

A Novel Approach to Ranking Physician Assistant Programs

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Purpose: *US News & World Report (US News)* is the only known media publication that ranks physician assistant (PA) educational programs. In 2007 *US News* ranked only 73 schools based on a subjective survey of PA school faculty and administration. This study presents a new approach to the ranking of graduate PA programs. **Methods:** The 73 PA schools included in the 2007 *US News* ranking were ranked based on each school's current Accreditation Review Commission on Education for the Physician Assistant (ARC-PA) accreditation length, student-to-faculty ratio, percentage of faculty with doctoral degrees, and the most recent 5-year average Physician Assistant National Certifying Examination (PANCE) pass rates. **Results:** The top three ranked schools were, in order, University of Wisconsin-La Crosse, Oregon Health & Science University, and the University of Iowa. There was a weak-positive relationship between the standardized rankings and scores and rankings by *US News* ($r = 0.40$, $r = 0.41$, respectively). **Conclusions:** This novel approach to ranking of PA programs provides a basis for improving the methods of future rankings.

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INTRODUCTION

Several attempts are made each year to rank and review colleges and universities based on subjective and/or objective data. These rankings are widely accepted and relied upon by not only the academic community but by the media and general public as well. In an article in *The Washington Monthly* in 2000, Nicholas Thompson suggested that alumni and trustees focus on academic rankings as an indicator of the status that society places on the degrees obtained from their university.¹ Society also benefits by assisting students in deciding which school to attend, providing the general public with a tool for assessing a school's quality of education, and providing policy makers evidence of the efficiency of education in the United States.^{2,3,4}

America's Best Graduate Programs

While undergraduate programs have traditionally been the center of the *US News & World Report (US News)* rankings, there has been an increased focus on graduate programs. In comparison to undergraduate universities, graduate programs are more homogeneous in their goals, making it relatively less complicated to rank them.^{5,6,7} Like their undergraduate siblings, these graduate school rankings are not done without criticism. In 2001, McGaghie and Thompson reported five flaws in the methodology of *US News'* "America's Best Medical Schools."⁴ The first critique was the narrow focus of the rankings, such that from 1996 to 2000, only 20% to 40% of US medical schools were ranked. However, according to the most recent rankings published by *US*

News, the 125 medical schools fully accredited by the Liaison Committee on Medical Education as well as the 20 osteopathic medical schools fully accredited by the American Osteopathic Association were included.⁶ The low response rate from schools, ranging from 40–46% (1996 to 2000), was also subject to criticism.⁴ In the 2009 rankings, the response rate drastically improved in that 87% (126 of the 145 schools) responded to the survey.⁶

In 1998, *US News* was the first to publish a list ranking physician assistant (PA) programs and is still the only known ranking for the PA profession. Only those PA programs issuing a master's degree upon completion — except for Stanford University, which grants a certificate upon program completion — were considered in the 2007 *US News* ranking. Moreover, only 73 programs received a score and rank.⁸ Interestingly, *US News* ranked these 73 programs based solely on a subjective survey of deans, other administrators, and/or faculty of accredited PA schools.⁹ The 2007 survey had a response rate of 56%. These aspects of the *US News* ranking of PA programs were a major motivation for the current study.

Possible Indicators of Academic Success

US News ranks schools either based solely on the results of a subjective survey or a compilation of objective indicators without providing evidence for their validity. Several authors have argued in support of an objective ranking system to replace the current subjective method used in several *US News* rankings of academic disciplines.^{2,10,11}

Blessing et al took the initial step toward devising an objective methodology by surveying directors of the then 126 accredited PA programs to

identify which indicators to include in a ranking of PA programs. Although no one criterion received near-unanimous support, several criteria did receive over 60% agreement, including overall (79%) and 5-year average (77%) pass rates on the Physician Assistant National Certifying Examination (PANCE), faculty-to-student ratio (71%), and faculty education level (64%). Additionally, a majority of respondents (57%) approved of the inclusion of a program's accreditation length in a ranking of PA programs.²

Multiple studies use a school's first-time PANCE pass rate as a standardization tool to evaluate other program characteristics, such as degree granted upon completion, class size, and curriculum length.^{12,13,14} This may explain the strong agreement among PA program directors for the inclusion of first-time PANCE pass rates.² Objectively, PAs that scored higher on the PANCE tended to have scored higher on the Physician Assistant National Recertification Examination (PANRE) ($r = 0.56$).¹⁵ In conclusion, first-time PANCE pass rates, in some manner, should be included as an objective measure of a PA program's academic quality.

