

STUMBLING ON



TWO ECONOMISTS
EXPOSE THE PITFALLS
ON THE ROAD TO VICTORY
IN PROFESSIONAL SPORTS

DAVID J. BERRI AND MARTIN B. SCHMIDT

Stumbling On Wins

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Professional Sports

David J. Berri
Martin B. Schmidt

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*To Lynn and Susan:
We couldn't have done this
without you.*

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Contents

Acknowledgments	xi
About the Authors	xiii
Preface	xv
Chapter 1: Maybe the Fans Are Right	1
Sporting Rationality	3
Crunchers, “Experts,” and the Wrath of Randomness	5
A Century of Mistakes in Baseball	7
Chapter 2: Defending Isiah	13
Isiah Thomas Illustrates How Money Can’t Buy You Love	14
Getting Paid in the NBA	20
Coaching Contradictions	23
Isiah’s Defense	28
Chapter 3: The Search for Useful Stats	33
Identifying the Most “Useful” Numbers	33
The Most Important Position in Team Sports?	39
Assigning Wins and Losses	47
Chapter 4: Football in Black and White	49
A Brief History of the Black Quarterback	50
Performance in Black and White	55
Quarterback Pay in Black and White	63

Chapter 5:	Finding the Face of the Franchise	67
	Birth of the Draft	68
	The Problem with Picking First	69
	How to Get Picked First?	78
	Back to Kostka.	80
Chapter 6:	The Pareto Principle and Drafting Mistakes	83
	The Pareto Principle and Losing to Win	83
	The NBA Draft and NBA Performance.	93
	Catching a Baseball Draft	100
Chapter 7:	Inefficient on the Field.	103
	Just Go For It!	106
	Evaluating the Little Man in Football	113
	The Hot Hand and Coaching Contradictions	115
Chapter 8:	Is It the Teacher or the Students?	119
	The Wealth of Coaching	120
	“Take Your’n and Beat His’n”	122
	Deck Chairs?	125
	Growing Older and Diminishing Returns	126
	Putting the Picture Together	132
Chapter 9:	Painting a Bigger Picture	135
Appendix A:	Measuring Wins Produced in the NBA . .	141
	A Very Brief Introduction to Regression Analysis	141
	Modeling Wins in the NBA	143
	Calculating Wins Produced in the NBA.	148
	Win Score and PAWS48	154
	A Comment on Alternatives	156
	Three Objections to Wins Produced for the NBA	158

Appendix B: Measuring Wins Produced in the NFL	161
Endnotes	173
Chapter 1	173
Chapter 2	176
Chapter 3	181
Chapter 4	186
Chapter 5	189
Chapter 6	194
Chapter 7	198
Chapter 8	202
Chapter 9	207
References	209
Books and Articles	209
Web Sites	222
Index	225

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Preface

Once upon a time, the word “moneyball” was only heard in reference to a winning shot in billiards. A few years ago, though, the phrase moved out of the pool hall and onto the baseball diamond. The man responsible for this move was Michael Lewis. In 2003, Lewis published *Moneyball*, a book that tells the remarkable story of the Oakland A’s and General Manager Billy Beane. From 1996 to 2006, Beane managed to consistently field a winning baseball team without spending very much money on players. According to Lewis, this feat was accomplished because Beane knew something about measuring player performance that other decision-makers in baseball didn’t know.

One year before *Moneyball* appeared, we published an article examining the coaches voting for the All-Rookie team in the National Basketball Association (NBA). This article suggested that coaches in the NBA were not evaluating rookies correctly. Then in 2006 we published, along with Stacey Brook, *The Wages of Wins*. Our first book explored a variety of issues in sports and economics, including labor strikes, competitive balance, and the ability of a player to “turn it on” in the playoffs. Within this list, we presented evidence that decision-makers in the NBA—like their counterparts in baseball—had problems measuring the value of free agents.

The idea that people in baseball and basketball have trouble evaluating players is certainly interesting to sports fans. Such stories, though, have implications beyond sports. In recent years, research has shown that, in general, people have trouble making “good” decisions. For example, Daniel Gilbert’s *Stumbling on Happiness*, a book that inspired our own title, showed how people’s efforts to find happiness are often sabotaged by their own actions. Dan Ariely, in *Predictably Irrational*, presented a number of experiments that show the difficulty people have in evaluating new information and making good decisions. And Richard Thaler and Cass Sunstein—in *Nudge*—not only describe the troubles people have making choices, but also how the presentation of choices can lead to better outcomes.

