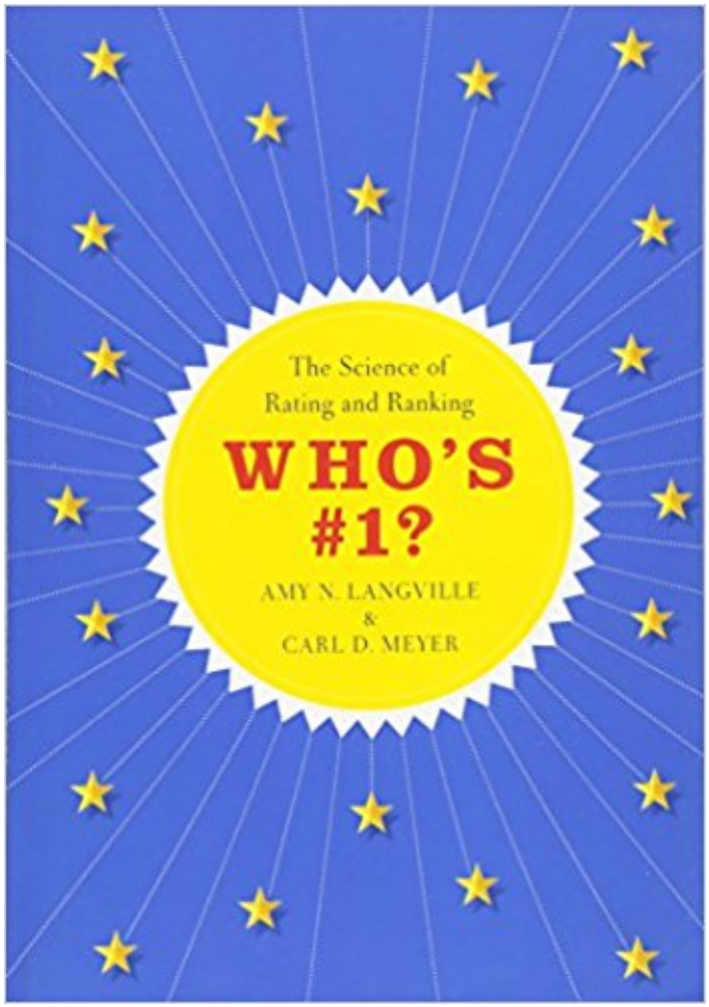
Who's #1?: The Science Of Rating And Ranking



Synopsis

A website’s ranking on Google can spell the difference between success and failure for a new business. NCAA football ratings determine which schools get to play for the big money in postseason bowl games. Product ratings influence everything from the clothes we wear to the movies we select on Netflix. Ratings and rankings are everywhere, but how exactly do they work? Who’s #1? offers an engaging and accessible account of how scientific rating and ranking methods are created and applied to a variety of uses. Amy Langville and Carl Meyer provide the first comprehensive overview of the mathematical algorithms and methods used to rate and rank sports teams, political candidates, products, Web pages, and more. In a series of interesting asides, Langville and Meyer provide fascinating insights into the ingenious contributions of many of the field’s pioneers. They survey and compare the different methods employed today, showing why their strengths and weaknesses depend on the underlying goal, and explaining why and when a given method should be considered. Langville and Meyer also describe what can and can’t be expected from the most widely used systems. The science of rating and ranking touches virtually every facet of our lives, and now you don’t need to be an expert to understand how it really works. Who’s #1? is the definitive introduction to the subject. It features easy-to-understand examples and interesting trivia and historical facts, and much of the required mathematics is included.

