Revisiting the Relationship between Institutional Rank and Student Engagement

John Zilvinskis and Louis Rocconi

Abstract: College rankings dominate the conversation regarding quality in postsecondary education. However, the criteria used to rank institutions often have nothing to do with the quality of education students receive. A decade ago, Pike (2004) demonstrated that institutional rank had little association with student involvement in educational activities. In a reprise of Pike’s research, the current study examines the relationship between three institutional ranking schemes, U.S. News, Forbes, and Washington Monthly and student engagement, as measured by the National Survey of Student Engagement (NSSE). Findings reveal few relationships exist between NSSE’s measures of student engagement and the three institutional ranking schemes, except for a modest negative relationship between rank and student-faculty interactions.

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 Palmer, Hayek, Hossler, Jacob, & Cummings, 2004, p. 9). As such, rankings, like “Best Colleges” published by *U.S. News and World Report*, provide guidance to prospective students and their families regarding this decision (Altbach, 2012). For institutions, rank can have influence beyond prestige as changes in rankings are related to considerable increases in funding (Bastedo & Bowman, 2011).

For years, scholars have questioned the validity of rankings (see, Bastedo & Bowman, 2011; Green, 2011; Kuh & Pascarella, 2004; Pascarella, 2001; Pike, 2004), noting that they have little or nothing to do with the quality of education received by students. A criticism of rankings is that they simply measure the inputs of students enrolled and outcomes associated with those inputs, instead of the actual effects of attending the institution (Kuh & Pascarella, 2004; van der Wende, 2008). Student engagement, on the other hand, represents an aspect of college value that should be considered important to consumers because it describes what students will actually be doing if enrolled at an institution, and it is linked to other important factors, like retention (Hughes & Pace, 2003; Kuh, Cauce, Shoup, Kinzie, & Gonyea, 2008), academic performance (Carini, Kuh, & Klein, 2006; Loes, Pascarella & Umbach, 2012; Pike, Kuh, & Massa-McKinley, 2008), and satisfaction (Webber, Krylow, & Zhang, 2013). The purpose of this study is to examine institutional outcomes by comparing institution rank with levels of engagement measured by the National Survey of Student Engagement (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?

**Review of the Literature**

**Institutional Rank**

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). Increases in rank 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). For institutions, rankings are important as evident by the connection to essential functions like admissions and finance, as well as its overall campus culture.

One criticism of rankings is that they fail to describe essential functions of the academy, such as student learning or faculty teaching (Volkwein & Sweitzer, 2006). Others argue that the rankings merely reflect the selectivity of the institution (Kuh & Pascarella, 2004; van der Wende, 2008). Although most rankings systems do take into account first-year to second year retention and graduation rates, these values are skewed by the type of student an institution attracts (Volkwein & Sweitzer, 2006). 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). Further evidence that rankings do not measure outcomes is their relation 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 also related to important aspects of the college experience like student engagement?

**Student Engagement**

Student engagement is not a monolithic concept, but instead represents a series of understandings of the student experience (McCormick, Kinzie, & Gonyea, 2013). Many researchers have contributed to these understandings, establishing agreement regarding the facets of student engagement among scholars in higher education. For example, the work of Pace (1980), whose creation of the College Student Experiences Questionnaire contributed significantly to the development of the National Survey of Student Engagement (McCormick & McClenney, 2012), identifies student effort as a key factor in student success. Complementing this research, Astin’s (1984) Student Involvement Theory describes the aspects of students’ time and energy toward curricular activities (participation in honors programs, level of academic involvement, interacting with faculty) and co-curricular opportunities (participating in athletics, student government, or working on campus) as being a determinant factor of student learning and development. Kuh (2009, p. 6) bridges these aspects, “engagement is the term usually used to represent constructs such as quality of effort and involvement in productive learning activities.” The concept of engagement is simple: what students do matters. Thus, learning and development 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 support of diversity (Chickering & Gamson, 1987; McCormick, Kinzie, & Gonyea, 2013; NSSE, 2013).
Much attention has been directed towards student engagement because it has been associated with important indicators of collegiate quality such as retention, academic performance, satisfaction, learning, and critical thinking skills. Students who engage in educationally purposeful activities, like interacting with faculty, meeting with diverse students, and participating in active learning, have been positively associated with student retention (Kuh et al., 2008). In addition, engagement associated with living on campus is related to lower withdrawal rates, compared to first-year students who live off campus (Hughes & Pace, 2003). Students who are highly engaged have higher cumulative GPAs and report higher levels of satisfaction with their institution (Webber, Krylow, & Zhang, 2013). For first-year students, there is a significant positive relationship between being engaged in active and collaborative learning (a type of in-class engagement) and GPA (Pike, Kuh, & Massa-McKinley, 2008). Students who participate in specific engagement activities, like research with a faculty member or studying abroad, are more likely to be retained between their first and second year and also have higher GPAs (Kuh, 2008; Kuh & O’Donnell, 2013). Students engaged in rigorous academic work, support on campus, and strong relationships with others are more likely to develop critical thinking skills (Carini, Kuh, & Klein, 2006). Experiences with diverse others has also been shown to benefit critical thinking skills (Loes, Pascarella & Umbach, 2012). These numerous studies have linked student engagement to factors that consumers should consider important when choosing an institution, yet little is known about how the student experience in college relates to institutional rankings.

Theoretical Framework

The current study draws on the previous work of Pike (2004) who examined the rankings of fourteen public Association of American Universities (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 U.S. News. 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., U.S. News & World Report National University Rankings, and Washington Monthly’s National Universities Rankings. Each organization devises their rankings based on diverse criteria including selectivity, retention, success, satisfaction, social mobility, and service. Not only does this study expand on Pike’s work by increasing the number of institutions and ranking schemes, but it also uses data from the newly redesigned NSSE that allows researchers to evaluate dynamics of student engagement different than the ones previously studied, like effective teaching practices and students’ use of quantitative reasoning activities (McCormick, Gonyea, Kinzie, 2013).
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 behaviors to increase rank instead of long-term behaviors 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 perspective students, while also influencing the behavior of institutions that may seek more prestige. In their description of institutional behavior related to national rankings, Bastedo and Bowman (2011) define the process of reactivity (i.e., the ways in which organizations normalize behaviors in response to the quantification of quality asserted by a third party). 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 (Gonzales, 2013; Melguizo & Strober, 2007; Meredith, 2004). 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 conflate institutional prestige with institutional quality since factors that indicate 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 National Survey of Student Engagement (NSSE). The NSSE is an annual survey administered to first-year and senior students at four-year colleges and universities. The survey was designed to assess the extent to which students engage in educationally purposeful activities that have been shown to support and promote student success (McCormick et al., 2013). We also used an institution’s 2013 score for three rankings schemes: Forbes’ Top Colleges in the U.S. (Forbes), U.S. News & World Report National University Rankings (U.S. News), and Washington Monthly’s National Universities Rankings (WM). In order to be selected for this study, an institution 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 ten specific areas of student engagement: higher-order learning, reflective and integrative learning, learning strategies, quantitative reasoning, collaborative learning, discussions with diverse others, student-faculty interaction, effective teaching practices, quality of interactions, and supportive environment. Engagement indicator scores are calculated by averaging across various items on the survey. Then, following procedures outlined by NSSE (2013), each engagement indicator was placed on a 60-point scale. Descriptions of the items that comprise each of the ten indicators along with their internal consistency alphas are presented in Table 2.
Table 1.

