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High-Impact Practices: Evaluating Their Effect on College Completion

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Abstract

Since the Association of American Colleges and Universities (AAC&U) introduced high-impact practices (HIPs) in 2007, scholars have argued that students' involvement in these programs is associated with a range of positive outcomes. Namely, participation in HIPs is thought to promote student retention and help close achievement gaps between historically marginalized populations and advantaged peers. However, few have used a longitudinal approach to determine if HIP participation is related to college completion while accounting for pre-college variables. This study used data from the Educational Longitudinal Study (ELS) to analyze the impact of HIP participation on students' likelihood of completing college within six years, controlling for socioeconomic status, high school math and reading scores, and high school involvement. Results suggested that students involved in HIPs were more likely to complete college within six years compared to uninvolved peers, but found no evidence of compensatory effects among students who were involved with HIPs.

Keywords

high-impact practices, college completion, student engagement, student involvement, student retention, students of color, first-generation college students

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The number of students attending college in the United States has gradually increased over the past twenty-five years (National Center for Education Statistics [NCES], 2018a). Yet graduation rates during this same period have largely remained stagnant. Between 1997 and 2015, the average six-year college completion rate in the United States increased by only 1.6 percentage points to 53.8%, while the average time to complete a degree has lengthened from the 1980s onward (Bound et al., 2007; National Center for Higher Education Management Systems, 2020).

These completion statistics are particularly concerning for students of color and first-generation students (Cataldi et al., 2018; NCES, 2018b). On the one hand, higher education has become more accessible to these historically marginalized populations. From 1976 to 2016, students of color grew from 16% to 47% of all undergraduate students (Fry & Cilluffo, 2019; Rankin & Reason, 2005), while 24% of college students during the 2015–2016 school year had parents with no postsecondary education (RTI International, 2019). These students continue to face a range of obstacles in terms of accessing college, navigating hostile campus environments, and finishing their degrees (Harper & Hurtado, 2007; Rankin & Reason, 2005; Wilbur & Roscigno, 2016). Recent data illustrate that 64% of White students and 74% of Asian students graduate college in six years, compared to 54% of Latinx students, 40% of African American students, and 39% of American Indian/Alaskan Native students (NCES, 2019). Approximately one-third of first-generation students leave college within three years without finishing their degree, compared to 14% of continuing-generation peers (Cataldi et al., 2018). Although it is encouraging to see more students from diverse backgrounds matriculate, college access alone does not remedy equity gaps between advantaged and disadvantaged populations.

High-impact practices (HIPs) offer a potential way to boost completion rates, ensure quality, and close the completion gaps between minoritized and advantaged students. Since their introduction by the Association of American Colleges and Universities (AAC&U) in 2007, there has been a push for more institutions to adopt HIPs and make them more widely available. (Kilgo et al., 2015; Kuh, 2008; Kuh & O'Donnell, 2013; Zhao & Kuh, 2004). Scholars have argued that HIP participation is especially beneficial to historically disadvantaged populations, because of the impact on students' self-efficacy, perceptions of their learning, and institutional commitment (Conefrey, 2018; Dagley et al., 2016; Finley & McNair, 2013; Thomas et al., 2018). Nevertheless, there is scant evidence concerning the relationships between involvement in HIPs and degree completion (Johnson & Stage, 2018). Scholars have also questioned the degree to which all student populations, particularly those with limited resources and cultural capital, are able to access these opportunities (Finley & McNair, 2013). Thus, the purpose of this study was to examine which students have access to

high-impact practices and the degree to which HIP participation predicts college completion.

Literature Review

In 2007 AAC&U introduced ten educational practices believed to be essential components of a liberal education in the 21st century. These included 1) first-year seminars and experiences, 2) common intellectual experiences, 3) learning communities, 4) writing intensive courses, 5) collaborative assignments and projects, 6) undergraduate research, 7) diversity/global learning, 8) service learning/community-based learning, 9) internships, and 10) senior capstone courses and projects (AAC&U, 2007). Working in conjunction with AAC&U, Kuh (2008) termed these "high-impact educational practices" (HIPs) and noted how student involvement with HIPs was associated with higher grades, higher retention rates, deeper learning, and greater personal development.

