

Revisiting the Relationship between Institutional Rank and Student Engagement

Abstract

Using data from the 2013 administration of the National Survey of Student Engagement (NSSE), multilevel models were employed to explore the relationship between student engagement and three institutional ranking schemes: *U.S. News*, *Forbes*, and *Washington Monthly*. Findings reveal few relationships exist between NSSE's measures of student engagement and the three institutional ranking schemes, except for a negative relationship between the three ranking schemes and student-faculty interactions; implications of these findings are included.

Revisiting the Relationship between Institutional Rank and Student Engagement

Since their creation three decades ago, university rankings have become a mainstay in the higher education landscape inspiring intrigue, interest, and skepticism (Hossler, 1998).

With the increase in competition between institutions over students, faculty, resources, and prestige (Peterson, 1999), rankings serve as a fulcrum between institutions interested in trading up and consumers (students and parents) trying to make wise investments. “The college-choice process is one of the first major noncompulsory decisions made by American adolescents.”

(Kinzie et al, 2004, p. 9). As such, rankings, like “Best Colleges” published by *U.S. News and World Report* (USNWR), provide guidance to prospective students and their families regarding this decision (Altbach, 2012). For institutions, rank can have influence beyond level of prestige; positive changes in rankings have been shown to increase admission profiles, state appropriations, research and development funding (federal and private), and price of out-of-state tuition (Bastedo & Bowman, 2011).

As a reflection of the prevalence of rankings in the field, many researchers have studied their influence over the past decade. Rankings have been linked to several institutional behaviors such as mission creep (Gonzales, 2013), changes in institutional marketing and strategy (Hazelkorn, 2008), faculty compensation (Melguizo & Strober, 2007), expenditures per student (Zhe, Whalley, & Whalley, 2007), and heightened admissions standards (Meredith, 2004). A criticism of rankings is that they fail to describe essential functions of the academy, such as student learning or faculty teaching (Volkwein & Sweitzer, 2006). However, rankings have been shown to be related to ancillary institutional aspects (aspects not intended to be measured) such as institution affluence, research output, and financial aid (Brennan, Brodnick, & Pinckley, 2008).

Is it possible that rankings are linked to important aspects of the college experience like student engagement?

Student engagement is not a monolithic concept, but represents a series of understandings of the student experience (McCormick, Kinzie, & Gonyea, 2013). Although the concept of student engagement has appeared in various forms in the works of Pace (1980), Astin (1984), Tinto (1975, 1993), Kuh (2001, 2009), and Pascarella (1995), their views are all based on the premise that learning in college is related to the way students spend their time and energy both inside and outside the classroom. Specific examples of student engagement include student-faculty contact, active learning, and interaction with diverse others (Chickering & Gamson, 1987). Because of the association of student engagement with important indicators of collegiate quality, such as persistence (Hughes & Pace, 2003; Kuh, 2008 ; Kuh et al., 2008), GPA and satisfaction (Webber, Krylow, & Zhang, 2013), and critical thinking (Carini, Kuh, & Klein, 2006; Loes, Pascarella & Umbach, 2012) both institutions and consumers should be interested in whether institutional rank correlates with student engagement.

The current study draws on the previous work of Pike (2004) who, over a decade ago, examined the rankings of fourteen public AAU research universities and demonstrated little relationship between the levels of engagement reflected in the *National Survey of Student Engagement* (NSSE) and the institution rank measured by USNWR. This study furthers the research in this area, as encouraged by Pike, by including more institutions (sixty-four) and different rankings schemes. The three rankings schemes examined in this study are Forbes' Top Colleges in the U.S. (F-TCUS), U.S. News & World Report National University Rankings (USNWR), and Washington Monthly's National Universities Rankings (WM-NUR). Each organization devises their rankings based on diverse criteria including selectively, retention,

success, satisfaction, social mobility, and service (see Appendix A for description of rankings schemes). A majority of these ranking schemes reside on input characteristics of students (like academic preparation) and it has been shown that these inputs can heavily influence some outcomes of institutions, like graduation (Dill & Soo, 2005). This is clear when examining the relationships between institutional selectivity and student graduation rates: institutions with higher entrance selectivity criteria tend to also have higher than average four-year graduation rates. A criticism of the rankings is they simply measure inputs, and the results from these inputs, of the students entering the institution instead of actual effects of attending the institution (van der Wende, 2008). This study tries to examine institutional outcomes by comparing institution rank with levels of engagement measured by the NSSE. The primary research question guiding this study is: When accounting for institutional and student characteristics, is there a relationship between an institution's rank and student engagement?