Much of this research is based on experimental evidence, and we find such evidence to be persuasive. Still, in the world of professional sports one might expect a different story. Sports come with an abundance of data to inform decisions. Plus, the consequences of failure are both quite severe and very public. In such an environment, we should expect that the experts employed in the industry get it “right.”

The two stories told in *Moneyball* and *The Wages of Wins*, though, suggest otherwise. And these tales are actually just the tip of the iceberg. As the following pages reveal, similar stories can be found throughout the world of sports. We believe these stories should not only change the way sports fans perceive the choices made by their favorite teams, but also impact the way economists and other social scientists think about human decision-making.

1

Maybe the Fans Are Right

“I must say, with all due respect, I find it very hard to see the logic behind some of the moves you have made with this fine organization. In the past 20 years, you have caused myself, and the city of New York, a good deal of distress, as we have watched you take our beloved Yankees and reduce them to a laughing stock.”

George Costanza upon meeting George Steinbrenner (owner of the New York Yankees): Seinfeld, “The Opposite” (season 5, 1994)

“What the hell did you trade Jay Buhner for?! He had 30 home runs and over 100 RBIs last year. He’s got a rocket for an arm. You don’t know what the hell you’re doin’!”

Frank Costanza (George’s father) upon meeting George Steinbrenner: Seinfeld, “The Caddy” (season 7, 1996)¹

Few sports fans ever meet the people who operate their beloved sports teams. Such a meeting, though, would probably inspire many fans to get in touch with their inner “Costanza.” Given the opportunity, fans would love to ask:

- Why do you keep signing such lousy free agents?
- Why can’t we ever draft players who actually help us win?
- Why can’t we ever find a better goalie?
- Why does the coach keep making that decision on fourth down?
- Why does the coach keep playing that point guard?

Obviously, this is just a sample of the questions asked. And, just as obviously, we have cleaned up the language. What may not be obvious is the economic implication of these questions.

Fans often suggest that decision-makers in sports are less than perfect. Managers and coaches are not only accused of making bad choices, fans often accuse these people of making the same bad choices over and over again. Many economists, though, find such stories unbelievable. After all, traditional economics clearly teaches that decision-makers are supposed to be “rational.”

What does it mean to be a “rational” decision-maker? Thorstein Veblen sarcastically argued in 1898 that economists tend to see people as “hedonistic lightning calculators.”² In more recent years, Richard Thaler and Cass Sunstein have just as sarcastically suggested that the rational decision-makers described by economists “can think like Albert Einstein, store as much memory as IBM’s Big Blue, and exercise the willpower of Mahatama Gandhi.”³

Both these remarks comment on the simple idea that rational decision-makers “choose efficiently the means that advance their goals.”⁴ Let’s imagine the behavior of a manager and coach that “chooses efficiently.” Such a person would tend to make the correct decision given the circumstances they observe. Perhaps more importantly, as the game changes, these same coaches and managers would change their point of view and make different decisions. Therefore—and contrary to what sports fans often contend—it’s not possible for coaches and managers to make the same mistake over and over again.

So who is right: fans or economists? The emerging field of behavioral economics—via a collection of laboratory experiments—seems to side with the fans. Experiments have shown that people are not quite as rational as traditional economics contends.⁵ Some economists have argued, though, that how people behave in a laboratory experiment is different from how they behave in the “real world.”⁶ In the real world, people face real consequences for making mistakes, and real consequences force people to be rational.

Sporting Rationality

To settle this debate, it might help to move out of the laboratory and look at decisions in the “real world.” Sports are often described as being removed from reality. Yet for the people in this particular reality, what happens in sports matters. Consequently, we can learn about the rationality—or irrationality—of human decision-making by examining the “real world” of sports. This examination, consistent with the experimental evidence, will show again and again and again (actually we will present at least 20 “agains”) that decisions in sports are not completely rational.