Descriptive statistics

| Engagement Indicators                                               | First-year |          | Senior  |          | Min | Max |
|---------------------------------------------------------------------|------------|----------|---------|----------|-----|-----|
|                                                                      | Mean¹      | SD       | Mean¹   | SD       |     |     |
| Higher-Order Learning                                               | 39.01      | 13.45    | 40.35   | 13.87    | 0   | 60  |
| Reflective & Integrative Learning                                  | 35.27      | 12.25    | 38.06   | 12.89    | 0   | 60  |
| Learning Strategies                                                 | 27.84      | 15.98    | 30.01   | 17.19    | 0   | 60  |
| Quantitative Reasoning                                              | 39.15      | 13.97    | 39.05   | 14.75    | 0   | 60  |
| Collaborative Learning                                              | 33.72      | 13.79    | 33.71   | 14.31    | 0   | 60  |
| Discussions with Diverse Others                                    | 41.56      | 15.15    | 42.09   | 15.52    | 0   | 60  |
| Student-Faculty Interaction                                         | 19.81      | 13.88    | 23.9    | 15.87    | 0   | 60  |
| Effective Teaching Practices                                        | 39.23      | 12.6     | 40.01   | 13.24    | 0   | 60  |
| Quality of Interactions                                             | 41.6       | 11.71    | 41.61   | 11.47    | 0   | 60  |
| Supportive Environment                                              | 38.15      | 13.06    | 33.75   | 13.71    | 0   | 60  |

| Student Characteristics                                             |          |          |         |          |     |     |
|                                                                      | Mean¹    | SD       | Mean¹   | SD       |     |     |
| Female                                                              | 0.61      | 0.49     | 0.58    | 0.49     | 0  | 1   |
| Asian                                                               | 0.09      | 0.29     | 0.07    | 0.25     | 0  | 1   |
| Black/African-American                                              | 0.06      | 0.23     | 0.06    | 0.23     | 0  | 1   |
| Latino/a                                                            | 0.06      | 0.23     | 0.06    | 0.23     | 0  | 1   |
| White (reference group)                                             | 0.70      | 0.46     | 0.74    | 0.44     | 0  | 1   |
| Multiracial                                                        | 0.06      | 0.24     | 0.05    | 0.22     | 0  | 1   |
| Other race-ethnicity                                                | 0.03      | 0.18     | 0.03    | 0.16     | 0  | 1   |
| Fulltime student                                                    | 0.98      | 0.15     | 0.86    | 0.34     | 0  | 1   |
| First-generation student²                                           | 0.32      | 0.47     | 0.37    | 0.48     | 0  | 1   |
| Transfer student                                                    | 0.07      | 0.26     | 0.4     | 0.49     | 0  | 1   |
| Traditional age³                                                    | 0.96      | 0.21     | 0.77    | 0.42     | 0  | 1   |
| STEM major                                                          | 0.34      | 0.47     | 0.31    | 0.46     | 0  | 1   |
| Live on campus                                                      | 0.75      | 0.43     | 0.15    | 0.36     | 0  | 1   |
| Member of Greek organization                                        | 0.14      | 0.35     | 0.13    | 0.34     | 0  | 1   |

| Institutional Characteristics                                       |          |          |         |          |     |     |
|                                                                      | Mean¹    | SD       | Mean¹   | SD       |     |     |
| Enrollment size³                                                    | 13.74     | 8.61     | 13.74   | 8.61     | 1.77| 36.16|
| Private institution                                                 | 0.39      | 0.49     | 0.39    | 0.49     | 0  | 1   |
| U.S. News ranking score                                             | 41.92     | 11.37    | 41.92   | 11.37    | 27  | 78  |
| Forbes ranking score                                                | 49.75     | 10.4     | 49.75   | 10.4     | 32  | 80  |
| Washington Monthly ranking score                                    | 49.3      | 10.62    | 49.3    | 10.62    | 29  | 84  |

¹Means for dichotomous items represent proportions
²Neither parent holds a bachelor’s degree
³24 years or younger
⁴Undergraduate Enrollment size in thousands
## Table 2.
### Items comprising NSSE’s Engagement Indicators and Alpha Reliability Coefficients

**Higher-Order Learning**  
Cronbach’s alpha: First-year = .83; Senior = .84  
- *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**  
Cronbach’s alpha: First-year = .87; Senior = .88  
*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**  
Cronbach’s alpha: First-year = .76; Senior = .77  
*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**  
Cronbach’s alpha: First-year = .83; Senior = .86  
*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**  
Cronbach’s alpha: First-year = .81; Senior = .81  
*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**  
Cronbach’s alpha: First-year = .87; Senior = .89  
*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 Cronbach’s alpha: First-year = .82; Senior = .84
*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 Cronbach’s alpha: First-year = .82; Senior = .85
*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 Cronbach’s alpha: First-year = .93; Senior = .91
*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 Cronbach’s alpha: First-year = .88; Senior = .88
*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

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. Intuitional 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. We chose to run separate models for first-year and senior students for two reasons: (1) NSSE reports engagement indicator results separately for first-year and senior students, and (2) the educational experience is different for first-year and senior students. For instance, the first-year students are typically enrolled in general education coursework, whereas seniors are typically enrolled in coursework in their academic major. First-year students have only been exposed to a limited number of faculty members at their current institution, while seniors have been exposed to many more. The first-year cohort includes students who will eventually transfer or drop out of the institution, while the senior cohort includes students that transferred into the institution and includes the students who “made it” to the end.