The structure of a HIP helps explain why these practices are effective. To be truly considered high-impact, a program must adhere to the following six characteristics: 1) substantial time and effort directed toward an educational task; 2) shared experiences between the student, peers, and faculty; 3) directives for students to step outside their comfort zone and engage diverse worldviews; 4) frequent high-quality feedback; 5) opportunities for students to apply what they are learning to new settings; and 6) conditions that encourage students to synthesize what they are learning in ways that change their overall worldview and level of self-awareness (Kuh, 2008; Tukibayeva & Gonyea, 2014). When an educational program is designed and delivered in accordance with these pedagogical considerations, students are more likely to understand the significance of what they are learning, make meaningful connections between disparate pieces of information, and be more engaged with their college experience (Brownell & Swaner, 2010; Kuh, 2008; O'Neill, 2010; Tukibayeva & Gonyea, 2014).

High-impact practices that adhere to the characteristics listed above offer a strong means of promoting student engagement (Bonet & Walters, 2016; Gonyea, 2008; Kuh, 2008; Pike et al., 2011; Zhao & Kuh,2004). Engagement is a two-part construct that comprises the time and effort students exert toward meaningful campus activities, as well as how institutions foster students' sense of belonging on campus (Kuh, 2009). Factors that indicate students' engagement include the degree to which they feel challenged by academics, the quality of their relationships with diverse peers, interactions with faculty, and perceptions of the surrounding campus environment (Kuh, 2009; National Survey of Student Engagement, 2018). Higher education leaders have provided substantial documentation for the relationship between student engagement and desired college outcomes (AAC&U, 2002, 2005, 2007; Astin, 1999; Berger & Milem, 1999; Joint Task Force on Student Learning, 1998; Kuh, 2009; Kuh et al., 2008; National Association of Student Personnel Administrators & The American

College Personnel Association, 2004; Pascarella & Terenzini, 2005; Tinto, 1998). Thus, engagement is believed to be a mechanism that explains the relationship between HIP participation and desired college outcomes (Kuh, 2009; Sweat et al., 2013). These include liberal arts learning outcomes (Brower & Inkelas, 2010; Finley & McNair, 2013; Kilgo et al., 2015), heightened academic performance (Bonet & Walters, 2016; Kuh, 2008), and life-long learning orientations (Padgett et al., 2013). Participation in HIPs has also been positively associated with student persistence and retention (Brownell & Swaner, 2010; Dagley et al., 2016; Kilgo et al., 2015; Provencher & Kassel, 2019; Sweat et al., 2013; Thomas et al., 2018). Benefits associated with HIP participation apply to a wide range of students from diverse backgrounds. Yet gains have been especially pronounced for historically disadvantaged groups, such as students of color and first-generation students (Finley & McNair, 2013; Kuh, 2008).

As noted earlier, students of color and first-generation students face unique challenges throughout the course of their college experience. For students of color, the prevalence of hostile racial climates has been shown to negatively affect learning, achievement, and sense of belonging (Chang et al., 2011; Harper & Hurtado, 2007; Hurtado & Carter, 1997; Johnson et al., 2014). First-generation students are more likely to balance schoolwork with competing demands such as family commitments, off-campus work, or commuting (Stebleton & Soria, 2013; Wilbur & Roscigno, 2016). Additionally, they may lack access to the same resources or cultural capital as their continuing-generation peers, impacting their sense of belonging, ability to navigate the institution, and engage with campus activities (Stebleton et al., 2014; Stebleton & Soria, 2013; Wilbur & Roscigno, 2016).

These factors can place students of color and first-generation students at a disadvantage relative to their White and continuing-generation peers when it comes to feeling a connection with their campus community, academic success, and college completion. Students of color and first-generation students are among those least likely to graduate within six years of starting their degree (Cataldi et al., 2018; Engle & Tinto, 2008; NCES, 2018b; Wilbur & Roscigno, 2016). However, one of the most notable characteristics of HIPs is that they appear to disproportionately benefit students who come to college from disadvantaged backgrounds.