Class size and the number of faculty are easily obtainable figures that should be considered when assessing academic quality. Class size alone does not appear to have any influence on one's performance on the PANCE.^{12,13} A possible alternative to class size alone may be to account for the number of faculty at an institution by calculating the faculty-to-student ratio. Although the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA) does not explicitly state what an acceptable value would be,¹⁶ there is considerable consensus that a

lesser number of students per individual faculty member is optimal and that this ratio should be considered as part of any methodology.²

The typical PA program has 5.7 faculty members with the majority being PA credentialed (PA: 4.4 vs. non-PA: 1.3). Sixty-six percent of PA faculty hold a master's degree, and an additional 16% of PA faculty obtained a doctoral degree, while 41% of program directors hold a doctoral degree.¹⁷ Most academic institutions require faculty members to be academically credentialed at or above the level of degree sought by its students. Thus it can be perceived that those programs employing a greater number of doctoral-trained faculty members are better prepared to train entry-level PA students.

The ARC-PA is the sole entity that defines, maintains, and promotes the standards for the education of PAs. McDowell et al studied the relationship between a school's date of accreditation and its students' performance on the PANCE. Interestingly, no significant relationship was found between the date of accreditation and average PANCE pass rates (prior to 1985: 90.3% vs. 1985 and beyond: 85.1%; t -value = 1.51).¹⁴ One reason for the lack of statistical significance may be the method of analysis performed in this study, as schools were separated into two disproportionate sample sizes (1970–1984: 84% vs. 1985–1999: 16%). Although this study did not show significant evidence to support the inclusion of a program's original date of accreditation, it did not totally dismiss the possibility. In contrast to a school's original date of accreditation, the current length of accreditation awarded may correlate better with a PA program's current academic standing.

METHODS

This study compiled data that were public knowledge and obtainable through various print and online sources. If any discrepancies were discovered, the data were verified either by reviewing the program's official website or by contacting the program directly by phone. The most recent *US News* ranking of PA programs was obtained online from *US News & World Report*. Only those programs receiving a rank and score by *US News* were included. A complete list of accredited PA schools was obtained from the ARC-PA website. A program's current length of accreditation was manually obtained by reviewing the ARC-PA list of accredited schools over several years. The degree offered upon completion and the class size were obtained from the Physician Assistant Education Association (PAEA) website.

The ARC-PA requires the previous 5 years' PANCE pass rates to be reported on each program's website. Pass rates should be reported as the percentage of first-time test takers obtaining a score sufficient for certification. Thus, first-time PANCE pass rates from 2003 through 2007 were obtained from each program's website, and a 5-year mean pass rate was calculated. If a school reported their pass rates in the form of a graph without accompanying values, the exact percentage was estimated.

Data pertaining to faculty members were obtained from the 2007 PAEA Faculty Directory. Positions considered faculty were program director, medical director, academic coordinator, clinical coordinator, director of admissions, and faculty. Faculty members listed under two positions were considered for only one position. Positions such as administrative staff, admissions staff, and tutor were excluded as faculty members. The student-to-faculty

ratio was then calculated as a ratio of class size to number of faculty members for each school.

A doctoral degree was defined as a doctor of medicine (MD), doctor of osteopathic medicine (DO), doctor of philosophy (PhD), doctor of education (EdD), doctorate of pharmacy (PharmD), doctor of jurisprudence (JD), doctor of health science (DHSc), doctor of public administration (DPA), doctor of public health (DPH), and doctor of psychology (PsyD). Individual faculty members holding at least one accepted doctoral degree were tallied. Faculty members holding multiple doctoral degrees were assessed as one regardless of the number of degrees held. The percentage of faculty members holding an accepted doctoral degree was then calculated.

Statistical Analyses

Four measures were used to rank the 73 PA programs that were included in *US News*' ranking: 5-year PANCE pass rate, accreditation length in years, student-to-faculty ratio, and percentage of faculty with doctoral degrees. Each measure was standardized about its mean and standardized scores were summed. The totals of standardized scores were first ranked in descending order, a higher score indicating a better rank. Weighted ranks were then obtained by applying the following weights to the standardized scores: 0.45 to 5-year PANCE pass rate, 0.20 to length of accreditation, 0.25 to student-faculty ratio, and 0.10 to percentage of faculty with doctoral degrees. Determination of weights was done by surveying students and faculty at an accredited PA program, as well as five outside faculty from other PA programs. A linear regression was calculated comparing the standardized rankings and scores with *US News*' ranks and scores.