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 from these baseline models 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 account for the nesting effects in the data, to protect against over inflated standard errors, and to more accurately model the relationship between the ranking schemes (an institution-level variable) and engagement (a student-level variable; 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 (Enders & Tofighi, 2007; 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. To identify possible misspecification of the distribution of random effects, we compared model-based standard errors and robust standard errors (Raudenbush & Bryk, 2002). An equation of the full model is presented in Figure 1. Since the focus of this study is on the relationship between engagement and institutional ranking, we present those results from the models. Results for the student-level variables and other institution-level variables are presented in Appendix A.
Limitations

As with any research, ours is not without its limitation. There are at least five limitations that should inform the reader’s interpretation of this study. First, although there was some diversity in institutional type and size, many of the institutions were similar in that they were defined by the publications as “national universities.” U.S. News and Washington Monthly separate institutions by classification types and only the rankings of national universities (compared to ranking lists of liberal arts colleges) were employed here. Second, institutions had to be ranked in all three ranking schemes and participate in NSSE in 2013 to be included in this study; therefore, several institutions were removed from consideration, and there are a number of highly ranked institutions (according U.S. News) that do not participate in NSSE. Third, readers should be cautious not to overgeneralize these results; although some statistically significant relationships were discovered, these relationships are not particularly strong. Fourth, although NSSE is a widely adopted instrument to assess the student experience within higher education, it is only one means in which to measure student engagement, and our analysis is limited to the constructs measured by the survey. Fifth, it is important to acknowledge that there is the debate within the higher education community regarding the validity of survey data, which includes concerns regarding social desirability bias (Bowman, 2011) and subjectivity of self-reporting (Porter, 2011). However, there has been research conducted using NSSE data demonstrating social desirability bias does not play a major role in students’
self-reports of basic academic behaviors (Miller, 2012). Although survey data may reflect respondent perception, they still offer valuable information regarding the student experience that should be incorporated in institutional decision making and policy creation (Gonyea & Miller, 2011; Pike, Smart, & Ethington, 2012). Despite these limitations, we believe these results are helpful in contributing to the dialogue regarding collegiate quality and confirm the findings of Pike (2004); empirical confirmation like this work is a laurel of the scientific community.

**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 3. After accounting 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 scores on the student-faculty interaction engagement indicator, signifying that a higher ranking score, that is a better ranking, was associated with institutions with lower student-faculty interaction scores (first-year: Forbes $\gamma = -.046$; WM $\gamma = -.039$; senior: Forbes $\gamma = -.050$; US News $\gamma = -.038$; WM $\gamma = -.040$). 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 ($\gamma = -.056$) 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 ($\gamma = .054$) and the discussion with diverse others engagement indicator for first-year students. This result suggest that first-year students 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**

Overall, findings demonstrate little to no relationship between institutional rank and student engagement. However, a modest but consistent finding across ranking schemes and class level was a negative relationship with student-faculty interaction, indicating that students at higher ranked insti-
Table 3. **Standardized Coefficient Estimates for the Relationship between Ranking Schemes and NSSE Engagement Indicators**

| First-Year Engagement Indicator                  | Forbes | US News | WM  |
|-------------------------------------------------|--------|---------|-----|
| Higher-Order Learning                           | .006   | .004    | .014|
| Reflective & Integrative Learning              | .022   | .026    | .030|
| Learning Strategies                             | -.003  | .005    | -.005|
| Quantitative Reasoning                          | .013   | .018    | .000|
| Collaborative Learning                         | .037   | .040    | .019|
| Discussions with Diverse Others                 | .031   | .029    | .054*|
| Student-Faculty Interaction                     | -.046**| -.028   | -.039*|
| Effective Teaching Practices                    | .002   | -.003   | .006|
| Quality of Interactions                         | .003   | .019    | -.013|
| Supportive Environment                          | -.012  | .008    | -.024|

| Senior Engagement Indicator                     | Forbes | US News | WM  |
|-------------------------------------------------|--------|---------|-----|
| Higher-Order Learning                           | .001   | .002    | -.014|
| Reflective & Integrative Learning              | .016   | .013    | .018|
| Learning Strategies                             | -.020  | -.015   | -.015|
| Quantitative Reasoning                          | .011   | .012    | .005|
| Collaborative Learning                         | -.026  | -.032   | -.015|
| Discussions with Diverse Others                 | .015   | .009    | .037|
| Student-Faculty Interaction                     | -.050**| -.038*  | -.040*|
| Effective Teaching Practices                    | -.010  | -.009   | -.015|
| Quality of Interactions                         | -.006  | -.004   | -.039|
| Supportive Environment                          | -.027  | -.010   | -.056*|

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

Institutions reported fewer interactions with faculty. The relationship between student-faculty interaction and rank is intriguing. It is certainly possible that less competitive institutions recruit and attract students that need more guidance from faculty, thus explaining part of the negative association between rank and experiences with faculty. This could also be related to institutional emphasis on teaching and learning and faculty promotion. Conventional wisdom holds that less competitive institutions will be more dedicated to teaching, as opposed to research, and faculty may place a greater emphasis on teaching than on research at less competitive institutions. Maybe the results of these efforts are showing up here. In any event, institutions should be aware of the opportunities they offer students given that extensive research (see, for example, Kim & Sax, 2009; Kuh & Hu, 2001) has demonstrated that meaningful interactions with faculty have a profound impact on students’ college experience and contribute to their learning and development.
Besides the relationship between rank and student-faculty interaction, Washington Monthly was the only ranking scheme to have any other statistically significant relationships with engagement. Unlike the U.S. News and Forbes ranking schemes, which were highly correlated \((r = .89)\), the Washington Monthly ranking scheme employees unorthodox measurements of college experience. Beyond the typical variables like graduation rates and faculty profile, this ranking scheme has a unique blend of social mobility, research, and service measurements. Factors include aspects like percent of students receiving Pell grants, bachelor’s to Ph.D. recipients, number of Peace Corps and ROTC volunteers, and the amount of federal work-study funds spent on service. Not only were the ranking values dissimilar from the other two rankings schemes, but they also had different relationships to student engagement. Notably, Washington Monthly rank had a positive relationship with the discussions with diverse others indicator and a negative relationship with the supportive environment indicator. It would be interesting to investigate what factors in the Washington Monthly ranking scheme lead highly ranked schools to have students who report more frequent conversations with students different than themselves yet also have students who feel less supported on campus. These indicators are particularly interesting because both indicators seem in line with the goals of Washington Monthly’s social mobility and service domains yet have opposite levels of success.

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 associated with college rankings schemes. Our results demonstrate that, contrary to conventional wisdom, higher ranked institutions do not necessarily provide a superior educational experience. In fact, educational quality, as indicated by engagement, seems to have little to do with institutional rank. These findings echo Pike’s (2004) results over ten years ago when he examined the relationship between engagement and U.S. News rankings. It is important to point out that NSSE uses only one type of data (survey data) and measures only one aspect of quality (engagement); therefore, readers should be cautious not to extend these findings beyond the reach of these instruments. Even so, student engagement can be an indicator of collegiate quality (Kuh, 2001; McCormick & McClenneney, 2012); thus, institutional administrators and prospective students should be concerned about the influence of rankings on market and institutional behavior.