Kuh (2008) demonstrated that HIPs had a positive association with second-year rates of retention for all students who participated in these practices. Yet for Black participants, the retention boost was significantly higher than gains experienced by White students (Kuh, 2008). Similarly, participation in HIPs was associated with higher grades for all participants, but gains experienced by Hispanic students were significantly greater than those among their White peers (Kuh, 2008). This phenomenon is known as the "compensatory effect" (Kuh, 2008, p. 18) or "equity effect" (Finley & McNair, 2013, p. 19) to denote how engagement with HIPs can help close achievement gaps for students who

come to college from historically disadvantaged backgrounds. Ensuing research has provided added support for the legitimacy of such effects for underserved and disadvantaged students who participate in HIPs (Brownell & Swaner, 2010; Finley & McNair, 2013; Pascarella & Blaich, 2013). Early involvement in HIPs has been shown to help first-generation students transition to the college environment, improving their sense of belonging and self-efficacy at a time when they are at increased risk of departure (Conefrey, 2018). In other words, while involvement in HIPs benefits all students, students who come to college from historically disadvantaged backgrounds reap more benefits through their participation (Finley & McNair, 2013; Kuh, 2008).

In the last decade, a growing amount of research also demonstrates that men are less likely to earn a college degree compared to women, which has been true, on average, since the 1980s (Buchmann et al., 2008). There is evidence that women's historical advantage in degree completion dates back even farther for students of color and is larger among students from lower socioeconomic backgrounds (DiPrete & Buchmann, 2013; McDaniel et al., 2011). Despite this growing body of evidence, less research examines the experiences of men in college or the effects of engagement in HIPs on men's outcomes.

As students participate in a greater number of HIPs, they accrue additional educational benefits (Finley & McNair, 2013). Students self-reported significant gains in measures of deep learning, general education, practical competence, and personal/social development for every two additional practices they were involved with (Finley & McNair, 2013). Due in part to these findings, scholars have recommended that higher education institutions allocate additional resources to offer more HIPs and encourage students from disadvantaged backgrounds to participate in these programs across multiple years of college (Conefrey, 2018; Finley & McNair, 2013; Kilgo et al., 2015; Kuh, 2008; Kuh & O'Donnell, 2013; Zhao & Kuh, 2004).

Despite the abundance of scholarship promoting the benefits of HIPs, there are questions about what students engage in these practices and if participation affects students' college completion. A great deal of existing research on HIPs comes from the National Survey of Student Engagement (NSSE) (Finley & McNair, 2013; Garvey et al., 2018; Kuh et al., 2008). Although NSSE data provides insight related to a range of outcomes concerning student participation in HIPs, the cross-sectional nature of this study does not control for pre-college variables of students who choose to participate in these programs. In other words, it is possible that certain HIPs attract more high achieving students with the resources necessary to participate. This means that the benefits accrued through participation may be indicative of the type of student who would choose to get involved with these educational programs, not the program itself. To better understand the effect of high-impact practices and if students from diverse backgrounds participate in different practices at different rates, one

must control for students' socioeconomic background, high school academic ability, and high school co-curricular participation.

There is also a need for scholarship that explores whether participation in HIPs translates to degree completion. Related to this point, scholars must examine if HIP participation boosts disadvantaged students' graduation rates in ways that are similar to the compensatory effects seen for learning and retention measures. Although HIPs have been shown to improve student retention (Provencher & Kassel, 2019; Thomas et al., 2018), few have questioned if these practices bolster completion. Recognizing this distinction, Johnson and Stage (2018) looked at the availability of HIPs across institution types and corresponding relationships to graduation rates. The authors found that incorporating more high-impact practices into the curriculum did not necessarily improve institutional four- and six-year graduation rates (Johnson & Stage, 2018). Kuh and Kinzie (2018) found this claim misleading, because the mere availability of HIPs across the institution is a poor measure of their impact on student-level outcomes such as engagement and completion. Instead, they stressed that a more compelling approach would be to compare graduation and persistence measures between students who participated in HIPs and students who did not, while simultaneously considering students' engagement in these practices and controlling for pre-college variables (Kuh & Kinzie, 2018).