RESULTS

Data pertaining to the 5-year PANCE pass rate, accreditation length, student-to-faculty ratio, and percentage of faculty with doctoral degrees for the 73 PA programs receiving a rank in the 2007 *US News* rankings were analyzed. The averages for each measure were as follows: 5-year PANCE pass rate, 94.0%; accreditation length, 5.34 years; student-to-faculty ratio, 5.36; and percentage of faculty with doctoral degrees, 30.5%.

The standardized weighted rankings and scores were then calculated. Total standardized weighted scores ranged from 1.18 to -1.31. Schools receiving the top five standardized scores and subsequent rank were University of Wisconsin-La Crosse, Oregon Health & Science University, University of Iowa, Central Michigan University, and University of Texas Southwestern Medical Center, respectively. Table 1 compares the top 50 ranked programs' standardized ranking with their *US News* ranking. A positive relationship was found between the standardized rankings and the *US News* rankings ($r = 0.40$) (see Figure 1). A similar relationship was calculated when viewing the relationship between standardized scores and *US News*' score ($r = 0.41$).

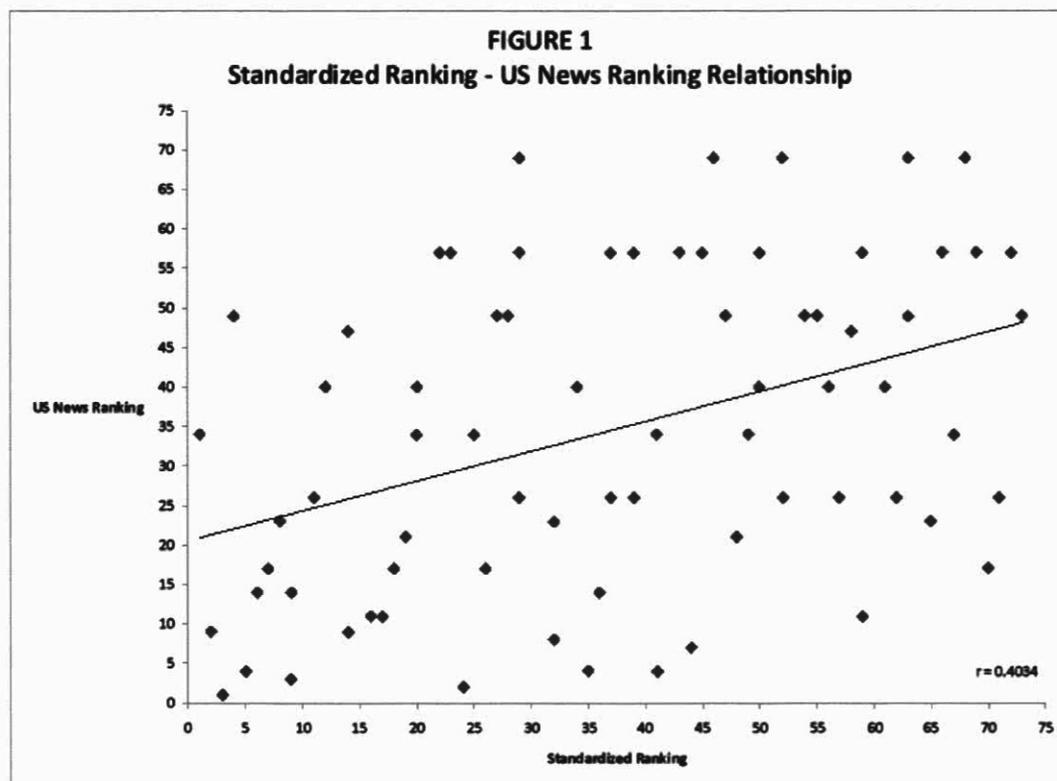
DISCUSSION

The main finding of the current study was that the schools obtaining the five highest standardized scores and subsequent rank were University of Wisconsin-La Crosse, Oregon Health & Science University, University of Iowa, Central Michigan University, and University of Texas Southwestern Medical Center, respectively. Only two schools in the top five programs ranked by *US News* also received a top five standardized ranking: University of Iowa (*US News* #1) and University of Texas Southwestern Medical Center (*US News* #4).