Theoretical Framework

There are two bodies of research that are guiding the current study: research in behavioral industrial organization and Hossler and Gallagher's (1987) model of college choice. Scholars in behavioral industrial organization argue that third parties can work to provide information leading to more efficient behaviors on behalf of firms and consumers, lowering the costs of decision making (Ellison, 2006). Rankings are particularly important because they have been shown to influence consumer choice and firm behavior (Duarte & Hastings, 2012). Although research in behavioral industrial organization has shown that rankings may lead to more effective choice making from the consumers, they may also lead institutions to engage in short-term behavior to increase rank instead of long-term behavior to increase quality. In the context of higher education, the various guidebooks and ranking schemes serve as third parties, providing

information on college quality to parents and prospective students, while also influencing the behavior of institutions that may seek more prestige. However, administrators making decisions that concord with rankings schemes that are not based on important factors of collegiate quality can be problematic, especially considering that rankings have been demonstrated to influence vital operations like institutional mission, student admission, and faculty compensation. The relationship between service providers (institutions) and consumers (parents and students) helps provide both context for and application to the role of rankings between institutions and students.

The current study also draws on Hossler and Gallagher's (1987) three-phase model of college choice, the phases are: predisposition (deciding to enroll in higher education), search (evaluating institutions), and choice (selecting an institution). In the second phase of this model, a student has begun to gather information about possible institutions; this information can include college rankings (Hossler, Schmit, & Vesper, 1999). Researchers have found that approximately 40% of first-year students used rankings in their search and 17% identified rankings as "very important" when choosing an institution (Eagan, Lozano, Hurtado, & Case, 2013; McDonough, Lising, Walpole, & Perez, 1998). Typically, students using college rankings in the search phase come from high-income and well-educated families. This research helps to reaffirm that rankings do play a critical role in college choice. However, there should be some concern that students and parents may interpret the prestige of an institution as an institution's quality and some factors that indicate collegiate quality, like classroom learning, faculty teaching, and student engagement, remain largely absent from ranking schemes. Given the emphasis prospective students and their families place on rankings along with the institutional pressures to maintain or increase their ranking, it is important to investigate whether these

various ranking schemes are related to important aspects of students' college experience; specifically, student engagement.

Methods

Data Sources

This study draws data from over 80,000 first-year and senior students at sixty-four institutions that participated in the 2013 administration of the NSSE and includes the institution's 2013 score for three rankings schemes: Forbes' Top Colleges in the U.S. (F-TCUS), U.S. News & World Report National University Rankings (USNWR), and Washington Monthly's National Universities Rankings (WM-NUR). In order to be selected for this study, institutions had to have been ranked in the 2013 edition of each scheme. Approximately 59% of the respondents were female, 91% were full-time students, 38% lived on-campus, and 35% were first-generation students (i.e., neither parent holds a bachelor's degree). The racial-ethnic makeup of the sample was as follows: 8% identified as Asian, 6% identified as Black or African-American, 6% identified as Hispanic or Latino, 73% identified as White, 6% identified as multiracial with the rest identifying as another race-ethnic group (e.g., American Indian, Native Hawaiian). In regards to institutional characteristics, about 39% of institutions were private and the average undergraduate enrollment size was around 13,000. Descriptive statistics describing the sample are presented in Table 1.

Variables

The dependent variables used in this study were the ten NSSE engagement indicators. In order to represent the multi-dimensional nature of student engagement, NSSE staff developed ten engagement indicators that correspond to specific areas of student engagement such as student-faculty interaction, higher-order learning, collaborative learning, and quality of interactions.

Engagement indicator scores are calculated by averaging across various items on the survey. Descriptions of the items that comprise each of the ten indicators are presented in Appendix B.

