College Rankings

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Introduction

The power of college rankings is huge, even though they are often criticized from the world of higher education. In fact, Bastedo and Bowman (2011) argues that those who are in the field of higher education are more affected by the rankings rather than other people, such as students and alumni. It is awkward that higher education people are tossed about the rankings without considering rankings' character even though the people are mainly supposed to be analytic. This paper reviews the history and critique of college rankings and analyses the characteristics of the rankings. This paper further recommends the way to make use of the rankings.

History

The history of college rankings starts as early as 1870. In 1870, the U.S. Bureau of Education began publishing an annual report of colleges by using statistical data (Stuart, 1995). The report was not quite similar to what we call a college ranking today at first, but the data became enriched gradually and it became similar to the current rankings to list some institutions separately (Stuart, 1995).

In 1910, psychologist James McKeen Cattell published *American Men of Science*. Stuart (1995) describes it as "the first true ranking" (p.14), based on the statistics of eminent scientists. Although the last version of this ranking was published in 1933, his method of tracking eminent scientists remained influential until the mid 1960s (Webster, 1986).

In 1925, Raymond Hughes published *A Study of the Graduate Schools of America*. He gathered information from faculty in the Miami University (Ohio) to find out raters and universities (Bogue and Saunders, 1992). He also advanced his method as chair of the American Council on Education (ACE) and its Committee on Graduate Instruction in 1934. This time,

instead of rating the fields on a scale of one to five, Hughes asked the raters to indicate all departments that "they thought were adequately equipped for graduate work and to 'star' approximately the best 20 percent of them" (Webster, 1992, p. 239). All adequate institutions were listed alphabetically by discipline, some with stars.

Stuart (1995) finds that Chesly Manly, a reporter from the *Chicago Tribune*, attracted the general public's attention to rankings. First, he wrote an article regarding an unpublished study of an internal ranking of member universities by the Association of American Universities in 1946 (Stuart, 1995). He also made six rankings using consultants: "10 best universities, coeducational colleges, men's colleges, women's colleges, law schools, and engineering schools" (Webster, 1992, p.243).

Allan M. Cartter produced the most comprehensive reputational ranking of graduate departments in 1966 by *An Assessment of Quality in Graduate Education*. The scope of the ranking reached 106 institutions and it adopted two criteria to rank departments: quality of the graduate faculty and rating of doctoral training program (Webster, 1992). According to Webster (1992), "The *Cartter Report* sold some 26,000 copies and was reviewed far more widely than any previous reputational ranking" (p. 250).

Rebecca Zames Margulies and Peter Blau conducted a study of professional schools for the first time (Margulies and Blau, 1973). Even though the low response rate on their survey of deans has been criticized, "they concluded that generally deans in high-prestige fields, such as medicine, responded in smaller proportions than did deans in low-prestige fields" (Webster, 1992, p. 256).

Allan M. Cartter and Lewis C. Solmon conducted another professional ranking in 1977 for business, education, and law, because the board of his institution (UCLA) was unhappy with the

results of the Blau and Margulies rankings (Webster, 1992). Even though the authors included faculty in addition to deans as raters and improved the response rate, two rankings "were reasonably similar" (Webster, 1992, p. 260).

National Academy of Science conducted a multimeasure study of 228 universities in 1982. The study, *Assessment of Research-Doctorate Programs in the United States*, used standardized scores on each measure to reveal how far above and below each department scored on each measure, and up to 16 measures for 2,699 programs were collected (Stuart, 1995). The study was not designed to rank institutions, but its detailed data has been used to rank programs and institutions (Stuart, 1995).

Contemporary College Rankings

Stuart (1995) finds that after the mid 1980s, rankings began to emphasize on undergraduate education with some attention to student outcomes. Therefore, ordinary people became the audience of the rankings, while in the early times the audience was government officials, university administrators, and researchers (Drew and Karpf, 1981). In 1983, *U.S. News & World Report* started a reputational ranking of institutions with undergraduate programs (Stuart, 1995), perhaps the most famous college ranking these days.

Hunter (1995) points out that popularity of rankings can be attributed to several factors such as growing public awareness of college admissions policies during the 1970s and 1980s; the public's loss of faith in higher education institutions due to political demonstrations on college campuses; and major changes on campus in the 1960s and 1970s such as coeducation, integration, and diversification of the student body. These factors forced public to reevaluate higher education institutions (Hunter, 1995). In addition, contemporary rankings are usually

magazine articles rather than academic papers, and thus the criteria of the rankings vary based on author's intent.