Table 1. Comparison of New Ranking and *US News* Ranking

Rank	New Ranking System	Rank	<i>US News</i> Ranking 2007
1	University of Wisconsin–LaCrosse	1	University of Iowa
2	Oregon Health & Science	2	Duke University
3	University of Iowa	3	Emory University
4	Central Michigan University	4	George Washington University
5	University of Texas Southwestern Medical Center	4	University of Texas Southwestern Medical Center
6	University of Nebraska	4	University of Utah
7	University of Medicine and Dentistry of New Jersey	7	University of Washington
8	University of Oklahoma–Oklahoma City	8	University of Colorado
9	Quinnipiac University	9	Baylor College of Medicine
9	Emory University	9	Oregon Health & Science
11	Desales University	11	Interservice PA Program
12	Duquesne University	11	SUNY–Stony Brook University
12	Yale University	11	University of Texas Medical Branch–Galveston
14	Baylor College of Medicine	14	University of Nebraska
14	Augsburg College	14	Quinnipiac University
16	University of Texas Medical Branch–Galveston	14	Rosalind Franklin University
17	SUNY–Stony Brook University	17	University of Medicine and Dentistry of New Jersey
18	Northeastern University	17	Northeastern University
19	Saint Francis University (PA)	17	Saint Louis University
20	Wayne State University	17	University of Texas HS Center–San Antonio
20	Philadelphia University	21	Saint Francis University (PA)
22	Loma Linda University	21	University of Florida
23	Arcadia University	23	University of Oklahoma–Oklahoma City
24	Duke University Medical Center	23	Shenandoah University
25	University of North Texas HS Center–Fort Worth	23	Wake Forest University
26	Saint Louis University	26	Desales University
27	University of South Alabama	26	Drexel University
28	Medical University of South Carolina	26	Medical College of Georgia
29	Drexel University	26	Wichita State University
29	Medical University of Ohio–Toledo	26	University of Alabama at Birmingham
29	Seton Hill University (PA)	26	Midwestern University (IL)
32	University of Colorado	26	Midwestern University (AZ)
32	Shenandoah University	26	Arizona School of Health Science
34	Western Michigan University	34	University of Wisconsin–LaCrosse
35	University of Utah	34	Philadelphia University
36	Rosalind Franklin University of Medicine	34	University of North Texas HS Center- Fort Worth
37	Seton Hall University (NJ)	34	University of Detroit–Mercy
37	Medical College of Georgia	34	Lock Haven University
39	Wichita State University	34	Marietta College
39	Nova Southeastern University–Fort Lauderdale	40	Duquesne University
41	George Washington University	40	Yale University School of Medicine
41	University of Detroit–Mercy	40	Wayne State University
43	Chatham University	40	Western Michigan University
44	University of Washington	40	Marquette University
45	Albany Medical College	40	Stanford University
46	Idaho State University	40	James Madison University
47	University of Southern California	47	Augsburg College
48	University of Florida	47	Western University of Health Sciences
49	Lock Haven University	49	Central Michigan University
50	University of New England	49	University of South Alabama
50	Marquette University	49	Medical University of South Carolina
		49	University of Southern California
		49	Pacific University
		49	Springfield College
		49	Des Moines University
		49	East Carolina University

Figure 1. Standardized Ranking – US News Ranking Relationship



Moreover, in the comparison of all programs, one program moved up 45 positions and another 40 positions. Conversely, one program dropped 53 positions and another dropped 48 positions.

The average 5-year PANCE pass rate for this study was 94%, which is higher than the average for all ARC-PA accredited schools (91%). Taking into account that pass rates held the greatest weight in the current study, a narrow margin of error occurred, such that any one percentage point drop drastically affected a school's overall score. For example, one program had an average student-to-faculty ratio, as well as an above average accreditation length and percentage of faculty with doctoral degrees. However, their PANCE pass rate was 3.6% below the national average. Although this is consistent with the national average for all accredited

schools, it is far below the average for the 73 schools included in this study. Thus, this program received an overall rank in the lower half.

The most recently published ranking of PA programs by *US News* was derived from a survey of PA program faculty and administration from each school. A weak to moderate positive relationship was found between the standardized score and ranking and the *US News* score and ranking (see Table 1 and Table 2). These results put into question the validity of the *US News*' ranking of PA programs, which to the date of this study has not been assessed.

Limitations

Blessing et al acknowledged that "no ranking system will be perfect."² The current study is no exception in that data were derived from sources available to the public. This in itself is a

major limitation of the current study in that several possible variables could not be collected. Several areas of graduate study ranked by *US News*, such as medical schools and law schools, include a greater number of variables that are both public and private knowledge.^{6,7} A few examples of such variables are a school's library resources, total research expenditure, and expenditure per faculty member and/or student.