In order to control for differences in engagement by student and institutional characteristics, we included several factors that have been shown to be related to engagement. Student characteristics included gender, race-ethnicity, enrollment status, age, academic major, first generation status, transfer status, residential status, and membership in a Greek organization. Institutional characteristics included sector (public/private) and institutional enrollment size. In order to examine the relationship the three ranking schemes have with NSSE's ten engagement indicators, we included an institution's numerical score on the three ranking schemes. Thus, a higher numeric score equated to a higher, or better, ranking for the institution.

Data Analysis

Given that the rankings are based on data derived at an institutional level and the data on student engagement are derived from individual students nested within institutions, multilevel modeling procedures were used to explore the relationship institutional rankings have with ten facets of engagement measured by the NSSE. Models were run separately for first-year and senior students and for each engagement indicator and ranking scheme. The first step in the modeling process involved partitioning the variability in the ten engagement indicators into variability due to differences between students and variability due to differences between institutions. Results demonstrate that between 1.2% and 4% of the variance in engagement indicator scores is due to differences between institutions. Although most of the variability in engagement indicator scores is between students, we decided to continue with the multilevel model to more accurately account for the nesting effects in the data and to protect against over inflated standard errors (Hox, 2010; Raudenbush & Bryk, 2002). Next, models were estimated

that included student background characteristics at level-1. All variables were centered about their grand mean. As a result, the intercepts represented institutional engagement indicator means adjusted for difference on the student characteristics (Raudenbush & Bryk, 2002).

Finally, models were estimated that included the variables in the previous step plus the addition of the institutional characteristics and the ranking scheme at level-2. An equation of the full model is presented in Figure 1.

Results

Results from the final set of analyses which examined the relationship between institutional rankings and the ten NSSE engagement indicators are presented in Table 2. After controlling for differences in student and institutional characteristics, results, for the most part, reveal no relationship between *U.S. News*, *Forbes*, and *Washington Monthly* rankings and NSSE engagement indicators, with a few exceptions. Our findings demonstrate a negative relationship between ranking and institutional scores on the student-faculty interaction engagement indicator, signifying that a higher ranking score, i.e. a better ranking, was associated with institutions with lower student-faculty interaction scores. In other words, students attending inferior ranked schools reported more frequent interactions with their faculty than their counterparts at more highly ranked institutions. This relationship held for both first-year and senior students and across ranking schemes, with the exception of *U.S. News* ranking for first-year students. We also found a negative relationship between *Washington Monthly's* ranking score and supportive environment for senior students, indicating that seniors on average felt most supported at institutions with lower, or worse, *Washington Monthly* rankings. There was one instance where we found a positive relationship between an institution's *Washington Monthly* ranking and the discussion with diverse others engagement indicator for seniors. This result suggest that seniors

at institutions with higher, or better, *Washington Monthly* rankings reported higher levels of engagement in their discussions with people who are different than themselves.

Discussion

Student engagement is an important aspect of a student's experience and if rankings are intended to demonstrate some level of collegiate quality then their measures should be linked to important aspects of the college experience, such as student engagement; however, as the results of this study show, student engagement (except in a few areas) is not related to the facets measured in college rankings schemes. These findings echo Pike (2004)'s results ten year ago when he examined the relationship between engagement and *U.S. News* rankings. Student engagement can be an indicator of collegiate quality (Kuh, 2001; McCormick & McClenney, 2012), so intuitional administrators and prospective students should be concerned about the influence of rankings on market behavior. By examining this issue through the lens of behavioral industrial organization, third parties (like rankings) may not lead service providers (institutions) to invest in long-term solutions to increase efficiency or quality; instead they may invest in short-term solutions that may achieve third party status, but offset third party aims. In higher education, institutions practice quick fixes to increase rankings, such as submitting inflated admissions information about students and providing self-applauding scores on peer assessment surveys (Crabbe, 2009; Supiano, 2013). Behavior like this leaves institutions two steps behind, not only are they avoiding long-term solutions reflected in rankings (like increasing faculty resources or decreasing student debt), but they also are not investing in important factors not present in rankings, like student learning and engagement.