By examining these findings 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’ 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 information (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, 2012). In the meantime of developing a comparative tool that takes into consideration other indicators of college quality, institutional 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, students and their families should continue to gather information from multiple sources as they refine their personal definitions of the true value of higher education.

By providing institutional data, advertising standings within the rankings, and making policy to improve in those standings, institutions play a role in popularizing rankings. Higher education has a legacy of prestige seeking behavior, as institutions are known to expend their resources toward these vain pursuits (Bowen, 1980) – therefore, abstention does not seem plausible. However, institutions can work to offset the role of rankings by informing prospective consumers of the substantive aspects of student experience.
Some institutions have begun to do so by providing information regarding student learning outcomes, NSSE survey results, and shared experiences. Also, institutions should continue to support organizations, like the College Board, in creating resources for consumers regarding college planning. Advertising aspects of the quality of the student experience and informing the public regarding college selection will lead to the enrollment of not only academically prepared, but also thoughtful students.

**Directions for Future Research**

The results from this study should direct researchers in the future to consider how much value institutions place on achieving higher rank versus improving the student experience, and how students interpret the information in ranking schemes. Certainly, researchers have measured the extent to which stakeholders of institutions have adjusted important campus aspects, such as institutional mission (Gonzales, 2013; Hazelkorn, 2008), student admission (Bastedo & Bowman, 2011; Ehrenberg, 2003), and faculty recruitment (Melguizo & Strober, 2007; Pusser & Marginson, 2013); however, there is a dearth of research on how institutions prioritize their resources—at least with the aims of increasing institutional rank. There are transparent examples of university presidents receiving bonuses if their institution increases in rank (e.g., Arizona State University) and some institutions include increasing in rank in their 10-year plans (e.g., Northwestern University; Bastedo & Bowman, 2011). Without a doubt, there are decisions being made that are not as transparent guiding institutional decision making with the aims of increasing institutional rank, but are these decisions at the cost of the student experience? Researchers who measure institutional governance could illuminate these processes by measuring the degree to which rank is a prevalent factor when making institutional decisions and furthermore map how these decisions reflect pursuit of prestige versus pursuit of quality (Bowen, 1980). Examples of pursuit of prestige may include redirecting student tuition dollars to attract students to campus with more competitive academic profiles instead of pursuits of quality, which would include increasing the education of the students who are already likely to enroll. Certainly, almost everyone (faculty, students, and administrators) would prefer to have academically gifted students on campus, but institutions are missing their calling if they are inept at and refuse to improve in supporting the students they have in achieving their academic ambitions.

Another area of research that would be beneficial to scholarship on rankings is learning more about how students interpret rankings information in their search process. Already, researchers have been able to show that institutional rankings play some role in college decision-making. However, it is the position of the authors of this paper, and other scholars concerned with the conversation of collegiate quality, that consumers may be mistaking
college rank for collegiate quality, but there is a chance that this is not the case. Research on the use of rankings are quantitatively based asking respondents if they used rankings (Eagan et. al., 2013), instead of being qualitatively based to find out how rankings information is being used. Some consumers consider aspects of a rankings scheme as a means to filter institutions but may still look for more comprehensive sources regarding the quality of the institutions they are considering. For example, a student may use the SAT and high school GPA score to help decide if admissions to an institution is likely, then the student can gain more information from guidebooks, institution websites, and interviews with faculty and staff to determine if an institution offers educational opportunities that will help him or her achieve their academic and professional goals. Researchers have shown that the students who use institutional ranking schemes tend to be White and non-first generation college students (i.e., students likely to have social capital; McDonough et al., 1998), so there is a chance that these individuals are receiving guidance on how to use rankings information in a complex way. What about students without as much social capital? Are they more or less likely to conflate rank with quality? Examining these questions could be helpful in measuring the true cost of disassociation between institutional rank and student engagement from a consumer’s perspective.

One last area of future research we recommend is using multiple measurements to further the conversation regarding the relationship between student experience and institutional rank. Like NSSE, the Cooperative Institutional Research Program (CIRP) aims to assess the student experience in college. Researchers could use CIRP data to confirm our results using different measures of engagement and examine different aspects of students’ college experience. In addition to NSSE and CIRP, the Wabash National Study of Liberal Arts Education is a longitudinal study in which the researchers associated with this project examine similar aspects of student engagement and learning; because of the shared focus on engagement, using these data could substantiate the claims of our current study (Blaich & Wise, 2010). Another tool that may be helpful in furthering this conversation is the College Scorecard, which uses federal data to report institutional annual costs, financial aid awards and typically debt accumulation, graduation and retention rates, admission test scores (e.g., ACT, SAT), and salary data of former students. Although these aspects offer redundancy for some of the ranking schemes, this tool is of interest because it is designed to inform consumer decision making. A final measurement that might be worth exploring includes data collected by the Delta Cost Project. For example, expenditure data regarding education and related spending may provide valuable information regarding the relationship between how much an institution spends on student learning and its rank. All of these measures could provide additional examination
into the ways rankings schemes do and do not describe the quality of the student experience.

**CONCLUSION**

Given the popularity of college rankings as well as their use in the college-choice process, it is important to investigate whether these are related to other indicators of college quality. The results of the present study raise concerns about whether the criteria used in the ranking schemes provide appropriate information to prospective students and parents about the quality of the undergraduate experience. Similarly, post-secondary leaders should use caution before allocating resources to increase their institution’s rank. Findings from this study, along with Pike’s (2004) initial study, indicate that by focusing on increasing one’s ranking may be a disservice to students since institutional resources are going towards characteristics that are not related with a high-quality educational experience. The findings also call into question the notion that attending a higher ranked institution assures a better educational experience. Instead of relying on institutional rankings to gauge the quality of the college experience, it would be more beneficial to students, parents, institutional leaders, and the media to focus on indicators that more accurately represent what students do during college. As Pike concluded in his analysis, although the rankings schemes may reflect the “best” colleges in America, the question we should be asking is, what do we mean by “best?”

