

NCAA DIVISION III ATHLETICS MEASURING X-EFFICIENCY 2007-2012



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EXPLORING X-EFFICIENCY

Michael Lewis' 2003 book, "Moneyball: The Art of Winning an Unfair Game," captivated researchers' attention with its focus on using mathematics to analyze sports efficiency.

The idea – that certain statistics such as slugging percentage, and characteristics such as education level, are more likely to help a team win a championship – is a fascinating concept worth exploring.

X-efficiency is simply a way to measure whether certain actions are yielding a desired outcome.

Bankers have been using it for years to strengthen their operations. Recent sports research has focused on industries with high revenue streams, including the National Football League, Major League Baseball and Major League Soccer.

There has yet to be significant research into NCAA Division III athletics, even though these programs have abundant data (inputs) from which to draw, and recognized goals (outputs).

For this study, we presume that the overall goal is earning the highest score possible in the Learfield Sports Directors' Cup. Awarded annually by the National Association of Collegiate Directors of Athletics, the cup honors athletic success in men's and women's college sports in the United States. The further teams advance in postseason competition, the more points they accumulate.

For example, a team is awarded 100 points for winning a national championship. The second place finisher receives fewer points. At the Division III level, the scores for 18 sports (nine men's and nine women's) are combined to determine the rankings. All sports are weighted equally. About 450 schools compete in the Division III competition.

Using data from 2007-2012*, this study reviewed recruiting expenses per student, operating expenses for athletic programs, the number of men's and women's sports participants, size of school, number of coaches per athletic sport, and whether the school was public or private.

By comparing these inputs with each institution's Directors' Cup point totals, we can determine an efficiency score. Results can be found in the following tables. (A score of 1.000 equals 100 percent efficiency).

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TEN MOST EFFICIENT PRIVATE SCHOOLS (2007-12)

| INSTITUTION | EFFICIENCY SCORE | AVG. DIRECTORS' CUP POINTS |
|---------------------------------------|------------------|----------------------------|
| 1. Calvin College | 0.865 | 580.8 |
| 2. Amherst College | 0.839 | 894.2 |
| 3. Emory University | 0.836 | 712.85 |
| 4. Messiah College | 0.778 | 580.05 |
| 5. Washington University in St. Louis | 0.759 | 914.95 |
| 6. Williams College | 0.758 | 1118.1 |
| 7. Illinois Wesleyan University | 0.747 | 607.5 |
| 8. Wartburg College | 0.732 | 602.35 |
| 9. Methodist University | 0.697 | 367.5 |
| 10. Claremont McKenna College | 0.677 | 455.7 |

TEN MOST EFFICIENT PUBLIC SCHOOLS (2007-12)

| INSTITUTION | EFFICIENCY SCORE | AVG. DIRECTORS' CUP POINTS |
|--|------------------|----------------------------|
| 1. College of New Jersey | 0.760 | 695.65 |
| 2. University of Texas at Tyler | 0.682 | 281.6 |
| 3. Salisbury University | 0.617 | 556.45 |
| 4. Christopher Newport University | 0.605 | 457.25 |
| 5. University of Wisconsin-Whitewater | 0.588 | 729.95 |
| 6. University of Wisconsin-Oshkosh | 0.582 | 584.9 |
| 7. University of Wisconsin-Stevens Point | 0.577 | 629.95 |
| 8. SUNY College at Cortland | 0.532 | 687.6 |
| 9. University of Wisconsin-Eau Claire | 0.516 | 636.67 |
| 10. Eastern Connecticut State University | 0.491 | 209.7 |

*The university athletic season generally runs parallel to the academic year. Hence, the data comprises the 2007-08 through the 2011-12 athletic seasons. Operational and demographic data was retrieved from the U.S. Department of Education Equity in Athletics Data Analysis Cutting Tool. Learfield Sports Directors' Cup data was retrieved from the National Association of Collegiate Directors of Athletics.

While there are almost 450 NCAA Div. III athletic departments, 212 were included in this efficiency analysis. The remainder either did not accrue any Directors' Cup points in a year during the 2007-12 time frame or were not NCAA Div. III institutions for this entire time period.

CONCLUSION

X-efficiency is a valuable way to gauge effectiveness in NCAA Division III athletics.

Measuring return on investment is important, given the pressures universities face to allocate resources wisely, and increased competition for students.

The rankings on the preceding page reveal the most efficient private and public schools. According to our analysis, these 20 colleges and universities are using their resources most effectively to attain points in the Directors' Cup competition.

Among the findings:

- Larger schools tended to be more efficient than smaller schools. With a larger pool of potential athletes, these institutions increase their likelihood of performing better in the Directors' Cup. Also, larger schools may spread fixed costs across the athletic department, allowing for more efficient operations.
- The analysis showed that schools can accumulate Directors' Cup points more quickly by increasing the number of women's sports participants relative to male participants. This is sensible, given fewer female athletes compete, and therefore, schools have a statistically better chance at winning. There is no clear connection between efficiency and average Directors' Cup points. This is comforting as the purpose of this study is not to identify Directors' Cup winners, but to identify the schools that use their resources most efficiently to accumulate points.
- All schools could improve their point standings with existing resources by improving efficiency. For example, Calvin College, which scored the highest efficiency score of .865, could achieve an approximate 13 percent improvement.