According to research in behavioral industrial organization, rankings may direct consumer decision making. College rankings do play some role in college choice and the

absence of information regarding classroom learning, faculty teaching, and student engagement can be misleading to consumers (prospective students and their family) who may overvalue an institution's rank. Furthermore, reducing an institution to a single number may lead consumers away from a more thorough search phase, which should include learning about varying levels of student engagement between institutions and other important aspect of the college experience. Ranking schemes continued absence of important aspects of collegiate quality, like learning and engagement, will continue to lead to behaviors on behalf of both institutions and students that value prestige over quality.

One of the critiques of rankings is their reliance on input measures (like academic achievement) instead of their emphasis on outcomes measures (like student learning) (Dill & Soo, 2005; McCormick, Kinzie, & Gonyea, 2013). However, incorporating survey data (like NSSE data) into institutional ranking schemes could render the information garnered from the survey invalid. Furthermore, attempts to develop a universal means to measure faculty teaching and educational outcomes have proven problematic, if not impossible (Altbach, 2006). In the meantime of developing a comparative tool that takes into consideration other indicators of college quality, intuitional stakeholders should not allow themselves to be completely guided by rank; instead they could infuse other information (like levels of student engagement) into their strategy and communicate gains in these areas to consumers. Meanwhile, student and their families should continue to gather information from multiple sources, as they refine their personal definitions of the true value of higher education.

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Table 1
Descriptive Statistics

	<i>Mean</i> ¹	<i>SD</i>	<i>Min</i>	<i>Max</i>
<i>Student Characteristics</i>				
Female	0.59	0.49	0	1
Asian	0.08	0.27	0	1
Black/African-American	0.06	0.23	0	1
Hispanic/Latino	0.06	0.23	0	1
White (reference group)	0.73	0.45	0	1
Multiracial	0.06	0.23	0	1
Other race-ethnicity	0.03	0.17	0	1
Fulltime student	0.91	0.29	0	1
First-generation student ²	0.35	0.48	0	1
Transfer student	0.27	0.45	0	1
Traditional age ³	0.84	0.36	0	1
STEM major	0.32	0.47	0	1
Live on campus	0.38	0.49	0	1
Member of Greek organization	0.14	0.34	0	1
Higher-Order Learning	39.83	13.72	0	60
Reflective & Integrative Learning	36.97	12.71	0	60
Learning Strategies	29.17	16.76	0	60
Quantitative Reasoning	39.09	14.45	0	60
Collaborative Learning	33.72	14.11	0	60
Discussions with Diverse Others	41.88	15.38	0	60
Student-Faculty Interaction	22.30	15.25	0	60
Effective Teaching Practices	39.70	13.00	0	60
Quality of Interactions	41.60	11.57	0	60
Supportive Environment	35.44	13.64	0	60
<i>Institutional Characteristics</i>				
Enrollment size ⁴	13.74	8.61	1.77	36.16
Private institution	0.39	0.49	0	1
U.S. News ranking score	41.92	11.37	27	78
Forbes ranking score	49.75	10.40	32	80
Washington Monthly ranking score	49.30	10.62	29	84

¹Means for dichotomous items represent proportions

²Neither parent holds a bachelor's degree

³24 years or younger

⁴Enrollment size in thousands

Table 2
Coefficient estimates for the relationship between ranking schemes and NSSE engagement indicators (standardized coefficient estimates in parentheses)