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# Appendix

## Table A1

### Variance Components for Baseline Models

| NSSE Engagement Indicator | Between Institution Variance ($\tau$) | Within Institution Variance ($\sigma^2$) | Intraclass Correlation |
|---------------------------|---------------------------------------|----------------------------------------|------------------------|
| **First-Year**             |                                       |                                        |                        |
| Higher Order Learning (HO)| 2.19***                               | 176.09***                              | 0.012                  |
| Reflective & Integrative Learning (RI)| 2.87*** | 145.42***                              | 0.019                  |
| Learning Strategies (LS)  | 2.34***                               | 191.44***                              | 0.012                  |
| Quantitative Reasoning (QR)| 3.12*** | 249.76***                              | 0.012                  |
| Collaborative Learning (CL)| 7.58*** | 181.89***                              | 0.040                  |
| Discussions with Diverse Others (DD)| 7.44*** | 220.52***                              | 0.033                  |
| Student-Faculty Interaction (SF)| 3.08*** | 186.98***                              | 0.016                  |
| Effective Teaching (ET)   | 2.65***                               | 153.56***                              | 0.017                  |
| Quality of Interactions (QI)| 2.99*** | 132.25***                              | 0.022                  |
| Supportive Environment (SE)| 3.93*** | 166.34***                              | 0.023                  |
| **Senior**                 |                                       |                                        |                        |
| Higher Order Learning (HO)| 2.60***                               | 187.64***                              | 0.014                  |
| Reflective & Integrative Learning (RI)| 4.34*** | 161.90***                              | 0.026                  |
| Learning Strategies (LS)  | 5.87***                               | 212.07***                              | 0.027                  |
| Quantitative Reasoning (QR)| 3.34*** | 293.07***                              | 0.011                  |
| Collaborative Learning (CL)| 5.13*** | 199.11***                              | 0.025                  |
| Discussions with Diverse Others (DD)| 6.15*** | 233.78***                              | 0.026                  |
| Student-Faculty Interaction (SF)| 7.36*** | 243.30***                              | 0.029                  |
| Effective Teaching (ET)   | 4.38***                               | 170.32***                              | 0.025                  |
| Quality of Interactions (QI)| 5.15*** | 126.18***                              | 0.039                  |
| Supportive Environment (SE)| 7.67*** | 181.16***                              | 0.041                  |

***p<.001
# Table A2

**Standardized Coefficient Estimates, Standard Errors (in Parentheses), and Variance Components from Full Multilevel Model for First-Year Students and U.S. News Ranking Scheme**

| Fixed Effects | HO (0.046***), (0.008), (0.1***), (0.016)**, (0.021**), (0.007) | RI (0.007), (0.007) | LS (0.011***), (0.007) | QR (0.007), (0.007) | CL (0.007), (0.007) | DD (0.007), (0.007) | SF (0.007), (0.007) | ET (0.007), (0.007) | QI (0.007), (0.007) | SE (0.007), (0.007) |
|---------------|-----------------------------------------------------------------|----------------------|-------------------------|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Female        | (0.007), (0.007)                                                | (0.007), (0.007)     | (0.007), (0.007)        | (0.007), (0.007)    | (0.007), (0.007)    | (0.007), (0.007)    | (0.007), (0.007)    | (0.007), (0.007)    | (0.007), (0.007)    | (0.007), (0.007)    |
| Asian         | (0.007), (0.007)                                                | (0.007), (0.007)     | (0.007), (0.007)        | (0.007), (0.007)    | (0.007), (0.007)    | (0.007), (0.007)    | (0.007), (0.007)    | (0.007), (0.007)    | (0.007), (0.007)    | (0.007), (0.007)    |
| Black         | (0.007), (0.007)                                                | (0.007), (0.007)     | (0.007), (0.007)        | (0.007), (0.007)    | (0.007), (0.007)    | (0.007), (0.007)    | (0.007), (0.007)    | (0.007), (0.007)    | (0.007), (0.007)    | (0.007), (0.007)    |
| Latino/a      | (0.007), (0.007)                                                | (0.007), (0.007)     | (0.007), (0.007)        | (0.007), (0.007)    | (0.007), (0.007)    | (0.007), (0.007)    | (0.007), (0.007)    | (0.007), (0.007)    | (0.007), (0.007)    | (0.007), (0.007)    |
| Multiracial   | 0.009                                                            | 0.035***              | -0.011                  | 0.007               | 0.003               | 0.053***            | 0.011               | 0.001               | -0.017**             | -0.002              |
| Other race-ethnicity | (0.007), (0.007)                                                | (0.007), (0.007)     | (0.007), (0.007)        | (0.007), (0.007)    | (0.007), (0.007)    | (0.007), (0.007)    | (0.007), (0.007)    | (0.007), (0.007)    | (0.007), (0.007)    | (0.007), (0.007)    |
| Full-time student | 0.012, 0.018***                                                  | -0.013               | 0.022**                 | 0.049***            | 0.012               | 0.079***            | 0.009               | -0.01               | 0.021**              |                     |
| Traditional age | 0.003                                                           | -0.016*              | -0.036***               | -0.019**            | 0.041***            | 0.027***            | -0.155              | -0.022**            | 0.441***             |                     |
| First-generation | -0.014*                                                          | -0.012               | -0.015*                 | -0.002              | -0.019**            | -0.015*             | 0.008               | -0.007              | -0.024***            | 0.01                |
| Transfer       | 0.005                                                            | 0.029***             | 0.012                   | -0.008              | 0.004               | -0.004              | -0.008              | -0.008              | -0.008               | -0.008              |
| STEM major     | 0.013***                                                         | -0.079***            | -0.011                  | 0.121***            | 0.119***            | -0.004              | -0.013***           | -0.025***            | 0.014*               | 0.008              |
| Lives on campus | 0.001                                                           | 0.002                | -0.015*                 | 0.000               | 0.072**             | 0.068***            | 0.023**             | 0.008               | 0.044***             | 0.061***            |
| Greek member   | 0.006                                                            | 0.008                | 0.024***                | 0.037***            | 0.11***             | -0.021**            | 0.061***            | -0.027***            | -0.002               | 0.027***            |
| Enrollment size | 0.015                                                            | 0.013                | 0.032                   | 0.011               | -0.005              | 0.039               | -0.002              | -0.002              | -0.002               | -0.002              |
| Private institution | 0.062**                                                          | 0.05*                | 0.076***                | -0.002              | -0.001              | 0.066**             | 0.038               | 0.039               | 0.043                | 0.064**             |
| U.S. News score | 0.004                                                            | 0.026                | 0.008                   | 0.018               | 0.04                | 0.029               | -0.028              | -0.008              | 0.019                | 0.008              |

*Rando m Effects*

| Variance Components | Between Institutions (σ²) | Within institution (σ²) |
|---------------------|---------------------------|-------------------------|
|                     | 1.54***                   | 2.99***                 |
|                     | 1.26***                   | 2.65***                 |
|                     | 4.08***                   | 7.44***                 |
|                     | 2.79***                   | 1.82***                 |
|                     | 1.97***                   | 6.69***                 |
|                     | 144.1***                  | 189.03***               |
|                     | 238.85***                 | 174.38***               |
|                     | 216.54***                 | 184.10***               |
|                     | 153.38***                 | 131.55***               |
|                     | 163.52***                 | 181.73***               |

