Journal of the Scholarship of Teaching and Learning, Vol. 25, No. 1, March 2025, pp.103-121.
doi: 10.14434/josotl.v25i1.36373

Measuring Student Success Using the High-Impact Practices Spectrum: Evidence for the Value of High Engagement Experiences

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Abstract: The High-Impact Practices (HIPs) Spectrum is a taxonomy for assessing and categorizing courses along a continuum based on elements of High Impact Practices (Marten et al., in press). This study provides quantitative evidence for the validity and impact of the HIPs Spectrum by analyzing seven years of enrollment data in a Midwestern regional comprehensive university School of Business. Along the HIPs Spectrum, courses are categorized as High Impact Practice (HIP), High Engagement Experience (HEE), or Neither. Labeling the medium-intensity HEE courses allows for a detailed analysis of their effect on students, which is a gap in previous literature. Results show supportive evidence for both HIP and HEE courses significantly increasing student persistence, and HEEs significantly decreasing time to graduation in comparison with Neither courses. Students earned an average of half a letter grade higher in HIP courses than in Neither courses. Surprisingly, HEE courses had a larger positive effect on students than HIP courses for some variables, justifying the importance of researching and implementing HEEs as a pedagogical tool to support student success. Classification of courses along the HIPs Spectrum is now an important step in accurate measurement of how engaged learning affects students. As the HIPs Spectrum grows in use, it has the potential to shift how we classify, measure, and evaluate courses under the umbrella of High-Impact Practices.

Keywords: high-impact practices, high-engagement experiences, high-impact practices spectrum, student success, historically underserved students, regional comprehensive university

The High-Impact Practices (HIPs) Spectrum (Marten et al., in press) is a new classification taxonomy for courses that expands the traditional view of HIPs from a binary concept (e.g., not a HIP versus HIP) to a three-part continuum. This continuum introduces the High-Engagement Experience (HEE) as a middle ground for the courses that contain some of the universal elements (Kuh et al., 2013) of a HIP course, but not quite enough to fully qualify as a HIP course. Therefore, the HIPs Spectrum ranges from *Neither HIP nor HEE* at the beginning, to *HEE* in the middle, with *HIP* at the far end of the continuum. Using the HIPs Spectrum Course Classification Questionnaire (HSCCQ), (Marten et al., in press), we define HIPs as courses that contain a substantial amount of universal elements, which are high-quality learning activities or practices that foster student engagement and have been shown to have a beneficial impact on students (Kuh et al., 2013). Some examples of the high-quality universal

elements of HIPs include *high levels of performance expectations, a significant time and effort investment over an extended period of time, and faculty and peer interactions regarding substantive matters* (Kuh et al., 2013, p. 10). The HEEs are courses that have some of these high-quality universal elements, but not enough to qualify for a HIP. Neither courses have little to none of the high-quality universal elements.

The HIPs Spectrum (Marten et al., in press) allows researchers to study the impact of universal elements of HIPs by categorizing courses along a continuum based on the level of high impact, engaged learning in the course. Analysis of seven years of enrollment data in a Midwestern regional comprehensive university's School of Business show quantitative support for the implementation of the HIPs Spectrum, as well as quantitative evidence supporting the validity and impact of High Engagement Experiences (HEE), which fall in the middle of the HIPs Spectrum.

High Impact Practices

High Impact Practices (HIPs) engage students in experiential teaching methods to support learner retention and academic achievement. As a relatively new field of study within higher education, Kuh (2008) uses the term HIPs to describe hands-on courses such as First Year Seminars, Internships, Capstones, Service Learning, Undergraduate Research, and Study Abroad. Over the past 16 years, researchers have studied these course types and their impact on students (Brownell & Swaner, 2010; Finley & McNair, 2013; Fischer, et al., 2021; Johnson & Stage, 2018; Kilgo et al., 2015; Myers et al., 2019; Price, 2021), often through data from the National Survey of Student Engagement (NSSE) (Kuh, 2020). Kuh and Kinzie (2018) agree that other experiences in college may also have similar positive effects. What are these experiences? To find and explore these gaps in the literature, we took an unconventional approach to assessing HIPs. By using the HIPs Spectrum, we analyze the assessment and student data to provide a unique perspective on the outcomes of student engagement.

It is imperative to define what makes a HIP and how we understand them to affect students. HIP experiences include certain universal elements: *high levels of performance expectations; a significant time and effort investment over an extended period of time; faculty and peer interactions regarding substantive matters; experiences with diversity; frequent, timely and constructive feedback; periodic and structured opportunities to reflect and integrate learning; real world applications; and public demonstration of competence* (Kuh, et al., 2013, p. 10). Through these course elements, the goal is that students will think critically and make decisions about their education, form meaningful relationships, and develop applicable skills, leading to favorable learning outcomes and degree attainment.

High Engagement Experiences (HEEs)

In reflecting on the course offerings at the School of Business, we knew that some courses had many of these universal elements of HIPs but would not match the course titles of the list of 11 recognized HIP types (e.g., First Year Seminar, Internships, Capstone Courses) (Kuh et al.
, 2017). In his foreword, Kuh stated that "there are doubtless other high impact activities" (Brownell & Swaner, 2010, p. ix). To reconcile this difference, we used the above listed universal elements of HIPs to assess every course offered in the School of Business, using the HSCCQ (Marten et al., in press). Although a labor-intensive process, it provided a clearer picture of experiential course offerings, increased faculty buy-in about the value and recognition of HIPs, and aligned with a comment at the 2021 Assessment Institute by Kinzie, who posed the following question:

> We've been very focused on who is in HIPs and who benefits. I think there's a whole other population of students who are not being involved in HIPs and we need to better understand,

> are they having other high impact experiences that we're just not capturing in the existing 11 recognized high impact practices? (Daday et al., 2021).

Our answer is a resounding "yes!", there are other high impact experiences that are not currently being captured. Our approach responds to the growing call for assessing HIPs based on quality rather than course title alone (Kinzie et al., 2021; Zilvinskis, 2019; Zilvinskis et al., 2022).

We further recognized that some courses had multiple elements of a HIP but could not quite meet the higher standards of those intensive courses. Therefore, we developed a new taxonomy to recognize these medium-intensity level courses as *High Engagement Experiences (HEEs)* and created the *HIPs Spectrum* to visualize this new way of considering HIPs (Marten et al., in press). In this taxonomy, rather than a binary designation of the 11 HIPs course types being studied on their own, the HIPs spectrum labels courses as HIP, HEE, or Neither, classified according to the universal elements listed above, allowing for a more nuanced analysis of student engagement.

Assessment

To assess and label each School of Business course along the HIPs Spectrum, we created a survey called the HIPs Spectrum Course Classification Questionnaire (HSCCQ) (Marten et al., in press) where instructors reported how frequently each universal element of HIPs is used in their class throughout a semester. We then quantified results, verified answers by comparing to the content of syllabi, and allowed department Chair and individual instructors to appeal and discuss their course category. If instructors teaching different sections of the same course were found to be teaching in different categories, we labeled the course as the less intensive option and encouraged instructor collaboration and re-assessment to better align in future semesters (Marten et al., in press).