<u>First-Year Engagement Indicator</u>	<u>F-TCUS</u>	<u>USNWR</u>	<u>WM-NUR</u>
Higher-Order Learning	0.01 (0.01)	0.01 (0.01)	0.02 (0.02)
Reflective & Integrative Learning	0.03 (0.03)	0.03 (0.03)	0.04 (0.03)
Learning Strategies	0.00 (0.00)	0.01 (0.01)	-0.01 (-0.01)
Quantitative Reasoning	0.02 (0.01)	0.03 (0.02)	0.00 (0.00)
Collaborative Learning	0.05 (0.04)	0.05 (0.04)	0.03 (0.02)
Discussions with Diverse Others	0.05 (0.03)	0.04 (0.03)	0.08 (0.06)
Student-Faculty Interaction	-0.06** (-0.04)	-0.04 (-0.03)	-0.05* (0.04)
Effective Teaching Practices	0.00 (0.00)	0.00 (0.00)	0.01 (0.01)
Quality of Interactions	0.00 (0.00)	0.02 (0.02)	-0.01 (0.01)
Supportive Environment	-0.01 (-0.01)	0.01 (0.01)	-0.03 (-0.02)
<u>Senior Engagement Indicator</u>	<u>F-TCUS</u>	<u>USNWR</u>	<u>WM-NUR</u>
Higher-Order Learning	0.00 (0.00)	0.00 (0.00)	-0.02 (-0.02)
Reflective & Integrative Learning	0.02 (0.02)	0.02 (0.02)	0.02 (0.02)
Learning Strategies	-0.03 (-0.02)	-0.02 (-0.01)	-0.02 (-0.01)
Quantitative Reasoning	0.02 (0.01)	0.02 (0.02)	0.01 (0.01)
Collaborative Learning	-0.04 (-0.03)	-0.04 (0.03)	-0.02 (-0.01)
Discussions with Diverse Others	0.02 (0.05)	0.01 (0.01)	0.06* (0.04)
Student-Faculty Interaction	-0.08** (-0.05)	-0.06* (-0.04)	-0.06* (-0.04)
Effective Teaching Practices	-0.01 (-0.01)	-0.01 (-0.01)	-0.02 (-0.02)
Quality of Interactions	-0.01 (-0.01)	0.00 (0.00)	-0.04 (-0.04)
Supportive Environment	-0.04 (-0.03)	-0.01 (-0.01)	-0.07* (-0.05)

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

Figure 1

Equation of full multilevel model estimated. Separate equations were estimated for each engagement indicator and ranking scheme.

Level-1 (Student-level model):

$$Engagement\ Indicator\ score_{ij} = \beta_{0j} + \beta_{1j} * (female) + \beta_{2j} * (Asian) + \beta_{3j} * (Black) + \beta_{4j} * (Hispanic) + \beta_{5j} * (multiracial) + \beta_{6j} * (other\ race) + \beta_{7j} * (fulltime) + \beta_{8j} * (first\ generation) + \beta_{9j} * (transfer\ status) + \beta_{10j} * (STEM\ major) + \beta_{11j} * (live\ on\ campus) + \beta_{12j} * (Greek) + r_{ij}$$

Level-2 (Institution-level model):

$$\beta_{0j} = \gamma_{00} + \gamma_{01} * (enrollment\ size) + \gamma_{02} * (private) + \gamma_{03} * (ranking\ scheme) + u_{0j}$$

$$\beta_{1j} = \gamma_{10}$$

:

$$\beta_{12j} = \gamma_{120}$$

Appendix A: Description of Rankings Schemes

U.S. News & World Report National University Rankings

Ranking Category	Category Weight	Subfactor	Weight
Undergraduate Academic Reputation	22.5%	Peer assessment survey	15%
		High school counselors' ratings	7.5%
Student selectivity for fall 2011 entering class	15%	Acceptance rate	1.5%
		High school class standing in top 10%	6%
		Reading and Math SAT and composite ACT scores	7.5%
Faculty resources for 2011-2012 academic year	20%	Faculty compensation	7%
		Percent faculty with terminal degree in their field	3%
		Percent faculty who are full time	1%
		Student/faculty ratio	1%
		Class size, 1-19 students	6%
		Class size, 50+ students	2%
Graduation/Retention	20%	Six-year graduation rate	16%
		Freshman-to-sophomore retention rate	4%
Financial resources	10%	Financial resources per student	10%
Alumni giving 2009-2011	5%	Average alumni giving rate	5%
Graduation rate performance	7.5%	Graduation rate performance	7.5%
Total	100%	—	100%

Forbes The Top Colleges in the U.S.