Additionally, prior studies that examined the effects of HIP participation on completion have sampled at the institutional level from individual programs, thus limiting generalizability (Dagley et al., 2016; Huber, 2010). Others have leveraged a longitudinal pretest/posttest approach to measure the effects of HIP participation on student outcomes (Kilgo et al., 2015; Padgett et al., 2013), but relied on data that did not include information about graduation rates (Center of Inquiry, 2020). The current study overcomes these limitations by using a longitudinal, nationally-representative dataset that examines how pre-college experiences, socioeconomic background, and participation in high-impact practices are related to college completion, and follows students through at least the first six years of their college education. Research questions included the following:

1. Do students with different demographic backgrounds (gender and racial identity, first-generation status) participate in high-impact practices at different rates?
2. Do high-impact practices (internships, student-faculty research, study abroad, and community-based projects) affect students' college completion?
3. Do high-impact practices have greater effects on college completion for underrepresented students (students of color, men[1], first-generation college students)?

Methods

This study used data from the 2002 Educational Longitudinal Study (ELS) to analyze the impact of participating in four HIPs on students' likelihood of completing college. The ELS, administered by the NCES, began following a nationally representative sample of 10th graders in 2002, and resurveyed students in 2004 (their senior year of high school), 2006 (two years post-high school), and 2012 (at approximately age twenty-eight). We restricted our sample to students in the high school graduating class of 2004 who entered a four-year college or university within one year of graduating from high school, in order for the sample to be comparable to the sample utilized in NSSE (the data examined in the majority of current research on the effects of high-impact educational practices). Our final analytic sample included 4,548 students.

The main dependent variable was whether a student completed a bachelor's degree by the age of twenty-eight. During the final ELS survey in 2012, students who had enrolled in post-secondary education at any point were asked if they participated in any of four HIPs during college that mapped directly to AAC&U's HIPs. Responses were coded "yes" (1) or "no" (0). The main independent variables were whether a student participated in the following activities: 1) Internship, co-op, field experience, or student teaching; 2) Research project with a faculty member outside of a course; 3) Study abroad; or 4) Community-based project (i.e., service learning). Descriptive statistics for all variables are presented in Table 1.

Additional independent variables included student self-reported gender (1 = female), race/ethnicity (African American, Latinx, Asian American, Multiracial or Other, and White), first-generation student status (whether either parent completed a bachelor's degree), socioeconomic status, high school academic ability, high school co-curricular involvement, and college institution type. Socioeconomic status was measured as a composite of parents'/guardian's education, occupational prestige, and family income as reported by the parent/guardian(s); the composite variable was constructed by NCES. High school academic ability was measured as a composite score from standardized tests administered by ELS in math and reading. High school co-curricular involvement was measured as students' self-reported cumulative participation in up to eleven co-curricular activities as reported in the students' senior year. Activities included intramural sports, varsity sports, band, theater, high school government, honors societies, newspaper, service clubs, academic clubs, hobby clubs, or vocational clubs. College institution type measured whether the student enrolled in a public not-for-profit, private not-for-profit, or for-profit institution.

To answer the research questions, we first examined overall participation in HIPs using descriptive statistics, as well as whether there were demographic differences in HIP participation by using Pearson's chi-squared test of

Table 1. Participant Demographics.