*p<0.05; **p<0.01; ***p<0.001*
### Table A3

**Standardized Coefficient Estimates and Standard Errors (in Parentheses), and Variance Components from Full Multilevel Model for Senior Students and U.S. News Ranking Scheme**

| Fixed Effects                      | HO | R1 | LS | QR | CL | DD | SF | ET | QI | SE |
|-----------------------------------|----|----|----|----|----|----|----|----|----|----|
| Female                            | 0.043*** | 0.045*** | 0.100*** | -0.123*** | -0.006 | 0.022*** | 0.013* | 0.023*** | 0.007 | 0.044*** |
|                                   | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) |
| Asian                             | 0.006 | -0.028*** | 0.008 | 0.033*** | 0.014*** | -0.033*** | 0.012* | 0.002*** | 0.005 | 0.015*** |
|                                   | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) |
| Black                             | 0.024*** | 0.012* | 0.023*** | -0.003 | 0.008 | 0.027*** | 0.015*** | 0.019*** | 0.006 | 0.046*** |
|                                   | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) |
| Latino/a                          | 0.019*** | 0.017*** | -0.004 | 0.007 | 0.003 | 0.021*** | 0.010*** | 0.014*** | -0.009 | 0.022*** |
|                                   | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) |
| Multiracial                       | 0.014*** | 0.041*** | 0.006 | 0.033 | 0.001 | 0.051*** | 0.012* | -0.003 | 0.001 | 0.009 |
|                                   | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) |
| Other race-ethnicity              | 0.008 | 0.004 | 0.002 | 0.002 | 0.005 | 0.025*** | 0.015** | 0.004 | -0.01* | 0.007 |
|                                   | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) |
| Fulltime student                   | 0.029*** | 0.057*** | 0.005 | 0.025*** | 0.119*** | 0.066*** | 0.097*** | 0.01 | 0.007 | 0.037*** |
|                                   | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) |
| Traditional age                    | -0.016* | -0.005 | -0.057*** | 0.004 | 0.188*** | 0.009 | 0.063*** | -0.005 | -0.008* | 0.068*** |
|                                   | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) |
| First-generation                   | 0.007 | -0.007 | -0.001 | 0.004 | -0.027*** | -0.004 | -0.025*** | 0.001 | -0.008 | -0.002 |
|                                   | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) |
| Transfer                           | 0.005 | 0.002 | 0.028*** | -0.008 | -0.031*** | -0.025*** | -0.005*** | 0 | -0.003 | -0.039*** |
|                                   | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) |
| STEM major                         | -0.061*** | -0.144*** | -0.033 | 0.172*** | 0.127*** | -0.254*** | -0.087*** | -0.024*** | -0.035*** |
|                                   | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) |
| Lives on campus                    | -0.018*** | -0.001 | -0.016*** | -0.019*** | -0.007 | 0.033*** | 0.025*** | -0.002 | 0.026*** | 0.039*** |
|                                   | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) |
| Greek member                       | 0.019*** | 0.015*** | 0.033*** | 0.085*** | 0.001 | 0.040*** | 0.005 | 0.011 | 0.024*** |
|                                   | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) |
| Enrollment size                    | 0.013 | 0.035* | 0.050*** | 0.018 | -0.021 | 0.046 | -0.014 | 0.017 | 0.006 | 0.074* |
|                                   | (0.015) | (0.017) | (0.014) | (0.014) | (0.005) | (0.012) | (0.012) | (0.022) | (0.023) | (0.023) |
| Private institution                | 0.045*** | 0.048*** | 0.057*** | 0.01 | 0.008 | 0.068* | 0.038 | 0.044* | 0.041 | 0.065* |
|                                   | (0.015) | (0.016) | (0.013) | (0.019) | (0.026) | (0.021) | (0.001) | (0.031) | (0.028) | (0.028) |
| U.S. News score                    | 0.002 | 0.013 | -0.015 | 0.012 | -0.032 | 0.009 | -0.038* | -0.009 | -0.004 | -0.01 |
|                                   | (0.012) | (0.012) | (0.015) | (0.011) | (0.015) | (0.017) | (0.017) | (0.016) | (0.024) | (0.022) |

**Random Effects**

| Variance Components               |
|-----------------------------------|
| Between Institutions (τ)          | 1.25** | 1.34*** | 2.84*** | 8.52*** | 2.59*** | 5.98*** | 4.10*** | 2.77*** | 4.81*** | 5.76*** |
| Within institution (σ')           | 186.15** | 154.53*** | 206.56*** | 276.89*** | 184.98*** | 230.74*** | 235.01*** | 168.90*** | 125.41*** | 177.27*** |

*p<.05; **p<.01; ***p<.001
Table A4

Standardized Coefficient Estimates and Standard Errors (in Parentheses), and Variance Components from Full Multilevel Model for First-Year Students and Forbes Ranking Scheme

| Fixed Effects                  | HO    | RI    | LS    | QR    | CL    | DD    | SF    | ET    | QI    | SE    |
|--------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Female                         | 0.046*** | 0.008  | 0.1*** | -0.131*** | 0.035* | 0.021** | -0.014* | 0.001  | -0.025*** | 0.065*** |
| Asian                          | 0.022*** | -0.011 | 0.001  | 0.072*** | 0.019** | -0.068*** | 0.006*** | 0.008  | -0.019** | -0.035*** |
| Black                          | 0.033*** | 0.025*** | 0.001  | 0.007  | 0.009  | 0.026*** | 0.056*** | 0.013* | -0.006  | 0.037*** |
| Latino/a                       | 0.031*** | 0.022*** | -0.001 | 0.008  | -0.011 | 0.021**  | 0.041*** | 0.022** | -0.027*** | 0.014* |
| Multiracial                    | 0.009  | 0.034*** | -0.011 | 0.007  | 0.033  | 0.055*** | 0.011  | 0.001  | -0.017** | -0.002 |
| Other race-ethnicity           | 0.025*** | 0.024*** | 0.002  | 0.021** | 0.031* | 0.013*   | 0.042*** | -0.007 | -0.032*** | -0.003 |
| Fulltime student               | 0.012  | 0.018** | -0.013 | 0.022** | 0.049*** | 0.012**  | 0.029*** | 0.009  | -0.01  | 0.021** |
| Traditional age                | 0.003  | -0.016* | -0.036*** | 0.017** | 0.053*** | 0.041*** | 0.027*** | -0.015* | -0.022** | 0.041*** |
| First-generation               | -0.014* | -0.012 | -0.015* | -0.002 | -0.019** | -0.015*  | 0.007  | -0.007 | -0.024*** | 0.01   |
| Transfer                       | 0.005  | 0.022** | 0.012  | 0.016* | 0.007  | 0.006**  | 0.016*  | -0.004 | -0.009  | -0.008 |
| STEM major                     | 0.004  | -0.07*** | -0.041 | 0.121*** | 0.199** | 0.084**  | -0.033*** | -0.025*** | 0.014*  | 0.008 |
| Lives on campus                | 0.003  | 0.002  | -0.014* | -0.001 | 0.073*** | 0.06***  | 0.023**  | 0.004  | 0.045*** | 0.062*** |
| Greek member                   | 0.006  | 0.008  | 0.024*** | 0.037** | 0.11**  | -0.021** | 0.061*** | -0.027** | -0.002  | 0.027** |
| Enrollment size                | 0.015  | 0.016  | 0.034*  | 0.014  | -0.045 | 0.042    | -0.002  | -0.031 | -0.014  | 0.033 |
| Private institution            | 0.062** | 0.057** | 0.078*** | 0.007  | 0.086** | 0.072**  | 0.034  | 0.037  | 0.049** | 0.039** |
| Forbes score                   | 0.006  | 0.022  | -0.003 | 0.013  | 0.037  | 0.031**  | -0.046** | 0.002  | 0.003  | -0.012 |