Book Information

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Customer Reviews

"[A] thorough exploration of the methods and applications of ranking for an audience ranging from

computer scientists and engineers to high-school teachers to 'people interested in wagering on just about anything'."--Nature Physics"Who's #1 provides a fascinating tour through the world of rankings and is highly recommended."--Richard J. Wilders, MAA Reviews"[T]he book . . . provide[s] an excellent, accessible, and stimulating discussion of the material it does cover. Overall, the book makes a valuable addition to the canon of rating and ranking."--David J. Hand, Journal of Applied Statistics"This book provides an interesting overview of ranking various sports teams, chess players, politicians, and the like in real-life circumstances, which typically involve serious constraints on the time available to find the optimal ranking."--Choice"The book could be used to supplement a course on linear algebra and/or numerical linear algebra. . . . The book could also be used as the basis for a short topics course or undergraduate research project on ranking, or it could be used in a modeling class as an example of how mathematical modeling is done. In addition to describing the mathematics of ranking, the book is full of interesting tidbits that add to the pleasure of its reading."--James Keener, SIAM Review"When I started this book I knew very little about American football. I was little the wiser after finishing it, but I had an excellent understanding of various methods used in the obtaining of the ranking of teams and their interrelationships. Langville and Meyer are to be commended for this collection, and anyone who is more conversant with North American sports than I am will most certainly be stimulated by reading Who's #1?"--Andrew I. Dale, Notices of the AMS"Readers will find many interesting ideas as they grapple with the complexities of the science of rating and ranking."--Bob Horton, Mathematics Teacher"[T]his book is a call to consciousness on the relevance of rating and ranking as well as an enjoyable start-up guide from the point of view of algebraic methods."--Francisco Grimaldo Moreno, JASSS"This book is a great introduction to the field (including its constituent parts in linear algebra and data mining) and contains enough depth to be used as a supplemental book in a data mining course or as a jumping off point for an interested researcher. . . . Overall this is a very nice, well written book that could be use in multiple ways by a wide variety of audiences."--Nicholas Mattei, SigAct News"The profit the scientometrics community can gain from this book is an indirect one: an attitude how to compile a systematic collection of potential methods, how to select carefully using theoretical tests and empirical examples and how to combine methods to get a comprehensive, multidimensional rating and ranking system. In this sense, it is a highly recommended reading for all readers of the journal Scientometrics."--Andras Schubert, Scientometrics"This book is an excellent read for everyone; readers might be sports enthusiasts, social choice theorists, mathematicians, computer scientists, engineers, and college and high school teachers. Teachers will find quite an easy way to extract material for a short module."--Valentina Dagiene, Zentralblatt MATH

"Who’s #1? is an excellent survey of the fundamental ideas behind mathematical rating systems. Once a realm of sports enthusiasts, ranking things is becoming a vital tool in many information-age applications. Langville and Meyer compare and contrast a variety of models, explaining the mathematical foundations and motivation. Readers of this book will be inspired to further explore this exciting field."--Kenneth Massey, Massey Ratings"Langville and Meyer provide a rigorous yet lighthearted tour through the landscape of ratings methodologies. This is an enjoyable read that looks at ratings through the lens of sports, but also touches on how ratings affect our everyday lives through movies, Web search, online shopping, and other applications."--Chris Volinsky, member of the winning Netflix Prize team"Who’s #1? provides a much-needed synthesis of the methods used for ranking and rating things like sports teams, movies, politicians, and more. There is a ton of interest in this topic, and readers now have one place to look for a comprehensive treatment of the different approaches."--Wayne L. Winston, author of Mathletics: How Gamblers, Managers, and Sports Enthusiasts Use Mathematics in Baseball, Basketball, and Football"This highly accessible book gives readers a comprehensive account of the different mathematical ranking techniques across many different disciplines, and will appeal to everyone from researchers to sports statistics junkies."--Sep Kamvar, author of Numerical Algorithms for Personalized Search in Self-organizing Information Networks