In the School of Business, we aim to guarantee that every student who obtains their bachelor's degree through the School of Business will complete at least four HIPs courses, and that transfer students will complete at least three HIPs courses. This number was influenced by Kuh's (2008) recommendation that each student ideally complete one HIP per year of college, while also recognizing that this scaling needs to be intentional and equitable (Kuh & Kinzie, 2018; Price, 2021; Kilgo et al., 2019). Simply offering HIPs does not ensure that students will enroll in them, but by assessing the courses for universal elements and by incorporating them into degree requirements, we are able to ensure quality and access to HIPs for all School of Business students.

Both the University's and School's missions focus on being an access institution: providing quality, inclusive education to all who wish to learn (University of Wisconsin – Green Bay, 2022a; University of Wisconsin – Green Bay, 2022b). In Fall 2021, within the School of Business, 51% of students were first-generation, 38% were age 25+, 21% identified as a minority ethnicity, and 44% of undergraduates were transfer students (University of Wisconsin – Green Bay, 2022c). Although the University is a Predominantly White Institution (PWI), students' racial diversity has increased over recent years, (University of Wisconsin – Green Bay, 2022c), and the university strives continuously to improve how we serve the increasingly diverse students in this region of the Midwest. As the implementation of HIPs also increases, this emphasizes the importance of understanding how HIPs affect our student population, including various historically underserved subgroups of students.

Impact of HIPs

In this study, we examine the HIPs literature, diving into what should be recognized as a HIP, and how these experiences relate to student retention, graduation rates, and academic performance. "Being willing to question the by now taken-for-granted wisdom about the benefits of educational practices

is a valuable attribute at a time of disruption and challenge to the higher education status quo" (Kilgo, et al., 2019, p. 434).

Many studies have found a positive association between HIPs participation and student success metrics (Bhatt, et al., 2022; Kilgo et al., 2015; Hall & O'Neal, 2016). Finley and McNair (2013) found that students perceived deep gains in their learning through the HIPs of Learning Communities, Service Learning, Study Abroad, Internships, Student/Faculty Research, and Senior Capstones. Deep learning gains also increased more when students participated in multiple HIPs, a trend which held true for first-generation students, transfer students, and students of varying racial or ethnic backgrounds (Finley & McNair, 2013). Studying Black students through 2015 NSSE data, Dorimé-Williams and Choi (2023) found that student involvement in HIPs was significantly and positively associated with obtaining a bachelor's degree. "Our findings indicate a 75% increase in the odds of earning a bachelor's degree or above for every one-unit increase of involvement while the other predictors in the model were held constant" (p. 199). When examining the specific HIP of Undergraduate Research, Chan, Bhattacharyya, and Meisel (2018) found that participating in a First-Year undergraduate research assistant program was associated with significantly higher first-to-second-year retention rate for Underrepresented minority students and Pell Grant Recipients. Similarly, Bhattacharyya and Chan (2021) found that 6-year graduation rate of first-time, full-time students increased significantly from 58% in the overall student body to 84% for students who participated in undergraduate research, with similarly significant results for transfer students, first-generation students, members of underrepresented minorities, and Pell Grant recipients. In sum, there is evidence for the positive effects of HIPs.

We theorize that these positive effects are due to the presence of universal elements of HIPs. We expect to also see positive effects from HEEs, which share many of the same impactful universal elements. Therefore, based upon the studies discussed above, we propose the following hypothesized positive effects:

H1: Student completion of HIPs and HEEs will be more strongly related, respectively, to a) persistence, b) time to graduation, and c) performance (graduation grade point average, GPA), than completion of Neither courses.

H2: Course performance (course GPA) in both HIPs and HEEs courses will be greater, respectively, than in Neither courses.

Differences Between Groups

Kilgo et al. (2019) assert that if HIPs are required for everyone, educators need to ensure that they benefit everyone, and not harm students of certain identities. The AAC&U report by Brownell and Swaner (2010) analyzed the field of research on HIPs, finding examples of positive impacts on students' persistence, graduation rates, short-term-GPA, engagement, and critical thinking, but with comparatively limited research available to understand HIPs' effect on underserved students.

One concern is that minority students tend to have lower participation rates in HIPs than their counterparts (Dorimé-Williams & Choi, 2023; Kuh, et al., 2017; Martin, 2017; Roldan, et al., 2020). This motivates us to eliminate barriers to access and enrollment in HIPs, so that historically underserved students can actively participate in HIPs at comparable rates to their counterparts, and therefore have more meaningful educational experiences than they would have had otherwise.

Building on the concern of lower participation rates in HIPs, some claim that "a HIP experience typically has *compensatory effects* for undergraduates who are first in their family to attend college, are less well prepared academically, and are members of historically underrepresented racial and ethnic groups" (Kuh et al., 2017, p. 9). A study by Price (2021) through the National Association

of System Heads (NASH) and the Lumina Foundation, found multiple indicators of HIPs benefiting students. Students overall – including subgroups of Black students, Hispanic students, and students age 25 or older – who participated in HIPs reported a significant boost in academic and practical learning gains (Price, 2021).

However, some research contradicts the claim of HIPs having a compensatory effect for historically underserved students. Roldan, Kothari, and Dunn-Jensen (2020) studied business students and found that HIPs participants not from underrepresented groups had larger gains than underrepresented participants. Zilvinskis (2019) also refutes the compensatory effect, with findings that students who are Black, Hispanic, and first-generation students had lower opinions of HIPs and academic outcomes than their majority counterparts after participating in HIPs. The concern here is that if all students' success metrics improve after participating in HIPs, but that non-historically underserved students improve at a higher rate, then the achievement gap worsens even if everyone gains some benefit.

With equity in mind, more research is needed to understand how specific populations of students are affected by HIPs participation. We explore whether there are differences in outcomes among various groups of students, such as students coming from low resources (lower socioeconomic status), underrepresented minorities (URM), first-generation students, and high academic performers. More specifically, our study explores the following research question:

Research Question: Are there differences in outcomes in the proposed relationships for H1 and H2 for subgroups (low resource, minority race, first-gen, high academic performers)?

Methods

Data Source and Sample

This research analyzes the impact of HIP, HEE, and Neither courses on a student's persistence, time to graduation, and graduation GPA at the University of Wisconsin – Green Bay (UWGB) Cofrin School of Business. In addition, it also reviews the course GPA by classification category (HIP, HEE, Neither, or TBD) at the same institution. UWGB is a regional comprehensive university in the Midwest section of the United States. Data were obtained from the UWGB Registrar's Office and the Office of Institutional Strategy and Effectiveness (ISE) using the Cofrin School of Business enrollment data. Data included individual student course results and student demographics for each Cofrin School of Business course taught between fall 2015 and spring 2022, a seven-year window. Student demographics obtained included sex, age, ethnicity, first-generation status, and Pell Grant recipient status. The data set also included the student admit term, completion term (if graduated), admit type, persistence status, and final cumulative graduation GPA (if graduated). Select variables and respective coding are found in Table 2. The data set included 6,104 unique students across 45,305 course enrollments.

