This was closely followed for the total cohort. Correlations ranged from .14 to .29.

### Regression Analyses: The Role of Student Engagement in Predicting IPEDS Graduation Rates

The first regression analysis assessed the impact of student engagement (Block 2) on IPEDS graduation rates for all students while controlling for institutional characteristics (Block 1). As previously noted, this analysis was based on weighted CCSSE benchmark scores for all students participating in CCSSE including full- and part-time students. As shown in Table 3, the regression model accounted for 32% of the variance in graduation rate,  $F(13, 248) = 8.39$ ,  $p < .001$ ,  $R^2 = .32$ , adjusted  $R^2 = .28$ . Results indicated that among Block 1 variables, the percentage of Black ( $\beta = -.30$ ), Hispanic ( $\beta = -.30$ ), and of developmental students ( $\beta = -.20$ ) attending the institution negatively predicted graduation rate; whereas the percentage of Asian/Pacific Islander students ( $\beta = .21$ ) positively predicted graduation ( $p < .01$ ). Block 1 accounted for 24% of the total variance. The single statistically significant predictor in Block 2 (student engagement) was the support for learners benchmark ( $\beta = .22$ ); however, the active and collaborative learning benchmark approached statistical significance. This block accounted for 8 % of the total variance ( $p < .01$ ).

The second regression analysis assessed the relationship of student engagement (Block 2) and graduation rates for full-time students only while controlling for institutional characteristics (Block 1). The analysis was based on the unweighted benchmark scores of full-time students participating in CCSSE. As shown in Table 3, the final regression model accounted for 40% of the total variance in graduation rate,  $F(13, 244) = 12.06$ ,  $p < .001$ ,  $R^2 = .40$ , adjusted  $R^2 = .37$ . Similar to Block 1 in the regression model above, the percentage of Hispanic ( $\beta = -.31$ ), Black ( $\beta = -.27$ ), and of developmental students ( $\beta = -.18$ ) attending the institution negatively predicted graduation rate; whereas the percentage of Asian/Pacific Islander students attending the college ( $\beta = .23$ ) positively predicted graduation ( $p < .01$ ). Neither college size nor the degree of urbanicity had an effect on graduation rate. With respect to variables in Block 2, which accounted for 8% of the variance ( $p < .01$ ), two of the five student engagement benchmarks significantly predicted IPEDS graduation rates: active and collaborative learning ( $\beta = .30$ ) and support for learners ( $\beta = .22$ ). In sum, the CCSSE benchmarks contributed eight percentage points of the overall explanatory power in this model ( $R^2 = .40$ ); and both the active and collaborative learning and the support for learners benchmarks were significant and positive predictor of graduation rates. Put another way, 20% of the explanatory power of the regression model is attributed to the CCSSE benchmarks of institutional student engagement.

## DISCUSSION AND IMPLICATIONS FOR COMMUNITY COLLEGE PRACTICES AND POLICIES

The results above provide support for the salience of student engagement as an important predictor of college completion. Student engagement is statistically associated with institutional graduation rates; in particular, the CCSSE benchmarks of active and collaborative learning and

TABLE 3  
The Impact of Institutional Characteristics and Student Engagement on 2009 Community Colleges IPEDS  
Graduation Rates

Variable	Model 1				Model 2			
	B	SE	$\beta$	t	B	SE	B	t
Weighted graduation rate: All students								
Constant	37.31	10.94	3.41***	-18.14	16			-1.14
Block 1: Institutional characteristics								
Percentage full-time, 2009	8.4	6.65	.08	1.26	1.74	6.66	.02	.26
Percentage developmental	-23.4	10.87	-.10	-2.15*	-36.86	11.5	-.20	-3.2**
Percentage women	-.05	.12	-.03	-.45	-.02	.13	-.01	-.17
Percentage Asian/Hawaiian/Pacific Islander	.51	.11	.29	4.65***	.38	.12	.21	3.05**
Percentage Black/African American	-.25	.07	-.20	-3.42**	-.28	.07	-.30	-3.90***
Percentage Hispanic/Latino(a)	-.17	.06	-.20	-2.69**	-.24	.07	-.30	-3.58***
College size	-1.03	.97	-.10	-1.06	.72	1.01	.05	.72
Urbanicity	1.18	.98	.08	1.21	.88	.96	.06	.91
Block 2: Student engagement benchmark								
Active and collaborative learning					.46	.28	.15	1.67
Student effort					-.21	.30	-.10	-.68
Academic challenge					.22	.32	.06	.70
Student-faculty interaction					.06	.33	.02	.17
Support for learners					.68	.26	.22	2.62**
				$R^2 = .24$		$R^2 \text{ change} = .08$		$R^2 = .32$
Unweighted graduation rate: Full-time students only								
Constant	42.79	9.40		42.79	7.18	14.45		.50
Block 1: Institutional characteristics								
Percentage full-time, 2009	9.85	5.74	.11	9.85	7.49	5.63	.08	1.33
Percentage developmental	-16.70	8.98	-.12	-16.70	-26.52	9.65	-.18	-2.75**
Percentage women	-.26	.10	-.14	-.26	-.14	.11	-.08	-1.27
Percentage Asian/Hawaiian/Pacific Islander	.50	.09	.32	.50	.36	.10	.23	3.44***
Percentage Black/African American	-.26	.06	-.26	-.26	-.27	.06	-.27	-4.60***
Percentage Hispanic/Latino(a)	-.17	.05	-.21	-.17	-.25	.06	-.31	-4.48***
College size	-.56	.84	-.05	-.56	.78	.84	.06	.93
Urbanicity	1.68	.85	.13	1.68	.81	.83	.06	.98
Block 2: Student engagement benchmark								
Active and collaborative learning					.83	.23	.30	3.57***
Student effort					-.34	.26	-.11	-1.33
Academic challenge					-.19	.27	-.05	-.70
Student-faculty interaction					-.24	.26	-.08	-.94
Support for learners					.60	.20	.22	3.00**
				$R^2 = .33$		$R^2 \text{ change} = .08$		$R^2 = .40$