***U.S. News & World Report*'s Rankings**

U.S. News & World Report has been providing education rankings and assisting parents and students in search for the best suitable school. The Best Colleges ranking category system has been based on the Carnegie classification since its first rankings were published in 1983. The category names are –National Universities, National Liberal Arts Colleges, Regional Universities and Regional Colleges – and their definitions rely on the Carnegie principles. Schools in the National University category such as Princeton University and Harvard University, offer its students a full range of undergraduate majors, master's and doctoral programs and are committed to producing groundbreaking research. Whereas in the National Liberal Arts Colleges category, schools such as Amherst College and Williams College, emphasize undergraduate education and award at least 50% of their degrees in the liberal arts fields of study. Schools in Regional Universities and Regional Colleges categories offer the same commitment as the National ones, but with a distinction of being split in four regions: North, South, Midwest and West (Best College Ranking and List, n.d.).

Ranking Model Indicators of *U.S. News* Rankings

The host of intangibles that makes up the college experience cannot be measured by a series of data points. But *U.S. News* editors claims that for families concerned with finding the best academic value for their money, the *U.S. News* Best Colleges rankings provide an excellent starting point for the search (Morse, Brooks, & Mason, 2015). The indicators are based on researched view of what is considered to be important in education such as academic reputation, faculty resources, and graduation rate, which allows people to compare a relative quality of

institutions in various aspects. Followings are the measures and their weights in the ranking formula proposed by *U.S. News & World Report* (Morse, Brooks, & Mason, 2015).

Undergraduate academic reputation weighs 22.5 points out of 100 and is measured by peer assessment of presidents, provosts and deans of admission at higher education institutions, weighing 15 points, and of high school counselors, weighing 7.5 points.

Retention also weighs 22.5 points. The higher the rate of the first year students who return to sophomore and eventually graduate, the more they are considered to be offering classes that students need for success. Eighty percent within 22.5 points of retention, which makes 18 points, is given to 6 year or less graduation, and the remaining 4.5 points is given for first year retention.

Faculty resources take overall 20 points and there are six factors used for calculation of this indicator. Class size having 20 and fewer students weighs 30%; class size having 50 and more students weighs 10%; faculty salary 35%; proportion of professors with the highest degree in their fields 15%; student-faculty ratio 5%; and full time faculty ratio weighs 5% of overall 20 points.

Students selectivity weighs 12.5 points and is measured by three components. The first one is SAT or ACT scores of enrollees – 65%. The second component is first-year students who topped at their high school classes – 25%. The last one is the ratio of students admitted to applicants – 10%.

Financial resources weigh 10 points. This indicator is measured by an average spending per student on instruction, research, student services, and related educational expenditures.

Graduation rate performance is calculated based on *U.S. News* predictions, after controlling for spending and student characteristics. If the school's actual rate is higher than *U.S. News*

predicted, it means they are showing outstanding performance. And if the school's actual rate is lower than predicted, it means they are underperforming. In both cases they will get points accordingly at maximum of 7.5 point.

Alumni giving rate is the last indicator, which is an indirect measure of student satisfaction, weighing 5 points. It is calculated by the average percentage of living alumni with bachelor's degree who gave to their school during three years' period before the survey.

U.S. News College Compass

U.S. News College Compass is a tool with data of over 1,800 schools. Unique feature of this tool is that it has expanded college profiles, organizes test scores and GPAs for suitable schools, and provides with up to date data on financial aid opportunities and campus life. The way it works is simple; potential freshman students need to complete a table with certain data such as SAT score, intended location for studying, and college compass will come with a list of colleges that fits best for them (U.S. News College Compass, n.d.).

International College Rankings

There are several university ranking publishers which have gained recognition all over the world. The most prominent of them are Times Higher Education, QS World University Ranking and Academic Ranking of World Universities, also known as Shanghai Ranking. Each of them use specific indicators for evaluation to reach the outcome.

Times Higher Education Rankings

The *Times Higher Education* World University Rankings evaluate research-intensive universities by their core missions: teaching, research, knowledge transfer and international outlook. In order to provide complete and balanced comparisons, *Times Higher Education* World University Rankings uses 13 performance indicators. The performance indicators are

grouped into five areas (Times Higher Education World University Rankings Methodology, 2015).