To begin analysis, student identification numbers were de-identified. As the study focused on the undergraduate bachelor's program, data from associate degree and graduate programs were deleted. Course credit that had been transferred in from another institution was removed. Student admit types were limited to new students, reentry students (students who stopped out and later reapplied to continue without enrolling at another institution(s)), and transfer students. This excluded "special admit" students who were perhaps only taking one course to transfer back to their home institution. The analysis focused on completed courses; out of the 44,872 undergraduate course enrollments, 3,212 were excluded from the analysis as they were incomplete, withdrawal, withdrawal/fail, dropped, or transfer courses.

In the data set, 114 unique courses were identified. Based on the classification criteria discussed in the Assessment section above, 33 courses were identified as HIPs, 41 were HEEs, and 33 were Neither. An additional seven were considered unclassified (TBD). Unclassified courses not determined to be either a HIP, HEE, or Neither were from the Economics major, which transitioned to the School of Business partway through the multi-year HIPs assessment process. For graduation GPA and course GPA analyses, two HIP courses (Internships and Volunteer Income Tax Assistance (VITA)) were omitted as they are graded on a pass/no-pass grading system which results in zero points per credit to calculate GPA.

Measures

Table 1 provides a detailed list of the variables and measurements used in this study.

Table 1. Overview of Variables Used and Coding.

Variable	Description
Course Classification	Classification of course based on HIPs Spectrum using HSCCQ (0=*to be determined*, 1=*neither*, 2=*high engagement experience (HEE)*, 3=*high impact practice (HIP)*)
Course Count	Based on HIP_HEE course designation, count of the number of courses a student has taken (*TBD count, neither count, HEE count, HIP count*)
Persistence	Binary enrollment status of student (0=*discontinued not graduated,* 1=*current active or graduated*)
Course Grade	Earned course grade as recorded by the university, converted to numeric value (0.0=*F*, 1.0=*D*, 1.5=*CD*, 2.0=*C*, 2.5=*BD*, 3.0=*B*, 3.5=*AB*, 4.0=*A*)
Graduation GPA	Overall GPA at time of graduation as recorded by the university (*scale of 0.00-4.00*)
Years to Graduation	Calculated numbers of years to graduation based on admit date and graduation date, rounded up to the nearest whole year
CONTROL VARIABLES	
Sex	Student's self-reported sex (0=*female*, 1=*male*)
Age	Calculated age based on student provided birthdate
Minority	Student's self-report data when enrolling at the university with underrepresented status determined relative to the context of this PWI university (0=*non-underrepresented racial or ethnic minority*, 1=*underrepresented racial or ethnic minority*)
Pell Grant Eligible	Pell Grant eligibility status as reported by the university (0=*non-Pell Grant recipient*, 1=*Pell Grant recipient*)
First-Generation	First-generation student status as self-reported to the university (0=*non-first-gen student,* 1=*first-gen student*)

Sample Demographics

As shown in Table 2, the School of Business Pell Grant eligible students represented 38.3% of the student body studied, first-generation students represented 52.7%, and minority students represented

15.3%. In comparison, the University currently (as of Fall 2022) has 24.6% Pell Grant eligible students, 45.4% first-generation students, and 22.4% minority (University of Wisconsin – Green Bay, 2022d). The studied sample includes 54.1% of students who self-identified as female. At the University level, 66.2% self-identified as female (University of Wisconsin – Green Bay, 2022d). 71.2% of the students in the studied sample were traditional-aged university students (younger than 25), compared to 78.5% at the University level. Additional details regarding demographics can be found in Table 2.

Table 2. School of Business Students' Demographics, Based on Persistence.

	Persist		Did Not Persist		Total	
	n	%	*n*	%	*n*	%
Sex						
Female	2,543	54.7%	759	52.1%	3,302	54.1%
Male	2,102	45.3%	698	47.9%	2,800	45.9%
No Data					2	0.0%
Low Resource						
Pell Grant Eligible	1,818	39.1%	520	35.7%	2,338	38.3%
Non-Pell Grant Eligible	2,829	60.9%	937	64.3%	3,766	61.7%
First-Generation						
First-Generation Student	2,485	53.5%	734	50.4%	3,219	52.7%
Non-First-Generation Student	2,162	46.5%	723	49.6%	2,885	47.3%
Race						
Minority Status	691	15.1%	242	17.0%	933	15.3%
Non-Minority Status	3,872	84.9%	1,178	83.0%	5,050	82.7%
No Data					121	2.0%
Age						
Traditional (Under 25)	3,285	71.1%	1,061	73.0%	4,346	71.2%
Non-traditional (25-50)	1,273	27.6%	376	25.9%	1,649	27.0%
Senior (50+)	60	1.3%	17	1.2%	77	1.3%
No Data					32	0.5%

Results

To test hypotheses, dependent variables of persistence, graduation GPA, and course GPA were analyzed separately.

Hypothesis 1 – Student Completion of HIPs and HEEs

Hypothesis one predicted that *student completion of HIPs and HEEs will be more strongly related, respectively, to a) persistence, b) time to graduation, and c) performance (graduation GPA), than completion of Neither HIPs nor HEEs courses.* This was examined through multiple statistical methods.

H1a) Student Completion of HIPs and HEEs with Persistence

Logistic regression was used to analyze this hypothesis, as the outcome of persistence is a dichotomous variable. While holding sex, age, minority status, Pell Grant status, and first-generation status constant, logistic regression analysis determined that for each additional HIPs course taken, a student's chance of persistence increases by .283 ($p<.001$) and for each additional HEEs course taken, a student's chance of persistence increases by .464 ($p<.001$). Results for hypothesis 1a can be found in Table 4 and Figure 3. In contrast, while holding sex, age, minority status, Pell Grant status, and first-generation status constant, logistic regression analysis determined that for each additional Neither course taken, a student's chance of persistence decreases by .087 ($p<.001$). Therefore, hypothesis 1a is supported.

H1b) Student Completion of HIPs and HEEs with Time to Graduation

For this analysis, the data was initially analyzed using OLS regression analysis with *all* students who graduated in our sample. Results for hypothesis 1b can be found in Table 5 and Figure 4.

HIPs. The results of the regression analysis (see Table 4) shows that while controlling for sex, age, minority status, Pell Grant status, and first-gen status, the number of HIPs courses taken were *not* a significant predictor of time to graduation for all students (β = - 0.032, $p=.385$.)

HEEs. The results of the regression analysis (see Table 4) shows that while controlling for sex, age, minority status, Pell Grant status, and first-gen status, with each additional HEEs courses taken, student's time to graduation decreased by 1.84 months (β = - 0.153, $p<.001$); or in other words, *for every four HEEs classes taken, a student graduated a full semester sooner.*

Neither. The results of the regression analysis (see Table 4 and Figure 3) shows that while controlling for sex, age, minority status, Pell Grant status, and first-gen status, with each additional Neither course taken, student's time to graduation increased by 2.82 months (β = 0.235, $p<.001$); or in other words, *for every four Neither classes taken, a student graduated a full year later.*

In summary, hypothesis H1b is partially supported.