Before we get to this examination, let’s emphasize that the word “irrational” is not synonymous with the word “stupid.” When we eventually argue that decision-makers in sports are “irrational,” we will not be saying that people in sports are not as smart as people are in other industries or other occupations. In fact, people in sports are often better prepared for their jobs than people employed elsewhere.⁷ Furthermore, it seems likely that whatever “irrationalities” are observed in sports are likely to be found elsewhere.

We make this claim because at first glance decision-makers in sports perhaps more than anyone else should be “rational.” There are two characteristics of the sports industry that bolster this expectation. First, despite being a relatively small industry in the American economy,⁸ sports receive an inordinate amount of attention from the media. After all, no other industry has an entire section of each local paper devoted to its happenings. Such coverage raises the cost of failure to the participants in sporting contests. Losing in sports, as noted earlier, is not a private affair. Sports fans both near and far witness your failure and are often not shy in expressing their disappointment. Although people do pay some attention to failures in non-sports industries, it’s rare to see interested observers in other industries pay money to yell obscenities at those who fail to achieve success.

Sports are not only different in terms of attention received. In sports, success and failure would seem to be—relative to other industries—somewhat easy to understand. To illustrate, ask yourself this question: At your place of employment, who is the most productive worker? Yes, we know. It must be you. But is this something you could prove? We suspect, for many people, this would be difficult. For workers in many non-sports industries, measuring worker productivity is difficult.

Take our profession, college professors. We both think of ourselves as above average professors. But such a self-assessment may be dubious. In fact, a survey at the University of Nebraska revealed that 94% of college professors thought they were better teachers than the average at that same institution.⁹ We don't think this obvious delusion is unique to Nebraska. Neither of us can recall meeting a fellow professor who thought he or she was below average.

It also turns out that professors are not the only people who overestimate their abilities. Thaler and Sunstein find evidence of this phenomenon in surveys of MBA students, drivers, and new business owners,¹⁰ and this is just a partial list. They go on to note that “unrealistic optimism is a pervasive feature of human life; it characterizes most people in most social categories.”¹¹

In sports, though, there's a brake on this natural tendency. If we asked Jeff Francoeur of the Atlanta Braves how his hitting in 2008 compared to the league average, Francoeur would be hard pressed to argue he was above average. With respect to most of the standard measures of hitting performance, Francoeur was below average. Likewise, Francoeur's teammate Chipper Jones can be pretty confident that he really was an above-average hitter in 2008. Again, that's what the stats indicate.¹²

Because sports come with numbers, evaluating worker performance in sports would seem to be easier. Consequently, the path to success would seem—relative to what's seen in other industries—easier

to navigate. Unfortunately, there are a few stumbling blocks on the path to victory.

The stumbling blocks can be separated into two broad categories. First, numbers have to be understood. Coaches and general managers can see the numbers associated with each player's performance. But how these numbers connect to wins is not always appreciated. Even if the numbers were understood, though, another stumbling block gets in the way. Understanding the past doesn't have much value if the past can't predict the future. Some numbers in sports are simply inconsistent across time. When that's the case, following the unpredictable numbers makes the path to victory hard to find.

What the numbers mean for the present and future is the foundation of our story. But before we get to that story, we need to address a fundamental objection to any sports analysis offered by academics. Specifically, is it likely that academics would be able to say anything that the "experts" employed in the sports industry don't already know?

Crunchers, "Experts," and the Wrath of Randomness

Even if you don't believe people are perfectly rational, you might still expect decision-makers in sports—where there is an abundance of information, clear objectives, and severe consequences for failure—to get it "right." After all, these people are the "experts." There is no reason to think that some college professors armed with a slide rule can do any better.

Let's respond to that by noting that neither of us owns a slide rule (or knows how to use one). We do, though, have spreadsheets and some fairly sophisticated econometric software. There are a number of examples where people armed with such tools can see things that "the experts" miss. Some of our favorite examples come from places as diverse as the wine industry,¹³ analysis of Supreme Court

decisions,¹⁴ and the treatment of heart patients in the emergency room.¹⁵ In essence, it appears that human beings—who are not actually lightning calculators—tend to lose in a contest against actual lightning calculators.¹⁶ Such an outcome is observed whether or not the human being is an “expert.”