Teaching (the learning environment) is the areas and it groups five performance indicators: Reputation survey (15%), Staff-to-student ratio (4.5%), Doctorate-to-bachelor's ratio (2.25%), Doctorates awarded-to-academic staff ratio (6%), and Institutional income (2.25%). Overall, teaching area takes 30% of measurement.

Research (volume, income and reputation) takes 30% of overall measurement as well, and groups three indicators: Reputation survey (18%) looks at a university's reputation for research excellence among its peers; Research income (6%) is scaled against staff numbers and adjusted for purchasing-power parity; Research productivity (6%) measures university's ability to get papers published in quality peer-reviewed journals.

Citations (research influence), taking 30%, looks at universities' role in spreading new knowledge and ideas. It helps us to see to what extent each university is contributing to the expansion of human knowledge, and how much it is being shared among the scholarly community of the world, with a goal of enlarging the boundaries of our understanding, regardless of discipline.

International outlook (staff, students and research) is mainly based on international-to-domestic-student ratio (2.5%), international-to-domestic-staff ratio (2.5%), and international collaboration (2.5%).

Industry income (knowledge transfer) weighs 2.5%. This category seeks to capture such knowledge-transfer activity by looking at how much research income an institution earns from industry, measured against the number of academic staff it employs.

Quacquarelli Symonds (QS) Rankings

Methodology of QS World University Rankings is based on six indicators, and each of them has different weighting (QS World University Rankings: Methodology, 2015).

Academic reputation, weighing 40% of overall score, is measured using a global survey. For the last year there were over 76,000 responses for surveys from academics all over the world.

The employer reputation indicator is also based on a global survey, and for recent year over 44,000 responses from employers. This indicator weighs 10%.

Student-to-faculty ratio is a measure of the number of academic staff employed relative to the number of students enrolled. This indicator, weighing 20 percent, aims to find out the best equipped universities to provide small class sizes and a good level of individual supervision.

Citations per faculty weighs 20 percent and it aims to assess universities' research impact. Normally, the more often one's research is cited, the more it gains influence as means of research work. Consequently, the more a university has highly cited research papers, the stronger research output it is considered to have.

International faculty ratio and international student ratio are final indicators in QS Ranking, each having 5% of weight. These two aim to assess how successful a university has been in attracting students and academics from other nations.

Academic Rankings of World Universities (ARWU)

ARWU uses six objective indicators to rank world universities, including the number of alumni (10%) and staff (20%) winning Nobel Prizes and Fields Medals, number of highly cited researchers selected by Thomson Reuters (20%), number of articles published in journals of *Nature* and *Science* (20%), number of articles indexed in Science Citation Index - Expanded and Social Sciences Citation Index (20%), and per capita performance of a university (10%). More

than 1,200 universities are actually ranked by ARWU every year and the best 500 are published (Academic Ranking of World Universities Methodology, n.d.).

Comparison of Rankings

All the rankings mentioned above have some commonalities. For instance, all of them use citation as a performance indicator, however, each of them values it on their own way. International outlook is also common between *Times Higher Education* and QS. On the other hand, there are also some differences among these three. ARWU highly values Noble Prizes and Fields Medals winning alumni and staff (30% in total), whereas in other two they do not see them as performance indicators. By adopting only quantitative indicators, ARWU claims itself as using "objective indicators" (ARWU, n.d.). Regardless of those commonalities and differences, the lists of rankings are topped by almost the same universities. Table 1 shows the list of top 10 universities and the ranks of Penn State in each ranking (Academic Ranking of World Universities 2015, n.d.; QS World University Rankings 2015/16, n.d.; World University Rankings 2015-2016, n.d.).

Table 1

The List of Top 10 Universities by International Rankings

Times Higher Education	**QS World University**	**ARWU**
1. Caltech	1. MIT	1. Harvard University
2. University of Oxford	2. Harvard University	2. Stanford University
3. Stanford University	3. University of Cambridge	3. MIT
4. University of Cambridge	4. Stanford University	4. University of California
5. MIT	5. Caltech	5. University of Cambridge
6. Harvard University	6. University of Oxford	6. Princeton University

7. Princeton University	7. UCL	7. Caltech
8. Imperial College London	8. Imperial College London	8. Columbia University
9. ETH Zurich	9. ETH Zurich	9. University of Chicago
10. University of Chicago	10. University of Chicago	10. University of Oxford
75. Penn State University	101. Penn State University	60. Penn State University

Critique of College Rankings

Power of Rankings

Believe or not, colleges do use college rankings as marketing tools. Holub (2002) argues that higher college tuitions and lack of public funding have forced colleges to compete for students. In order to be competitive in the race, colleges use rankings to attract students, to bring in alumni donations and to attract potential donors, and even to recruit faculty and administrators (Machung, 1998). Actually, even the Higher Education Program of the Pennsylvania State University uses its rank in the *U.S. News & World Report* ranking as an advertisement (Penn State, n.d.).