H1c) Student Completion of HIPs and HEEs with Performance (Graduation GPA)

For this analysis, the data was analyzed using OLS regression analysis with students who have graduated in our sample. Results for hypothesis 1c can be found in Table 6. While holding sex, age, minority status, Pell Grant status, and first-generation status constant, there was no significant relationship between the number of HIPs (β = 0.037, $p=.311$), HEEs (β = - 0.010, $p=.762$), or Neither (β = 0.039, $p=.219$) courses taken by a student in the business school and their subsequent overall performance as measured by Graduation GPA. Therefore, hypothesis H1c is not supported.

Hypothesis 2 - Course Category and Course Performance

The second hypothesis stated that course performance (course GPA) in both HIPs and HEEs courses will be respectively greater than in Neither courses. This was examined with linear regression with 105 different courses classified as 1= Neither, 2=HEE, and 3=HIP, and course GPA was calculated as the average GPA over time, over all students, for each specific course. The TBD courses were

excluded from this analysis as well as two HIPS courses that are graded on a Pass/No Pass scale: VITA and Internship. Results for hypothesis 2 can be found in Table 3.

Table 3. GPA by Course Classification.

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for *B*	
		B	Std. Error	Beta	*t*	Sig.	Lower Bound	Upper Bound
1	(Constant)	2.856	0.077		36.991	0.000	2.703	3.008
	Course Classification	0.248	0.037	0.479	6.741	0.000	0.175	0.321

a. Dependent Variable: Average GPA

Table 3 shows regression results. It indicates that as course type moves by one unit across the HIPs Spectrum, there is a corresponding significant increase in Course Average GPA (β = 0.48, p<.001). The model indicates that course classification type explains 22% of the variance in Average GPA (Adjusted R^2=.224, p<.001). Additional post hoc testing was performed on this model and is described in the discussion section.

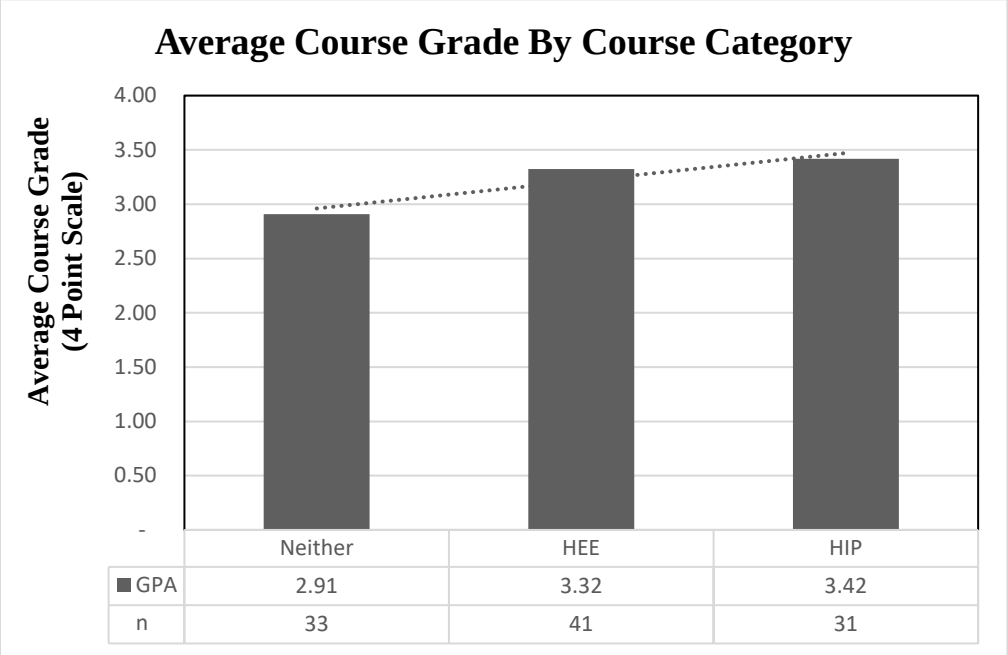

Figure 2. Average Course Grade by Course Category

Figure 2 presents the results demonstrating support for hypothesis 2 with average course GPA increasing along the HIPs Spectrum (Neither Average Course GPA =2.91/4.00; HEEs Average Course GPA = 3.32/4.00; and HIPs Average Course GPA = 3.42/4.00).

Research Question

Our exploratory research question for this paper was, "*Are there differences in the proposed relationships for H1 and H2 for subgroups (low resource, minority race, first-gen, high academic performers)?"* This was tested

through Logistical Regression, comparing counterpart groups (i.e., first-generation vs. non-first-generation students) for each of the aspects of the hypotheses: persistence, time to graduation, and graduation GPA. Course GPA was not included in these analyses, because that is calculated at a course level, not at an individual student level.

HIPs and HEEs had strong effects on different subgroups of students in terms of Persistence, shown in Table 4. For students overall, and when broken into subgroups, the impact of HEEs was stronger than the impact from HIPs for all groups of students. Non-minority students' persistence rates benefit significantly from HIPs (β=.303, p<.001), but HIPs do not significantly increase persistence for minority students (β=.142, p=.161). However, HEEs show to be significantly beneficial to minority students when it comes to persistence (β=.528, p<.001), even more so than for non-minority students (β=.430, p<.001). For the non-minority students, every additional Neither class that they took decreased their likelihood of persistence (β=-.084, p<.001), but that affect was not significant for minority students (β=-.079, p=.120). HIPs significantly affected likelihood of persistence for both first-gen (β=.278, p<.001) and non-first-gen students (β=.275, p<.001). HEEs also significantly increased likelihood of persistence for both first-gen (β=.451, p<.001) and non-first-gen students (β=.435, p<.001), and the positive impact was slightly stronger for first-gen. Additionally, each Neither class taken by non-first-gen students (β=-.112, p<.001) significantly decreased their likelihood of persistence, but that affect was not significant for first-gen Students (β=-.049, p=.102). HIPs and HEEs significantly positively impacted likelihood of persistence for both Male (HIP: β=.260, p<.001; HEE: .473, p<.001) and Female students (HIP: β=.288, p<.001; HEE: β=.420, p<.001) with slight differences between the groups.

Table 4. Impact of HIPs and HEEs on Persistence.

Variable	*n*	HIPs	HEEs	Neither
Overall Model	5,949	.283 ***	.464 ***	- .087 ***
Low Resource				
Pell Grant Eligible	2,325	.257 ***	.437 ***	-0.063
Non-Pell Grant Eligible	3,624	.289 ***	.443 ***	-.093 ***
Race				
Minority	929	0.142	.528 ***	-0.079
Non-Minority	5,020	.303 ***	.430 ***	-.084 ***
First-Generation				
First-Gen Status	3,187	.278 ***	.451 ***	-0.049
Non-First-Gen Status	2,762	.275 ***	.435 ***	-.112 ***
Sex				
Male	2,713	.260 ***	.473 ***	-.125 ***
Female	3,236	.288 ***	.420 ***	-.031

Note: Table shows Beta value from logistic regression. Pell Grant eligibility, sex, age, minority race, and first-generation status were held constant as control variables when not the variable in question. High performers were excluded from this analysis as a variable because it was measured by graduation GPA, and by definition, reaching graduation means that the student persisted.
*** p<0.001