	%		
Dependent Variable			
Completed Bachelor's Degree	71.3		
Involvement in High-Impact Practices			
Internship	56.4		
Undergraduate Research	18.1		
Study Abroad	16.6		
Community-Based Project	24.5		
Co-Variates			
Female	55.8		
Race/Ethnicity			
White	67.2		
African American	9.3		
Latinx	7.7		
Asian American	11.4		
Other Race or Multiracial	4.3		
First-Generation Status	38.4		
Talk to Faculty Outside of Class	88.5		
Institution Type			
Public, Not-for-Profit	64.5		
Private, Not-for-Profit	33.7		
For-Profit	1.9		
	M	*SD*	Range
Socioeconomic Status	0.42	0.69	−2.11–1.82
High School Math & Reading Score	57.40	7.90	25.35–79.84
High School Co-Curricular Participation	2.94	1.80	0–11

independence. Next, we utilized logistic regression to analyze the effects of HIP participation on completing a bachelor's degree. We examined interaction effects to determine if the effects of participating in HIPs on college completion varied by gender, race/ethnicity, or first-generation student status.

Results

There was great variation in the percentage of students participating in the four HIPs examined in this study. Among our sample, 16.6% of students participated in study abroad, 18.1% participated in research with a faculty member, 24.5% participated in a community-based project, and 56.4% participated in an internship, co-op or field experience during their college experience (see Table 1). There were significant differences with regard to which student populations participated in each HIP.

Table 2. HIP Participation by Demographic Characteristics.

	Internship	Research	Study Abroad	Community-Based Project
Female	61.5%	18.5%	20.5%	29.5%
Male	49.9%	17.6%	11.6%	18.3%
X^2	61.9***	0.69	63.48***	75.5***
Race/ethnicity				
African American	48.3%	16.3%	5.7%	22.8%
Latinx	53.4%	17.3%	16.5%	22.2%
Asian American	54.6%	25.8%	11.5%	24.4%
Other Race/Multiracial	50.3%	22.8%	10.2%	27.4%
White	58.6%	16.8%	19.4%	24.9%
X^2	22.4***	28.1***	69.5***	2.83
First Generation	51.7%	14.2%	10.2%	21.0%
Non-First Generation	59.3%	20.5%	20.6%	26.8%
X^2	25.6***	29.1***	83.7***	19.7***

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

Table 2 presents the percentage of students who participated in each of the four HIPs by gender, race/ethnicity, and first-generation status. Pearson chi-squared tests were performed to test for statistically significant associations between each demographic characteristic and participation.

There were not statistically significant differences by gender in students participating in research with a faculty member. A statistically significantly higher percentage of women (61.5%) participated in internships or other job experiences than men (49.9%). Similarly, a higher percentage of women participated in study abroad (20.5% v. 11.6%), and community-based projects (29.5% v. 18.3%).

Students from different racial and ethnic backgrounds participated in community-based projects at similar rates. There were significant differences by race/ethnicity in participation in internships, research, and study abroad. White students had the highest percentage of participation in internships (58.6%) and study abroad (19.4%). Asian American students had the highest percentage of participation in research (25.8%). African American students had the lowest percentage of participation in internships (48.3%), research with a faculty member (16.3%), and study abroad (5.7%).

First-generation students had significantly lower participation in all four HIPs studied compared to continuing-generation students. The largest gap between these two groups was in study abroad; 20.6% of continuing-generation students participated in a study abroad experience compared to 10.2% of first-generation students. The smallest gap was in community-based

projects; 21% of first-generation students participated in community-based projects compared to 26.8% of continuing-generation students.

Table 3 presents the results of a logistic regression of students' participation in HIPs on bachelor's degree completion. Model 1 includes all of the independent variables except HIPs. Among our sample of the high school class of 2004 who entered a four-year college within a year of graduation, women were significantly more likely to complete a bachelor's degree than men by the year 2012 (aligning with trends from the past several decades, see Buchmann et al., 2008). These analyses did not show significant differences in bachelor's degree completion by race, net of other control variables. First-generation students were significantly less likely to complete a bachelor's degree. Students with higher socioeconomic backgrounds, high school math, and high school reading test scores were significantly more likely to complete a bachelor's degree. The same was true for students who participated in high school co-curricular

Table 3. Logistic Regression of High-Impact Practices on Bachelor's Degree Completion.