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$ .

support for learners have impact. Additionally, several items that together represent these two benchmarks are also statistically associated with institutional graduation rates: four of seven items representing active and collaborative learning, and five of seven items representing support for learners. Exploring this finding further reveals both institution-wide and classroom-based behaviors to consider as potential high-impact educational practices.

With regard to active and collaborative learning, faculty should consider incorporating or expanding the effective instructional and pedagogical practices listed below. These practices reflect the four underlying items in the active and collaborative learning benchmark that were statistically correlated with institutional graduation rates:

- Requiring students to work together on projects during class.
- Encouraging student to work with classmates outside of class to prepare class assignments.
- Creating opportunities for students to tutor each other, either voluntary or paid.
- Committing faculty time for students to discuss ideas from readings or classes with instructors outside of class.

There are many ways to incorporate these practices in the classroom and beyond. For example, assignments could require groups to complete rather than individual students, and time in class and outside class could be set aside for this collaborative approach to learning. Learning communities are a popular way for faculty to collaborate with each other and establish classroom collaborative practices for students. Emergent evidence from a randomized control trial of learning community participants at an urban community college in the mid-Atlantic region suggests that learning communities enable students to complete developmental education courses more successfully, earn more college credits, and earn a college credential (Sommo, Mayer, Rudd, & Cullinan, in [press](#)). Supplemental instruction represents another widely used strategy for peer-to-peer teaching and learning; and faculty can bring their office hours to their students by spending time in academic support centers or by joining students during lunch or dinner breaks in the cafeteria or food courts. There remains a need for additional research on these and other specific instructional practices and their impact on student success and college completion. However, the evidence from this analysis suggests that effective instructional practices will need to incorporate principles of active and collaborative learning.

With regard to support for learners, community colleges need to reconsider how they structure and deliver student supports, both academic and nonacademic, and including financial aid. This analysis suggests the following policy and practice areas for institutional leaders to consider that can support the college completion agenda:

- What are the specific supports students need to help them succeed at community college, and how can we better provide these supports?
- How can community colleges better help students cope with nonacademic responsibilities such as work and family?
- What kinds of supports should community colleges provide to enable students to thrive socially?
- How can community colleges provide more effectively the financial support students need to afford college?
- How can colleges increase the frequency by which students receive advising services for academic and career planning?

These questions speak directly to institutional leadership and institution-wide commitment to creating an environment where support for learners is part of the college-culture, and the support is infused in the behavior and attitudes of faculty, staff, and administrators. This analysis suggests that students who attend community colleges that provide a supportive environment through academic advising; nonacademic supports (e.g., counseling); and financial supports are more engaged—and more engagement around the support for learners' benchmark is predictive of higher institutional graduation rates.

The challenge for community colleges is identifying and enacting policies and practices around academic and nonacademic support services that are proactive rather than waiting for students to seek them. For example, recent research from the Community College Research Center suggests that students who enroll in structured programs of study early on are more likely to earn credentials (Jenkins & Cho, 2012); thus, one way for community colleges to revamp their academic support structure is to have an advising process that is more prescriptive for students. More prescriptive advising could also include career planning and requiring regular advisor-student engagement throughout a student's academic career. Community colleges may also need to find innovative ways to support students financially. This can be done through work-study or other on-campus work opportunities so that external work responsibilities are less likely to distract students from their academic coursework. Several research studies have shown a significant negative relationship between the numbers of hours worked and GPA for students who worked more than 15 hours a week (e.g., Bozick, 2007; Dundes & Marx, 2006). Researchers have also found that students who worked 20 or fewer hours on campus had higher grades than students who did not work or who worked more than 20 hours per week (Pike, Kuh, & Massa-McKinley, 2008).

## CONCLUSION

This analysis provides empirical support that student engagement—specifically as it is experienced through active and collaborative learning and in a supportive institutional environment for learners—can result in higher graduation rates. While additional research can be useful in documenting more precisely what high-impact educational practices look like, community college leaders committed to the completion agenda need not wait for such evidence to act. Enabling and encouraging faculty to incorporate effective active and collaborative learning practices in their classroom and beyond, and addressing institution-wide policies and practices that provide more support for learners, can yield better student engagement, and thereby improve student success.

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