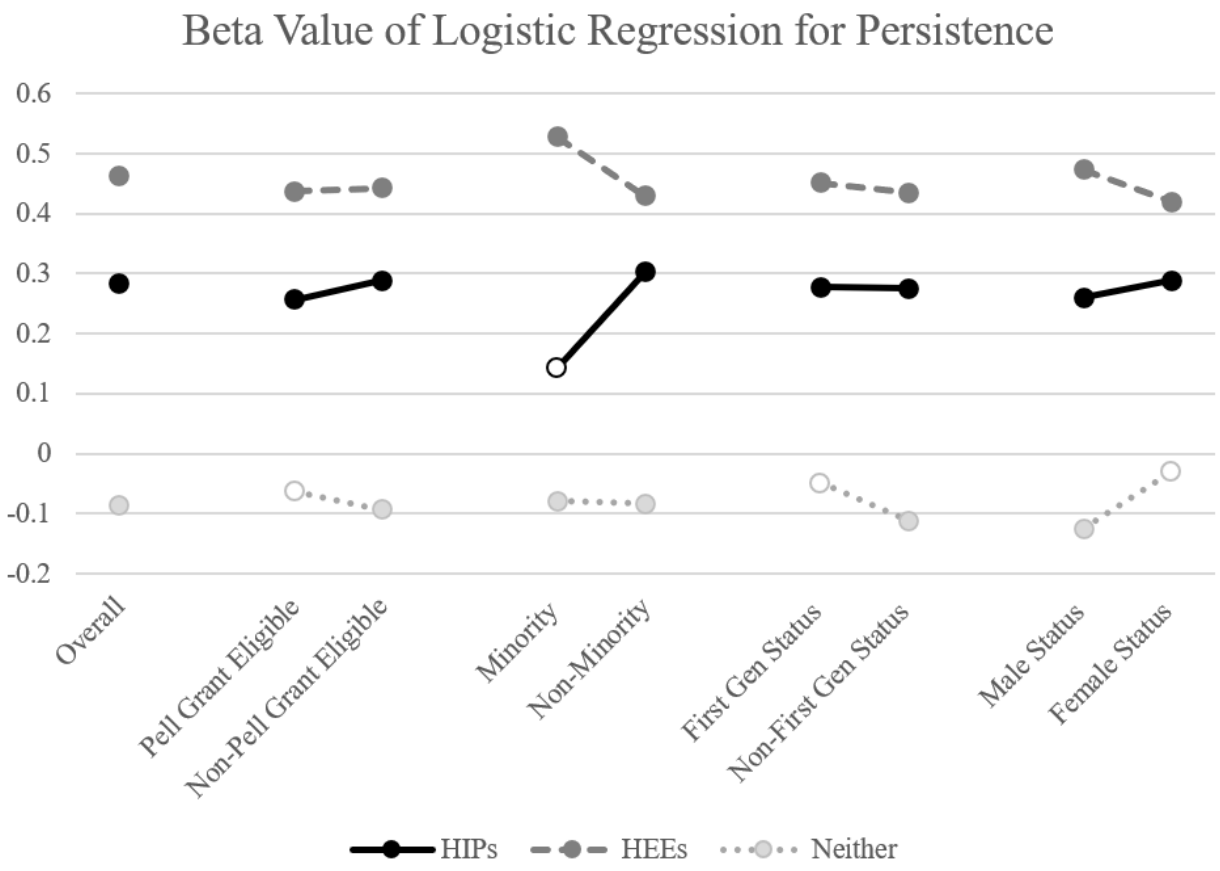

Figure 3. Beta Value of Logistic Regression for Persistence. Pell Grant eligibility, sex, age, minority race, and first-generation status were held constant as control variables when not the variable in question. Solid circles indicate significant results; open circles indicate non-significant results.

When examining Hypothesis 1b about HIPs and HEEs impacting Time to Graduation, we found that HIPs do not significantly affect time to graduation for any of the tested subgroups, shown in Table 5. HEEs significantly decrease time to graduation for students overall, but the effect sizes are lower for subgroups of students, even when significant. For female students, Neither courses significantly decrease time to graduation, whereas Neither courses increase time to graduation for male students and all other subgroups tested.

Table 5. Impact of HIPs and HEEs on Time to Graduation.

Variable	*n*	HIPs	HEEs	Neither
Overall Model	2,873	-0.032	- 0.153 ***	0.235 ***
Low Resource				
Pell Grant Eligible	1,164	-0.033	-0.024	.054 ***
Non-Pell Grant	1,709	-0.002	-.082 ***	.073 ***
Race				
Minority	361	0.027	-.105 *	.079 ***
Non-Minority	2,512	-0.019	-.056 ***	.063 ***

First-Generation				
First-Gen Status	1,553	-0.021	-.043 *	.056 ***
Non-First-Gen Status	1,320	-0.008	-.080 ***	.078 ***
Sex				
Male	1,264	0.007	-.089 ***	.075 ***
Female	1,609	-0.027	-.039 *	-.057 ***
High Performers				
GPA>or= 3.5	1,191	0.006	-.089 ***	.083 ***
GPA <3.5	1,682	-0.03	-.041 *	.055 ***

Note: Table shows Beta value from OLS regression. Pell Grant eligibility, sex, age, minority race, and first-generation status were held constant as control variables when not the variable in question. * $p<0.05$, *** $p<0.001$