The current study obtained four variables, one pertaining to institutional characteristics, one pertaining to student characteristics, and two assessing faculty characteristics. In reference to the number of faculty, the 2007 PAEA Faculty Directory did not delineate full-time employees from part-time, or define which faculty members are principal faculty as defined by the ARC-PA, and may not be the most accurate measure of fac-

Table 2. Proposed Categories for Future Studies

Variable	Rationale
Student Characteristics	
5-year average PANCE score	Test scores vs. pass rates — results in more variability among programs
Percent alumni donating money	<i>US News</i> states this is a reflection of student satisfaction
Graduation or attrition rate	Indicator of student success during school
Faculty Characteristics	
Student-to-faculty ratio	General consensus among academic community
Percent faculty with doctoral degree	Indicator of faculty’s academic standards
Full-time vs. part-time faculty	Important to discern percentage of faculty that is full time
Faculty research activity	Scholarly activity and productivity as indicator of faculty quality
Institutional Characteristics	
Accreditation length	Program’s ability to meet standards to operate set forth by the ARC-PA
Money allotted to students	Resources provided for each student
Degrees offered	Master’s-granting institutions typically perform better on the PANCE

ulty size. It may be interesting to see how the ratio of students-to-full-time faculty members differs among these already similar schools, and how the percentage of full-time employees influences a school’s ability to provide the desired education.

The standardized score was calculated on a weighted system. It is difficult to ascertain proper weights for each variable without any known published data available, and to specifically say which of the four variables should hold the greatest weight.

PANCE pass rates are the most studied variable and the ultimate endpoint for a PA student’s entry-level education. Thus it seems necessary that PANCE pass rates hold the most weight when ranking schools. One should also consider the effect on PANCE pass rates in regard to programs that admit a higher percentage of high-risk or disadvantaged students. Conversely, doctoral degrees are a relatively new trend for PA faculty members and understandably account for only 10% of a school’s standardized score.

The most recent *US News* ranking of PA programs included 73 of the then

136 ARC-PA accredited programs. Except for Stanford University, these programs ranked by *US News* grant a master’s degree upon completion. Other degrees offered include certificate of completion, associate’s degree, and a bachelor’s degree. Currently, no entry-level programs offer a doctoral program. Studies have shown that master’s-degree-granting programs have greater average PANCE pass rates compared to non-master’s degree-granting programs.^{12,14} Although the current study did not consider the degree granted upon completion, future studies considering all accredited PA programs should include the degree granted upon completion in the set of variables.

Future Recommendations

Future attempts to assess and rank PA programs should expand upon the current study’s attempt. This study proposed that variables be separated into three distinct categories: student, institutional, and faculty characteristics. Each category would, in theory, include multiple variables. McGaghie and Thompson identified six possible methods for evaluating medical

schools: accreditation, impact on students, prosperity, public service, reputation, and research activity.⁴ In agreement with their proposal, the current study included two of these methods, accreditation and the impact on students assessed by PANCE pass rates. Interestingly, McGaghie and Thompson suggest that surveys such as those used by *US News* may assess a school’s perceived prestige and may be suggestive of a higher status of their faculty.

Any proposed method to rank PA schools should be both objective and mathematical, thus eliminating any bias and subjectivity. The proposed method of McGaghie and Thompson, the results and limitations of the current study, and the numerous reports referenced should be considered in the future. Table 2 is one example of incorporating the current study’s approach in using student, institutional, and faculty characteristics.

Alternative variables requiring further analysis include library resources assessed by number of titles and/or journals, direct association of PA program with an accredited US medical school, admission selectivity, results of

the first PANRE taken by practicing PAs, and percentage of graduates working in primary care or underserved regions.

Summary

Since 1998 *US News* has been publishing the only known ranking of PA programs. However, their rankings continue to be based on subjective surveys of PA program faculty. Blessing et al explicitly states that a ranking system should be “measurable, reproducible, and not opinion-based.” The current study sought to standardize the ranking of PA programs based on objective data and then compare these results with those of the *US News* ranking. Several limitations were observed in the current study including the limited use of data and lack of scientific basis for the weight of the variables. Future studies should include the use of data not available to the general public such as those variables used in several *US News* rankings of graduate schools. The ranking of academic institutions will be debated indefinitely. Although the current study is no exception, this novel approach to the ranking of PA programs will hopefully improve the methods of the *US News* rankings and any future rankings.

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