Ranking Category	Category Weight	Subfactor	Weight
Student Satisfaction	25%	Student evaluations from ratenynprofessor.com	15%
		Actual freshman-to-sophomore retention rates	5%
Post-Graduate Success	35%	Predicted vs. actual freshman-to-sophomore retention rates	5%
		Salary of alumni from payscale.com	15%
		American leaders list	20%
Student Debt	17.5%	Average federal student loan debt load	10%
		Student loan default rates	5%
		Predicted vs. actual percent of students taking federal loans	2.5%

Four-year Graduation Rate	11.25%	Actual four-year graduation rate	8.75%
Academic Success	11.25%	Predicted vs. actual four-year graduation rate	2.5%
		Student nationally competitive awards	7.5%
		Alumni receiving PhDs	3.75%
Total	100%	—	100%

Washington Monthly National Universities Rankings			
Ranking Category	Category Weight	Subfactor	Weight
Social Mobility	33.33%	Students receiving Pell grants	8.33%
		Net price	8.33%
		Predicted graduation rate	8.33%
		Actual graduation rate	8.33%
		Research expenditures, in millions	6.67%
		Bachelor's to PhD	6.67%
		Science & engineering PhD's awarded	6.67%
		Faculty receiving significant awards	6.67%
		Faculty in national academies	6.67%
		Peace Corps	6.67%
Research	33.33%	ROTC	6.67%
		Federal work-study funds spent on service	6.67%
		Community service participation and hours served	6.67%
		Service staff, courses and financial aid support	6.67%
Service	33.33%		
Total	100%	—	100%

Appendix B: Description of Engagement Indicators

Higher-Order Learning

During the current school year, how much has your coursework emphasized the following:

- Applying facts, theories, or methods to practical problems or new situations
- Analyzing an idea, experience, or line of reasoning in depth by examining its parts
- Evaluating a point of view, decision, or information source
- Forming a new idea or understanding from various pieces of information

Reflective & Integrative Learning

During the current school year, how often have you:

- Combined ideas from different courses when completing assignments
- Connected your learning to societal problems or issues
- Included diverse perspectives (political, religious, racial/ethnic, gender, etc.) in course discussions or assignments
- Examined the strengths and weaknesses of your own views on a topic or issue
- Tried to better understand someone else's views by imagining how an issue looks from his or her perspective
- Learned something that changed the way you understand an issue or concept
- Connected ideas from your courses to your prior experiences and knowledge

Learning Strategies

During the current school year, how often have you:

- Identified key information from reading assignments
- Reviewed your notes after class
- Summarized what you learned in class or from course materials

Quantitative Reasoning

During the current school year, how often have you:

- Reached conclusions based on your own analysis of numerical information (numbers, graphs, statistics, etc.)
- Used numerical information to examine a real-world problem or issue (unemployment, climate change, public health, etc.)
- Evaluated what others have concluded from numerical information

Collaborative Learning

During the current school year, how often have you:

- Asked another student to help you understand course material
- Explained course material to one or more students
- Prepared for exams by discussing or working through course material with other students
- Worked with other students on course projects or assignments

Discussions with Diverse Others

During the current school year, how often have you had discussions with people from the following groups:

- People from a race or ethnicity other than your own
- People from an economic background other than your own
- People with religious beliefs other than your own
- People with political views other than your own

Student-Faculty Interaction

During the current school year, how often have you:

- Talked about career plans with a faculty member
- Worked with a faculty member on activities other than coursework (committees, student groups, etc.)
- Discussed course topics, ideas, or concepts with a faculty member outside of class
- Discussed your academic performance with a faculty member

Effective Teaching Practices

During the current school year, to what extent have your instructors done the following:

- Clearly explained course goals and requirements
- Taught course sessions in an organized way
- Used examples or illustrations to explain difficult points
- Provided feedback on a draft or work in progress
- Provided prompt and detailed feedback on tests or completed assignments

Quality of Interactions

Indicate the quality of your interactions with the following people at your institution:

- Students
- Academic advisors
- Faculty
- Student services staff (career services, student activities, housing, etc.)
- Other administrative staff and offices (registrar, financial aid, etc.)

Supportive Environment

How much does your institution emphasize the following:

- Providing support to help students succeed academically
- Using learning support services (tutoring services, writing center, etc.)
- Encouraging contact among students from different backgrounds (social, racial/ethnic, religious, etc.)
- Providing opportunities to be involved socially
- Providing support for your overall well-being (recreation, health care, counseling, etc.)

Helping you manage your non-academic responsibilities (work, family, etc.)
Attending campus activities and events (performing arts, athletic events, etc.)
Attending events that address important social, economic, or political issues