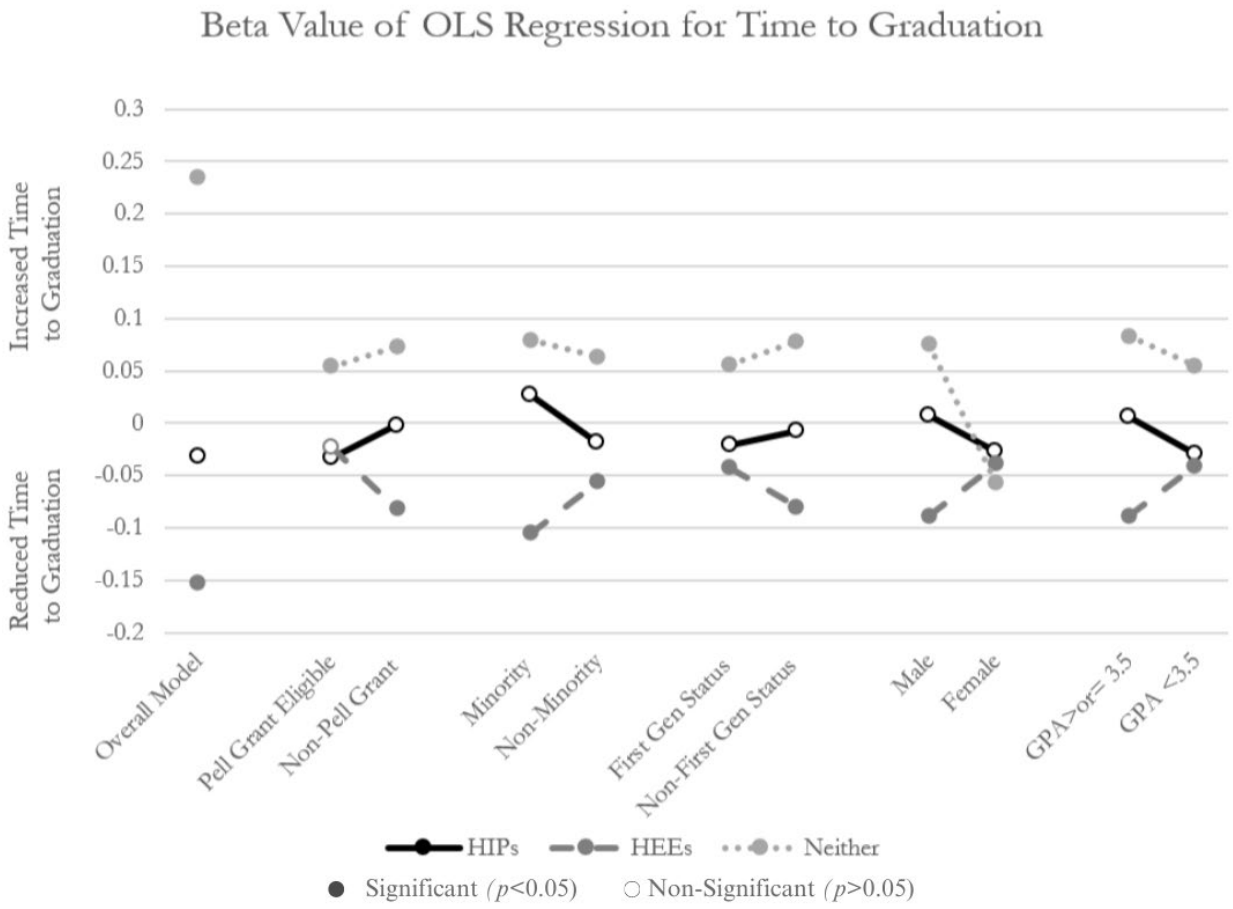

Figure 4. Beta Value of OLS Regression for Time to Graduation. Pell Grant eligibility, sex, age, minority race, and first-generation status were held constant as control variables when not the variable in question. Solid circles indicate significant results; open circles indicate non-significant results.

The third analysis examined differences between subgroups of students regarding graduation GPA. As shown in Table 6, no significant results came from this analysis.

Table 6. Impact of HIPs and HEEs on Graduation GPA.

Variable	*n*	HIPs	HEEs	Neither
Overall Model	2,856	0.037	-0.010	0.039
Low Resource				
Pell Grant Eligible	1,158	0.010	-0.004	0.002
Non-Pell Grant Eligible	1,698	0.003	0.000	0.005
Race				
Minority	356	0.027	0.001	-0.006
Non-Minority	2,500	0.002	-0.001	0.005
First-Generation				
First-Generation Status	1,540	0.001	-0.001	0.007
Non-First-Generation Status	1,316	0.011	-0.003	0.000
Gender				
Male	1,257	0.005	-0.004	0.006
Female	1,599	0.006	0.001	0.002
High Performers				
GPA>or= 3.5	1,158	-0.003	-0.001	0.000
GPA <3.5	1,698	0.003	0.007	0.004

Note: Table shows Beta value from OLS regression. Pell Grant eligibility, sex, age, minority race, and first-generation status were held constant as control variables when not the variable in question.

Discussion

Overall, this study provides evidence in support of the HIPs Spectrum. Results showed quantitative full support for hypothesis 1a in that HIPs and HEEs significantly increase odds of student persistence. Hypothesis 1b was partially supported, as evidence showed that taking HEEs courses *decreases* time to graduation, while taking Neither courses *increases* student time to graduation. Finally, hypothesis 2 was also fully supported, because average course GPA significantly increased along the spectrum when moving from Neither, to HEE, to HIP.

In this article, we take a novel approach to HIPs research, both by analyzing courses along the HIPs Spectrum based on a detailed assessment of course pedagogy rather than title alone, and by analyzing student outcomes based on enrollment data. Results showed positive outcomes in many regards for HIP and HEE courses, supporting the importance of the universal elements of HIPs for student success and establishing the importance of the impact of HEEs.

Impact and Relevance of HEEs

Hypothesis one predicted that persistence, time to graduation, and graduation GPA would be positively impacted by taking HEE and HIP courses, more so than taking Neither courses.

Persistence

As predicted, a student's likelihood of persistence increased for each HEE or HIP course they took and decreased for each Neither course. *Surprisingly*, the impact of HEE courses was even greater than the positive impact of HIP courses on persistence. One interpretation of this could be that HEE courses are still very engaging for students but are less intense for students who are burning out or struggling with external factors diminishing their ability to stay enrolled at the university. The intensity of HIP courses could be overwhelming for some students.

Time to Graduation

Following a similar pattern of HEEs benefiting students, each additional HEE course taken by students *reduced* their Time to Graduation, whereas each additional Neither course *increased* students' time to graduation. Surprisingly, HIPs courses did not have a significant impact on time to graduation. The number of HIPs courses could have been a minor factor in these results, as HIPs had a count of 33 courses, in comparison to HEEs at 41 and Neither at 33.

HEEs courses' strong positive impact on persistence and time to graduation justifies delineating and measuring high impact activities along a spectrum. Given this study's large sample size of 6,104 students over 7 years, the value that HEEs provide is well-supported. So far in this School of Business, a benchmark goal of how many HEEs courses to integrate into each major pathway has not been set, but we are hopeful that the significant positive results of this study will allow for informed policies to increase access to HEEs for all our students.

Performance

The third part of hypothesis one predicted that students who took more HEE and HIP courses would have higher cumulative GPAs at graduation. This prediction was not supported, as results were insignificant. One explanation for this finding could be that any effect from an especially high or low grade in certain courses got washed out in the calculation for cumulative GPA. Students are required to complete at least 120 credits to graduate with a bachelor's degree, and our School of Business requires each student to take four 3-credit HIPs courses, meaning that 10% of the credits students take are guaranteed to be HIP. In other words, the field of the GPA calculation for 120 credits is too wide for the HIPs course grades to have a significant impact on an individual student's cumulative GPA. There are simply too many variables at play in this calculation, including courses outside of the business school.

Evidence for HIPs Spectrum through Average Course GPAs

Applying a different angle at measuring performance, in hypothesis two, we proposed that the average course GPA for HIPs and HEEs courses would be significantly greater than the average course GPA for Neither courses. Our data showed strong support for hypothesis two. On a 4.0 GPA scale, the average course grade students earned was .41 higher in HEE courses than in Neither courses, and .51 higher in HIP courses than in Neither courses. In tangible terms, this would be the difference between earning a B on average in Neither courses and a B+ on average in HIP courses. While the challenge of HIP courses may scare away some students who are struggling academically, these results can serve as an example for both students and academic advisors that the engaging elements incorporated in HIP and HEE courses may actually benefit a student's final grade.