| Random Effects                 |       |       |       |       |       |       |       |       |       |
|--------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Between Institutions (\(\tau\)) | 1.54*** | 2.1*** | 1.26*** | 1.68*** | 4.13*** | 7.44*** | 2.51*** | 1.82*** | 2.11*** | 2.67*** |
| Within institution (\(\sigma^2\)) | 175.32*** | 144.11*** | 189.03*** | 238.85*** | 174.38*** | 216.54*** | 184.10*** | 153.34*** | 131.55*** | 163.52*** |

*\(p<.05\); **\(p<.01\); ***\(p<.001\)
Table A5  
Standardized Coefficient Estimates and Standard Errors (in parentheses), and Variance Components from Full Multilevel Model for Senior Students and Forbes Ranking Scheme

| Fixed Effects                  | HO     | R1    | LS     | QR     | CL     | DD     | SF     | ET     | Q1     | SE     |
|--------------------------------|--------|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| Female                         | 0.043***| 0.045***| 0.109***| -0.123***| -0.066| 0.022***| 0.013*| 0.023***| 0.007| 0.044***|
|                                | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) |
| Asian                          | 0.006 | -0.028***| 0.008 | 0.03***| 0.01**| -0.03***| 0.012*| 0 | -0.011*| 0.013***|
|                                | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) |
| Black                          | 0.024***| 0.012*| 0.02***| -0.003| 0.008 | 0.027***| 0.015**| 0.019***| 0.006| 0.044***|
|                                | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) |
| Latino/n                      | 0.019***| 0.017***| -0.004| 0.007 | 0.003 | 0.021***| 0.011*| 0.014**| -0.009| 0.022***|
|                                | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) |
| Multiracial                   | 0.014**| 0.04***| -0.006| 0.003 | 0.001 | 0.051***| 0.012*| -0.003| 0.001 | 0.009 |
|                                | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) |
| Other race-ethnicity          | 0.008 | 0.004 | 0.002 | 0.002 | 0.005 | 0.025**| 0.015**| 0.004 | -0.01*| 0.007 |
|                                | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) |
| Fulltime student              | 0.029***| 0.057***| 0.005| 0.035***| 0.119***| 0.066***| 0.097***| 0.01 | 0.007 | 0.033***|
|                                | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) |
| Traditional age               | -0.016*| -0.005| -0.097***| 0.005 | 0.118***| 0.01 | 0.065***| -0.005| -0.018***| 0.063***|
|                                | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) |
| First-generation              | 0.007 | -0.007| -0.001| 0.004 | -0.027***| 0.004 | 0.026***| -0.003| -0.008 | -0.002 |
|                                | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) |
| Transfer                      | 0.005 | 0.002 | 0.035***| -0.008 | -0.03***| -0.025***| -0.045***| 0 | -0.003 | -0.039***|
|                                | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) |
| STEM major                    | -0.061***| -0.194***| -0.01***| 0.172***| 0.127***| 0.072***| -0.026***| -0.025***| -0.087***| -0.024***| -0.033***|
|                                | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) |
| Lives on campus               | -0.018**| -0.011| -0.010**| -0.019***| -0.007| 0.023***| 0.026***| -0.002| 0.026***| 0.039***|
|                                | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) |
| Greek member                  | 0.019***| 0.015**| 0.013*| 0.031***| 0.085***| 0.001 | 0.040***| 0.005 | 0.011*| 0.034***|
|                                | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) |
| Enrollment size               | 0.013 | 0.064*| 0.05*| 0.019 | -0.025| 0.047 | -0.017 | 0.015 | 0.006 | 0.075* |
|                                | (0.015) | (0.016) | (0.02) | (0.014) | (0.02) | (0.027) | (0.022) | (0.022) | (0.032) | (0.029) |
| Private institution           | 0.046**| 0.05**| 0.044**| 0.013 | 0.061*| 0.031 | 0.042**| 0.041 | 0.045*| 0.051* |
|                                | (0.014) | (0.015) | (0.019) | (0.013) | (0.019) | (0.025) | (0.02) | (0.02) | (0.03) | (0.027) |
| Forbes score                  | 0.001 | 0.016 | -0.02 | 0.011 | -0.026 | 0.015 | -0.05**| -0.01 | -0.006 | -0.027 |
|                                | (0.002) | (0.003) | (0.015) | (0.011) | (0.015) | (0.016) | (0.017) | (0.024) | (0.022) | (0.022) |

**Random Effects**  
Variance Components

| Between Institutions (r)     | 1.25***| 1.31***| 2.82***| 1.51***| 2.68***| 5.95***| 3.83***| 2.77***| 4.81***| 5.64***|
| Within institution (sigma²)  | 186.15***| 154.53***| 206.54***| 276.89***| 184.98***| 230.74***| 255.01***| 168.90***| 125.41***| 177.2***|