The book explains different approaches to rating different items in a set. These approaches can be used to rate teams in a sport, how good a web-page is by the traffic it receives, or any other set of objects with characteristics you can quantify. While the book also addresses rankings (and quickly distinguishes between a rating and a ranking), the focus of the book is rating. There are many examples showing the various ratings methods. Each of the common approaches to ratings uses a 5-object set of football teams with scores of matches. The various approaches are compared and tested for past and predictive accuracy in different way, such as with an NFL football season. There is also a lot of interesting trivia about BCS ratings, sports betting and other fan topics.If you are a huge fan of BCS football and team rankings, this book will appeal to you. There are clear explanations of how ratings are produced using approaches of Massey, Colley, ELO, offense-defense and many others (I mention those 4 because those are the most recognizable). If you are very interested in sports modeling, or use math-heavy approaches to sports betting, this is a must-read book. Successful betting groups use models that rely on approaches very similar to the ones listed here. This book spells out half of the work involved in developing such a model. It also

briefly touches the other half of model-development: what inputs to use in your model.The book is packed full of matrices and proofs. I had to go back and review my linear algebra and eigenvectors to fully appreciate the book. There are also practical tips on solving these problems efficiently, and ways to simplify the problems so you do not try to brute-force your way through a monster matrix. You do not have to be able to solve or understand what a 3x3 matrix to enjoy this book, because each method is discussed in a very readable manner. However, the math behind what is going on is half the book. While it is still interesting without following all the math, I would only recommend the book to someone that is familiar with linear algebra, or will put in the time to become competent at it in order to understand the techniques presented.While overall the content was excellent and had the right depth, I felt like the sports and spread-betting content could have used more detail. For example, when considering inputs for a football rating, the authors conclude that "Experiments tend to suggest that scoring data provides better overall rankings for NCAA football than does yardage data." One study was mentioned considering 2005 ACC Football, but were there other studies supporting that generalization? The authors also discuss the difficulty in applying ratings to predict spreads, including blow-outs and irregular scoring. While these provide extra challenges to applying ratings to betting on the spread, there are simply ways to attack each of these problems. They ultimately conclude that "simply averaging past scoring differences will probably give you an estimate that is competitive with more complicated techniques". However, even using slight adjustments to inputs can increase the accuracy of fore-site projections.I gave the book 5 stars because it was very clean and well written, it nicely summarized and discussed many mathematical approaches to ratings, and no other book covered this topic.

The math is probably a bit above what the average person can comprehend but overall a very detailed and intriguing book.

Very interesting and well presented. Requires a fair amount of math.

This is what i am looking for.it easy to undertood and great book

A good book, but I think it was a bit tough to read because of the abundance of mathematical vernacular.If I had a better grasp of mathematics I would probably have rated it 4 or maybe even 5 stars.

"Click to Look Inside" is active for this book, and that's a worthwhile effort for this book. Pretty much every page is interesting.When I was 8, I loved to look through books like this one. I was fantastic at ignoring the math I didn't understand, while reading very interesting text, talking about math tools, and then looking at the pictures generated by the math tools. Later in life, when I knew some math, I was able to use those tools. If you're not a math person, but have the ability to ignore mathematics while going through a book, then this book is still good for you.Here, the tools are being used on sports teams, products, movies, and websites. As it happens, part of my job is to study rankings (mostly of websites), and here this book comes along to provide a comprehensive overview.What's it worth? As an example, the Netflix Prize sought to substantially improve the accuracy of predictions about how much someone is going to enjoy a movie based on their movie preferences. Chris Volinsky won a million dollars for his ranking method. He's one of the endorsers for this book.There is never a "what is this good for?" moment in this book -- the methods pick out winners. Chapter headings: Introduction to Ranking, Massey's Method, Colley's Method, Keener's Method, Elo's System, The Markov Method, The Offense-Defense Rating Method, Ranking by Reordering Methods, Point Spreads, User Preference Ratings, Handling Ties, Incorporating Weights, What If Scenarios, Rank Aggregation, Methods of Comparison, and Data.This book is entertaining enough to be considered a high-level popular math book. Anyone tasked with being #1 in a field will find this book useful and lucrative. Highly recommended.

My rating is subjective and reflects one of the dangers of buying a book online without browsing. The book requires at least a graduate level of maths, stats etc. I think a warning must be put online by as well as the publisher that this book requires a high level of mathematical knowledge. It would be great if someone could re-write this book in non-mathematical language.

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