Our results led us to a post hoc question of whether the average course GPAs were significantly different between the HEE and HIP courses. In post hoc analyses, we conducted a Tukey honestly significant difference test (Tukey's HSD) to test differences among samples means for significance. The Tukey post hoc analysis showed the course GPA increase from Neither to HEE (0.37, 95% CI (0.35 to 0.40) was statistically significant ($p<.001$), as well as from HEE to HIP (0.10, 95% CI (0.07 to 0.13), $p<.001$). In addition, the increase from Neither to HIP was also statistically significant (0.48, 95% CI (0.45 to 0.50), $p<.001$). This statistical significance and positive trend of the average course grade from Neither to HIPs provides further quantitative evidence for the continuum of the HIPs Spectrum.

Compensatory Effects

Our exploratory research question examines how HIP and HEE courses affect students of different subgroups. Previous literature is inconclusive on whether HIPs provide a compensatory effect – in other words, a disproportionate positive impact – for first-gen or minority race students (Kuh, 2008; Kuh et al., 2017; Roldan, et al., 2020; Zilvinskis, 2019). In seeking further evidence for an answer to this pending question, we analyzed the effects of HIPs and HEEs on Pell Grant vs. Non-Pell Grant eligible students, minority vs. non-minority race students, and first-generation vs. non-first-generation students. After testing each of these comparative groups for our hypotheses, we found significant evidence of a compensatory effect in two instances, both involving HEEs rather than HIPs. For each HEE course taken, minority race students experienced a greater positive impact on both persistence and reduced time to graduation than non-minority students. The fact that these disproportionate positive impacts were found when analyzing HEEs but not HIPs could help to explain why previous literature disagrees on the compensatory effect of student engagement, once again justifying the importance of assessing HEEs.

Contradicting the compensatory effect, some previous studies have found an achievement gap for historically underserved students taking HIPs (Roldan, et al., 2020; Zilvinskis, 2019), meaning that their majority counterparts disproportionately benefited from HIPs. Our data did not show evidence of such an achievement gap for persistence. The differences between Pell Grant eligible and non-Pell Grant eligible students were small for the positive impacts on persistence from HIPs and HEEs, as were the differences between first-generation and non-first-generation students (refer to Table 4 and Figure 3). Conversely, non-first-generation students tended to benefit from more reduced time to graduation from HEEs than first-generation students. Courses designated Neither increased time to graduation for all subgroups except Females, but that detrimental effect was slightly higher for minority students and slightly lower for Pell Grant eligible students and first-generation students than their majority counterparts. We all need to work together to ensure that students are participating in HIPs and HEEs that will benefit them best as unique individuals.

Effect on Males vs. Females

The effects of HIPs, HEEs, and Neither course classifications on persistence and time to graduation varied by sex. For persistence (refer to Table 4 and Figure 3), HIPs courses had a stronger positive impact for women, HEEs had a stronger positive impact on men, and Neither courses negatively impacted men, but had no impact for women. For time to graduation (refer to Table 5 and Figure 4), HEEs courses similarly had a stronger impact on men (i.e., reducing their time to graduation), and similarly Neither courses were more detrimental to men (i.e., increasing their time to graduation). However, Neither courses positively impacted women (i.e., decreasing their time to graduation). In sum, it appears that HEEs were more beneficial to men and Neither courses were more detrimental

to men for both outcomes of persistence and time to graduation, as compared to women. For women, the HIPs courses were more beneficial for persistence increases, and Neither courses were more beneficial for time to graduation, than compared with men. However, we are hesitant to make any strong interpretations at this point, until we have more research to explore these nuances further.

Effect on High Performers

Our study also explored whether there would be differential impact of the HIPs, HEEs, and Neither courses on time to graduation for those graduating with very high graduating GPAs (equal to or greater than 3.5 on a 4.0 scale), whom we referred to as the high performers. HEEs courses had a stronger negative impact on high performers (i.e., increasing their time to graduation) and Neither courses had a less negative impact on the higher performers (i.e., increasing their time to graduation) in comparison to the students below a 3.5 graduating GPA (refer to Table 5 and Figure 4). As discussed previously, HIPs courses were not predictive of time to graduation for any of the subgroups or even overall. At a rudimentary level, regarding time to graduation, it appears that the high performers benefit from taking Neither courses and the non-high performers benefit from taking HEEs courses. However, as with the results in the previous paragraph, we are hesitant to make any strong interpretations at this point, until we have more research to further explore these nuances.

Limitations

Due to the expansive nature of the enrollment data we were working with, spanning from Fall 2015 to Spring 2022, it is difficult to know if the course that students experienced years ago would match the current version of a course, and therefore guarantee whether it would have been categorized in the same way. We have worked to mitigate this limitation by talking with the School of Business' Advising Manager and Student Success Committee to track major curriculum changes. This allowed us to separate new versions of courses from old versions of courses when there had been significant changes, such as to course number or title. In those instances, we assessed the older and newer versions of the course separately. An additional limitation was that we were interested in more student demographics but were unable to retrieve them from the Registrar. Additional variables of interest were students' declared major and whether the student lived on or off campus. Along the lines of demographics, our findings are also limited by the differential sample size of minority race students (n=933, 15%) to the non-minority race students (n=5050, 82.7%).

The focus of this study was centered around *course* designations of HIPs, HEEs, or Neither. The definition of HIPs may include experiences outside of the classroom, such as undergraduate research, internships, study abroad, etc. Our study is limited in that it excludes HIPS beyond the classroom or those taught in courses outside of the School of Business. On the other hand, the strength of this study is the detailed look at a school of business' courses.

Future Research

As we analyzed our data set and began to run statistical analysis, we realized that our data set included the possibility of exploring many interactions and variables that we had not originally hypothesized about. In future research, we plan to analyze within-group effects and intersectionality of student demographics. As time passes, our data set will grow with updated enrollment data, which we look forward to analyzing to better understand our current students. Another interesting possibility could be to compare the outcomes from this set of enrollment data with other sources of student outcome information across the university, such as surveys.

Time to Graduation could also be affected by transfer student status. Limited space and scope in this paper prevented us from addressing this consideration fully. Future research could investigate the differential effects of transfer student status on each hypothesis explored.

Implications

The HIPs Spectrum is not confined to courses only in the field of business. We encourage readers to imagine how the HIPs Spectrum and the HSCCQ could apply to their disciplines and have an interdisciplinary effect on HIPs initiatives at their institution. For example, at UWGB, the HIPs assessment within the Cofrin School of Business is informing an institution-wide HIPs assessment process. Additionally, it has informed discussions about faculty workload, student bandwidth, and how we communicate about HIPs with students during the course registration process.

In addition to opening future avenues of research, the HIPs Spectrum has various practical implications for colleges and universities: Which impactful courses are currently being taught as HIPs or HEEs, but go overlooked? How are those courses affecting our population of students? Are HIP and HEE courses equitably distributed across academic disciplines, major pathways, and instructors?

Conclusion

This study provides quantitative evidence for the effectiveness of the HIPs Spectrum, which categorizes courses along a continuum using the universal elements of high-impact practices (Kuh, et al., 2013). We analyzed seven years of enrollment data in a public, Midwestern School of Business using the HIPs Spectrum and the HSCCQ (Marten et al., in press). Results showed that students, both overall and in various identity-based subgroups, experienced positive effects on persistence from HIP and HEE courses, and that average grades tended to be higher in HIP and HEE courses than Neither courses. HEEs are a new area of study (Marten et al., in press), opening the door for many avenues of future research, especially considering that results found greater positive effects on students from HEEs than from HIPs for some variables, such as reduced time to graduation.