*p<.05; **p<.01; ***p<.001
## Table A6

**Standardized Coefficient Estimates and Standard Errors (in parentheses), and Variance Components from Full Multilevel Model for First-Year Students and Washington Monthly Ranking Scheme**

| Variable                        | HO      | RI      | LS      | QR      | CL      | DD      | SF      | ET      | QI      | SE       |
|---------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|
| Fixed Effects                   |         |         |         |         |         |         |         |         |         |          |
| Female                          | 0.046***| 0.008   | 0.1***  | -0.131***| 0.016* | 0.02**  | -0.024* | 0.001   | -0.025***| 0.065*** |
| Asian                           | 0.021** | -0.011  | 0.001   | 0.073***| 0.159** | -0.068***| 0.065***| 0.001   | -0.019** | -0.035***|
| Black                           | 0.033***| 0.025***| 0.001   | 0.007   | 0.009   | 0.026***| 0.056***| 0.132*  | -0.006   | 0.037*** |
| Latino/a                       | 0.016** | 0.077***| -0.001  | 0.008   | -0.011  | 0.073***| 0.024***| 0.077***| -0.077***| 0.013**  |
| Multiracial                     | 0.009   | 0.034***| -0.011  | 0.007   | 0.003   | 0.05*** | 0.011   | 0.001   | -0.017** | -0.002   |
| Other race-ethnicity            | 0.023** | 0.024***| 0.002   | 0.021** | 0.013*  | 0.010** | 0.035** | 0.021** | -0.007   | -0.032***|
| Fulltime student                | 0.015   | 0.018** | -0.013  | 0.022** | 0.046***| 0.012   | 0.029***| 0.009   | -0.001   | 0.021**  |
| Traditional age                 | 0.003   | -0.016* | -0.007  | 0.047** | 0.005***| 0.041***| 0.027***| -0.015* | -0.022** | 0.041*** |
| First-generation                | -0.014* | -0.015* | -0.003  | -0.02** | -0.015* | 0.068   | -0.007  | -0.024***| 0.001    |          |
| Transfer                        | 0.005   | 0.022** | 0.007   | 0.016** | 0.007   | 0.006   | 0.017*  | -0.004  | -0.009   | -0.008   |
| STEM major                      | 0.035***| -0.079***| -0.011  | 0.123***| 0.004   | 0.033***| -0.025**| 0.014   | 0.009    |          |
| Lives on campus                 | 0.001   | 0.002   | -0.014* | -0.001  | 0.073***| 0.06*** | 0.023** | 0.004   | 0.045*** | 0.062*** |
| Greek member                    | 0.007   | 0.008   | 0.024***| 0.037***| 0.111***| -0.021**| 0.068***| -0.027***| -0.002   | 0.077*** |
| Enrollment size                 | 0.001   | 0.007   | 0.006*  | 0.009   | -0.007  | 0.025   | 0.007   | -0.033  | -0.008   | 0.041    |
| Private institution             | 0.062** | 0.058** | 0.078***| 0.009   | 0.012   | 0.073** | 0.031   | 0.037   | 0.055**  | 0.052**  |
| Washington Monthly score        | 0.014   | 0.021   | -0.005  | 0.006   | 0.019   | 0.054** | -0.039* | 0.006   | -0.013   | -0.024   |

**Random Effects**

| Variance Components             | HO      | RI      | LS      | QR      | CL      | DD      | SF      | ET      | QI      | SE       |
|---------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|
| Between Institutions (τ²)       | 1.51*** | 2.07*** | 1.25*** | 1.70*** | 4.32*** | 7.01*** | 2.68*** | 1.82*** | 2.09***  | 2.62***  |
| Within institution (σ²)         | 175.32***| 144.11***| 189.03***| 238.86***| 174.38***| 216.58***| 184.16***| 153.34***| 831.55***| 163.52***|

*p<.05; **p<.01; ***p<.001
**Table A7**

**Standardized Coefficient Estimates and Standard Errors (in parentheses), and Variance Components from Full Multilevel Model for Senior Students and Washington Monthly ranking scheme**

| Fixed Effects                      | HO    | RI    | LS    | QR    | CL    | DD    | SF    | ET    | Q1    | SE    |
|------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Female                             | 0.04***| 0.04**| 0.10***| -0.12***| -0.066 | 0.022***| 0.013* | 0.023***| 0.007 | 0.045***|
| Asian                              | 0.006  | -0.026***| 0.008 | 0.031** | 0.044* | -0.035***| 0.012* | 0.005 | 0.005 | 0.005 |
| Black                              | 0.024***| 0.012* | 0.023***| -0.003 | 0.008 | 0.027***| 0.015* | 0.023***| 0.006 | 0.046***|
| Latino/a                           | 0.019***| 0.017***| -0.004 | 0.007 | 0.003 | 0.021***| 0.011* | 0.014**| -0.009 | 0.022***|
| Multiracial                        | 0.014** | 0.04***| 0.006 | 0.003 | 0.001 | 0.051***| 0.012* | -0.003 | 0.001 | 0.009 |
| Other race-ethnicity               | 0.008  | 0.004 | 0.002 | 0.002 | 0.005 | 0.025***| 0.015**| 0.004 | -0.01* | 0.007 |
| Fulltime student                   | 0.029***| 0.057***| 0.005 | 0.035***| 0.115***| 0.066***| 0.007***| 0.01 | 0.007 | 0.037***|
| Traditional age                    | -0.016* | -0.005 | -0.079***| 0.005 | 0.118***| 0.009 | 0.064***| -0.005 | -0.079***| 0.068***|
| First-generation                   | 0.007  | -0.007 | -0.001 | 0.004 | -0.027***| 0.008 | -0.002 | 0.011 | -0.008 | -0.002 |
| Transfer                           | 0.005  | 0.002 | 0.039***| -0.008 | -0.023***| -0.025***| -0.057***| 0 | -0.003 | -0.039***|
| STEM major                         | 0.005  | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| Lives on campus                    | -0.017**| -0.01 | -0.016**| -0.019***| -0.007 | 0.028***| 0.025***| -0.002 | 0.026***| 0.039***|
| Greek member                       | 0.019***| 0.015**| 0.013* | 0.031***| 0.085***| 0.001 | 0.049***| 0.005 | 0.011* | 0.034***|
| Enrollment size                    | 0.019  | 0.034* | 0.053* | 0.019 | -0.023 | 0.034 | -0.008 | 0.02 | 0.021 | 0.094***|
| Private institution                | 0.047***| 0.051**| 0.052***| 0.014 | -0.002 | 0.06* | 0.027 | 0.042* | 0.042* | 0.065***|
| Washington Monthly score           | -0.014 | 0.018 | -0.013 | 0.005 | -0.015 | 0.037 | -0.04* | -0.015 | -0.039 | -0.056*|

| Random Effects                     |       |       |       |       |       |       |       |       |       |       |
|------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Variance Components                |       |       |       |       |       |       |       |       |       |       |
| Between Institutions              | 1.22***| 1.30***| 2.85***| 1.57***| 2.78***| 5.60***| 4.10***| 2.75***| 4.61***| 5.26***|
| Within institution                | 186.15***| 154.53***| 206.56***| 276.89***| 184.98***| 230.74***| 235.01***| 168.90***| 125.41***| 177.27***|

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