In fact, Luca and Smith (2013) reveals that one rank improvement in the *U.S. News & World Report* undergraduate ranking means 1% increase of number of applications. As for graduate schools, at least for international students, both of the authors of this paper referred to the *U.S. News & World Report* ranking to find out which university to check. Because there are so many graduate programs in the U.S., it is virtually impossible to find out proper programs to apply. For instance, one of the authors knew that Harvard, Teachers College Columbia University, and UCLA have a higher education program, but did not know that Penn State, Michigan State, and Vanderbilt have one before referring to the ranking.

Criticisms to Rankings

The primary complaint regarding rankings from university side is that the methodology is flawed. Actually, ranking editors often change its methodologies. Luca and Smith (2013) finds that the *U.S. News & World Report* ranking changed its methodology six times during 1990s. Owing to the methodology change in 1999, Caltech became the first in the ranking of the year from the ninth in the previous year (Luca and Smith, 2013). According to the study, if there were no methodology change, Caltech would have dropped its rank. Editors insist that they are improving their rankings by the methodology changes (Anonymous, 2015), but obviously the changes make rankings more attractive for general consumers – people would not buy new magazines if they know the rankings are stable.

Definition of quality is also an issue. Gladwell (2011) points out the meaningless of the one-scale college ranking by using the metaphor of an automobile ranking:

> This ranking system looks a great deal like the *Car and Driver* methodology. . . . It doesn't just compare U.C. Irvine, . . . Penn State . . . – all public institutions of roughly the same size. It aims to compare Penn State – a very large, public, land-grant university with a low tuition and an economically diverse student body, set in a rural valley in central Pennsylvania and famous for its football team – with Yeshiva University, a small, expensive, private Jewish university whose undergraduate program is set on two campuses in Manhattan . . . and is definitely not famous for its football team.

In addition, even though "reputation essentially has been viewed as synonymous with quality" (Stuart, 1995, p. 18), what it means is actually vague. Reputation is understood as academic quality, but Stuart (1995) insists that opinion of raters is related to many factors such as size, number of eminent faculty, selectivity, citations, publications, geography, and familiarity.

Studies have suggested that raters are affected by past affiliations and they do not know much about distant institutions (Stuart, 1995).

Halo effect is also observed. If one department is considered prestigious, other departments in the institution often considered also prestigious. Solmon and Astin (1981) discovered an extreme case that undergraduate programs of business of a number of institutions were rated highly even though the institutions had no such programs.

Bastedo and Bowman (2011) reveals that faculty and senior administrators are largely influenced by rankings when they are involved in reputational assessments and resource provision. For example, peer assessments are the most highly influenced by rankings. Faculty members in federal R&D committee seem more likely to fund projects from highly-ranked institutions. "Magazine rankings may be designed to affect students, parents, and policymakers, but their impact is far more demonstrable on universities themselves" (Bastedo and Bowman, 2011, p. 20).

Recommendations

College rankings are powerful enough to influence people including those who in the field of higher education. However, as evaluates of the rankings and as higher education professionals who are supposed to be analytic, it is not a good idea for us to rely on the rankings, especially after considering problems of them. On the other hand, they are useful because they concisely conclude certain aspects of colleges. Therefore, we recommend to use college rankings as a benchmark to compare with other colleges. This way, colleges are able to know their strengths and weaknesses through the comparison. Although absolute ranks may be harmful, colleges still can make use of the rankings.

From the perspective of students, they need to understand that ranking is just a summary of information and there are many aspects to consider when they choose colleges. Rankings are only one aspect of many factors, but they are likely to want to examine each aspect such as programs/degrees offered, location, size of the student body, and whether it is public or private. College Scorecard (College Scorecard, n.d.) provides a great resource for prospective students who seek data on schools with specific attributes such as program/degree, location, and size.

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