Appendix

Appendix 1: Descriptive Statistics.

	n	Min	Max	Mean	Std. Deviation
Number of Neither Courses Taken	6,103	0	24	3.20	3.641
Number of HEE Courses Taken	6,103	0	13	2.17	2.544
Number of HIP Courses Taken	6,103	0	16	1.71	2.382
Number of TBD Courses Taken	6,103	0	4	0.02	0.197
Sex	6,102	0	1	0.46	0.498
Age	6,072	17	68	24.57	7.450
Minority	5,983	0	1	0.16	0.363
Pell Grant Eligible	6,104	0	1	0.38	0.486
First-Generation	6,104	0	1	0.53	0.499
Valid N (listwise)	5,949				

References

Bhatt, R., Bell, A., Rubin, D. L., Shiflet, C., & Hodges, L. (2022). Education abroad and college completion. *Research in Higher Education, 63*(6). 987-1014. https://doi.org/10.1007/s11162-022-09673-z

Bhattacharyya, P., & Chan, C. W. M. (2021). Can undergraduate research participation reduce the equity gap? *Journal of the Scholarship of Teaching and Learning, 21*(1). 287- 300. https://doi.org/10.14434/josotl.v21i1.30462

Brownell, J. E., & Swaner, L. E. (2010). *Five high-impact practices: Research on learning outcomes, completion and quality.* Association of American Colleges and Universities.

Chan, C. W. M., Bhattacharyya, P., & Meisel, S. (2018). A model for successful cross-campus collaboration for engaging potentially at-risk students in mentored undergraduate research early in their college career. *Council on Undergraduate Research Quarterly, 1*(3), 48-56. https://doi.org/10.18833/spur/1/3/13

Daday, J., Kinzie, K., O'Donnell, K., Vande Zande, C., & Zilvinskis, J. (2021, October 26). *Preliminary impressions from delivering on the promise of high-impact practices.* [Conference presentation]. 2021 Assessment Institute, Indianapolis, IN, United States.

Dorimé-Williams, M. L., & Choi, S. (2023). Class, sex, and the role of involvement on Black collegians degree attainment. *Journal of Diversity in Higher Education, 16*(2), 194-204. https://doi.org/10.1037/dhe0000325

Finley, A., & McNair, T. (2013). *Assessing underserved students' engagement in high-impact practices.* Association of American Colleges and Universities.

Fischer, A. E., Immel, K. R., Wilkum, K., & Lee, L. R. (2021). A taxonomy for developing undergraduate research experiences as high-impact practices. *Journal of the Scholarship of Teaching and Learning*, *21*(1), 84-106. https://doi.org/10.14434/josotl.v21i1.30564

Hall, B., & O'Neal, T. (2016). The residential learning community as a platform for high-impact educational practices aimed at at-risk student success. *Journal of the Scholarship of Teaching and Learning, 16*(6), 42-55. https://doi.org/10.14434/josotl.v16i6.19585

Johnson, S. R., & Stage, F. K. (2018). Academic engagement and student success: Do high-impact practices mean higher graduation rates? *The Journal of Higher Education*, *89*(5), 753-781. https://doi.org/10.1080/00221546.2018.1441107

Kilgo, C. A., Ezell Sheets, J., & Pascarella, E. (2015). The link between high-impact practices and student learning: Some longitudinal evidence. *Higher Education*, *69*(4), 509-525. https://doi.org/10.1007/s10734-014-9788-z

Kilgo, C. A., Linley, J. L., Renn, K. A., & Woodford, M. R. (2019). High-impact for whom? The influence of environment and identity on lesbian, gay, bisexual, and queer college students' participation in high-impact practices. *Journal of College Student Development, 60*(4), 421-436. https://doi.org/10.1353/csd.2019.0038

Kinzie, J., Silberstein, S., McCormick, A. C., Gonyea, R. M., Dugan, B. (2021). Centering racially minoritized student voices in high-impact practices. *Change, 53*(4), 6-14. https://doi.org/10.1080/00091383.2021.1930976

Kuh, G. D. (2008). *High-impact educational practices: What they are, who has access to them, and why they matter.* Association of American Colleges and Universities.

Kuh, G. D. (2020). NSSE and NILOA: Compatriots in making outcomes assessment matter more. *Assessment Update, 32*(2), 10-12. https://doi.org/10.1002/au.30209

Kuh, G. D., & Kinzie, J. (2018, May 10). *What really makes a 'high-impact' practice high impact?* Inside Higher Ed. https://www.insidehighered.com/views/2018/05/01/kuh-and-kinzie-respond-essay-questioning-high-impact-practices-opinion

Kuh, G. D., O'Donnell, K., & Reed, S. (2013). *Ensuring quality & taking high-impact practices to scale.* Association of American Colleges and Universities.

Kuh, G. D., O'Donnell, K., & Schneider, C. G. (2017). HIPs at Ten. *Change*, *49*(5), 8-16. https://doi.org/10.1080/00091383.2017.1366805

Marten, K., Murphy, D. D., Kaminski, H. L., & Dornbush, M. (In Press). *Journal of the Scholarship of Teaching and Learning.*

Martin, R. R. (2017). Taking student success to scale. *Change, 49*(1), 38-47. https://doi.org/10.1080/00091383.2017.1265391

Myers, C. B., Myers, S. M., & Peters, M. (2019). The longitudinal connections between undergraduate high impact curriculum practices and civic engagement in adulthood. *Research in Higher Education*, *60*(1), 83-110. https://doi.org/10.1007/s11162-018-9504-4

Price, D. (2021). *Evidence from evaluation studies:* NASH TS3 HIPs initiative. NASH webinar presented on HIPs: May 10, 2021.

Roldan, M., Kothari, T., & Dunn-Jensen, L. M. (2020). Direct effects of high-impact practices on the success of business majors in large, mostly nonresidential public universities. *Journal of Management Education, 44*(1), 39-65. https://doi.org/10.1177/1052562919869384

University of Wisconsin – Green Bay. (2022a). Cofrin School of Business mission, vision, and values. Retrieved August 17, 2022. https://www.uwgb.edu/csb/about/mission

University of Wisconsin – Green Bay. (2022b). UWGB University Mission. Retrieved August 17, 2022. https://www.uwgb.edu/chancellor/university-mission/

University of Wisconsin – Green Bay. (2022c). UWGB University Detailed Factbook. Internal Private Document.

University of Wisconsin – Green Bay. (2022d). UWGB University Factbook. Retrieved August 17, 2022. https://www.uwgb.edu/CMSAssets/ISE/factbook.asp

Zilvinskis, J. (2019). Measuring quality in high-impact practices. *Higher Education*, *78*(4), 687-709. https://doi.org/10.1007/s10734-019-00365-9

Zilvinskis, J., Kinzie, J., Daday, J., O'Donnell, K., & Vande Zande, C. (Eds.). (2022). *Delivering on the promise of high-impact practices: Research and models for achieving equity, fidelity, impact, and scale.* Taylor & Francis Group.