	Model 1			Model 2		
	b	S.E.	Odds Ratio	b	S.E.	Odds Ratio
High-Impact Practices						
Internship				0.99	0.08	2.70***
Undergraduate Research				0.28	0.11	1.32**
Study Abroad				0.67	0.13	1.96***
Community-Based Project				0.20	0.09	1.22*
Female (ref. male)	0.20	0.07	1.22**	0.03	0.07	1.03
Race/Ethnicity (ref. White)						
African American	−.024	0.12	0.79*	–0.19	0.12	0.83
Latinx	0.19	0.13	1.21	0.18	0.14	1.20
Asian American	0.17	0.12	1.18	0.17	0.12	1.19
Other Race or Multiracial	–0.30	0.16	0.74	–0.24	0.17	0.78
First-Generation Status	–0.28	0.10	0.76**	–0.27	0.10	0.76*
Socioeconomic Status	0.26	0.08	1.30***	0.19	0.08	1.21**
High School Math & Reading Score	0.05	0.01	1.05***	0.05	0.01	1.05***
High School Co-Curricular Participation	0.13	0.02	1.14***	0.09	0.02	1.09***
Talk to Faculty Outside of Class	0.65	0.10	1.91***	0.50	0.10	1.64***
Institution Type (ref. Public)						
Private, Not-for-profit	0.10	0.08	1.10	–0.04	0.08	0.96
For-Profit	–0.92	0.25	0.40***	–0.86	0.26	0.42**
Constant	–2.94	0.31	0.05***	–3.03	0.31	0.05***

*$p < .05$, **$p < .01$, ***$p < .001$
$n = 4{,}548$.

activities and talked to faculty outside of class.[2] Students attending private, not-for-profit institutions were as likely to complete a bachelor's degree as students from public institutions, but students attending for-profit institutions were significantly less likely to complete a bachelor's degree compared to students at public institutions.

Model 2 introduces HIPs into the regression. Net of students' demographic background and experiences, participation in all four of the HIPs significantly increased the likelihood of completing a bachelor's degree.[3] Students who participated in an internship or other career experience were 170% more likely to complete their bachelor's degree compared to students who were not involved in these practices (odds ratio = 2.70). With regard to community-based projects and undergraduate research, involved students were 22% and 32% more likely to complete their degrees compared to uninvolved peers, respectively (odds ratios = 1.22 and 1.32). Finally, students who participated in study abroad were 96% more likely to complete a bachelor's degree than students who did not (odds ratio = 1.96). These findings suggest participating in any of these four HIPs is positively associated with completing a bachelor's degree.

To answer our final research question, "Do high-impact educational practices have greater effects on college completion for underrepresented students?" we ran logistic regression models with interactions between each HIP and gender, race, and first-generation status. However, when examining the interaction terms, there were no significant differences in the effect of HIPs on college completion for any of these groups, net of other control variables (results available upon request).

Discussion and Limitations

This study answered three questions: 1) who participates in HIPs, 2) how do HIPs affect college completion, and 3) do HIPs have differential effects on students from different backgrounds. First, we found that participation in HIPs varied widely by practice – only 16.6% of students participated in study abroad while 56.4% participated in internships or career experiences. Participation also varied by demographic background. Higher percentages of women participated in internships, study abroad and community-based projects than men. Consistent with prior research (Finley & McNair, 2013; Kinzie, 2012; Yeh, 2018), lower percentages of first-generation students participated in all four HIPs studied. Involvement with study abroad reflected the largest gap between these students and their continuing-generation peers. This may be explained by the fact that study abroad requires intensive planning, guidance, and resource investment, which can discourage first-generation students from participating if they do not have available time or support from campus advisors (Finley & McNair, 2013). There were also racial differences in HIP participation across all practices, except for community-based projects.

Second, each of the four HIPs studied were associated with an increased likelihood of completing a bachelor's degree. Students who participated in internships or career experiences, study abroad, research with a faculty member, or a community-based project were significantly more likely to complete a college degree than students who did not participate in these activities. This finding fills a notable gap in the literature and complements the established relationships between HIP participation and student retention.

Third, we did not find that HIPs differentially affected the college completion rates by gender, first-generation status, or racial background. These results were surprising because they contrast with prior claims, drawn from cross-sectional data, that HIPs may be more beneficial for underrepresented groups (Finley & McNair, 2013; Kuh, 2008). To be clear, HIP participation still had a positive effect on graduation rates for underrepresented students. Yet the compensatory effects of HIPs that apply to outcomes like students' perceptions of learning, academic achievement, and retention (Finley & McNair, 2013; Kuh, 2008) did not manifest with regard to college completion.

There are several limitations of this study that future research should address. First, ELS data only asked about students' experiences in four HIPs, so we were unable to address the effectiveness for all practices outlined by AAC&U. Future data collections should incorporate additional HIPs to better understand which are or are not effective. Second, this study is based on the high school graduating cohort of 2004. These students entered college before the AAC&U made recommendations about the importance of HIPs and before a solid body of evidence asserting the importance of HIPs was widely available. From examining our data, it was clear that institutions were using HIPs prior to the AAC&U's recommendations, but it is likely that they are more widespread now. Furthermore, asking students whether they participated in a HIP did not capture the quality of their experience or whether deep learning occurred. As stated earlier, scholars have posited that HIPs are effective because they increase a student's sense of engagement at their college or university, which in turn, effects success in college. The best way to maximize the potential benefits of HIPs is to ensure that practices are thoughtfully designed and implemented (Brownell & Swaner, 2010; Kuh, 2008; O'Neill, 2010; Tukibayeva & Gonyea, 2014). The structure of certain practices may differ in notable ways from one campus to the next, or even within a single institution. Our data did not include measures of students' feelings of engagement or look at how educators administered relevant practices. Thus, although we overcame several limitations of past efforts to study the effect of HIPs on completion, we were unable to address one of Kuh and Kinzie's (2018) most important recommendations. Future research can include attitudinal measures along with longitudinal data collection and control measures, to better determine the impact of engagement on student outcomes.

Implications for Policy and Future Research

Given the AAC&U's push for the adoption of HIPs, and the central role that engagement plays in many theories of student success, it is important to understand whether participating in HIPs actually increases college completion. This study suggests that each of the four HIPs examined are positively associated with students' college completion. Specifically, participating in an internship, study abroad, research with a faculty member, or a community-based project is associated with an increased likelihood of graduating with a bachelor's degree. The results presented from this study are important for higher education scholars to consider, as they refine theories of student engagement, retention, and college completion. Moreover, these findings can help policymakers and higher education administrators determine which HIPs are the most beneficial means to improve college completion rates as they make decisions about what practices to endorse and fund.

At the same time, stakeholders must recognize that students of color, first-generation students, and men are less likely to be involved with these practices. These are also the student populations least likely to graduate within six years, which implies a mismatch between those who stand to benefit most from HIP participation and those who are actually involved. For example, in this study, internships were the practice most highly correlated with graduation. Yet students of color, first-generation students, and men participated at significantly lower rates than their peers. This means that many of the students who were most at-risk of not completing college did not take advantage of an experience believed to mitigate that risk. Based on the literature review presented earlier, one explanation for this phenomenon may be that sociocultural and socioeconomic factors continue to discourage underrepresented students' participation in meaningful campus experiences.

In conclusion, this study showed that HIP participation improved graduation rates for all involved students, even though there was no evidence of a compensatory effect. Moving forward, higher education leaders must further leverage the potential for HIPs to boost completion rates by ensuring that these practices are designed and implemented in ways that are more available, more accessible, and more inclusive.

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Notes

1. We include men as an underrepresented population to reflect the fact that from the mid-1980s onward, men have comprised a minority of undergraduate students and college graduates. However, men as a group have not faced the same systemic barriers to college access that students of color and first-generation students experience (Buchmann, et al., 2008).
2. Variance inflation factors were examined to determine if multicollinearity was an issue in the models; it was not.
3. Models were also analyzed looking at the cumulative effect of participating in multiple high-impact practices on college completion and results were statistically significant. The odds of completing college are 1.81 times larger for each additional high-impact practice students participated in.

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