Related to the obvious point that people are not lightning calculators is a classic finding in psychology. People in sports often claim they can simply watch a player during a game and “know” if he is good or bad. The seminal work of George Miller, though, has shown that the human mind can only track about seven items at one time.¹⁷ In sports, though, a multitude of events are happening throughout the contest. All these events not only have to be seen and noted, the impact of these factors on wins must be ascertained. To claim that you can simply watch a player and see his or her overall contribution to wins suggests that you believe your mind can do something that research suggests is difficult. Despite the limitations of personal observation, though, human beings still tend to believe the analysis based on this approach is correct. Such overconfidence can often cause people to ignore contradictory information.

Statistical analysis, though, can overcome these issues. Spreadsheets and statistical software can evaluate more games than a person can ever personally observe. These evaluations can also allow us to look past the “most dramatic factors” and identify which factors truly matter most in terms of wins. Furthermore, the analysis can also easily change as new data arrives. Perhaps most importantly, statistical models come with confidence intervals.¹⁸ In other words, statistical models can assess the quality of the prediction being made. Try getting that kind of service from a human expert!

Number crunching does more than offer better explanations than what we get from “experts.” It can also tell us when there really isn’t an explanation. In other words, number crunching can help us see when a process is inherently random.

Let's illustrate this last point with an oddity from the Super Bowl. As of 2009, the National Football Conference (NFC) team has won the coin toss at the Super Bowl for 12 consecutive years. Such a streak clearly indicates that the NFC has some secret that allows it to better predict coin tosses; and the American Football Conference (AFC) better do some work if it hopes to close the "coin toss predicting gap." Then again, maybe there's another possibility. Flipping a coin is a random process.¹⁹ Even if you flipped a coin 12 times in a row with the same result, the process is still random. The outcomes don't tell us anything about the skill level of the NFC teams. This point should be obvious, since predicting a coin toss is not an actual skill.

This simple story highlights an additional advantage of analyzing sports data, and another potential pitfall for decision-makers. Some numbers that we associate with an athlete represent the skills of the performer. Other numbers, though, are not about a player's skill, but instead are determined by the actions of the player's teammates (or coaching or some random process). The analysis of numbers can actually clue us in on the skills versus non-skills argument. In the absence of such analysis, though, a decision-maker can actually suffer from the "wrath of randomness." Specifically, a decision-maker can be fooled by numbers that are as reliable predictors of the future as the numbers generated by our coin-flipping game. When that happens, money can be wasted on players who are not really helping. Or on the flip side, a player with some supposedly poor numbers can be removed from the roster when in fact the player is actually helping the team win.

A Century of Mistakes in Baseball

Although the "wrath of randomness" does rear its head in the study of sports, often the numbers do tell a story. Let's start with a great story that reveals a century of mistakes in Major League Baseball (MLB).

In 1997, the Oakland A's ranked toward the bottom in Major League Baseball, in respect to both team payroll and winning percentage. The next season, Billy Beane became general manager, and part of this story stayed pretty much the same. Specifically, the lack of spending on players didn't change. What did change were the outcomes achieved by the A's. From 1999 to 2002, only the New York Yankees, a team that spent three times more on playing talent than Beane, managed to win more games in the American League. The term "more" is a bit misleading. The Yankees actually won only two more games than the A's across these four seasons.

How was this possible? It's been argued²⁰ that the key was Beane's ability to recognize specific inefficiencies in baseball's labor market. Such inefficiencies allowed Beane to pick up talent that was both cheap and productive.²¹

At least, that's the story that's been told. For the empirical evidence supporting this tale, we turn to the work of Jahn Hakes and Raymond Sauer. These economists decided to investigate whether the baseball player market was, as they say, "grossly inefficient." Before we get to their answer, however, let's briefly describe an efficient labor market. A basic tenet in economics is that workers are paid in line with their expected productivity, that is, workers who are expected to be the most productive get paid the most. This suggests that baseball players who are expected to perform the best are paid the highest salaries (at least, once they become free agents). In a world where some teams are "rich" and others "poor," the best players typically end up on teams that have the ability to pay the most. In other words, we would expect the Yankees—or the "rich" team—to get the best talent, and a "poor" team like the Oakland A's should end up with the less capable players.

The key to the above reasoning is the phrase "ballplayers who are expected to be the most productive." This tells us that having money isn't enough. Teams have to be able to identify the "most productive" players. If one team can do a better job at identifying the "most

productive,” then that team might be able to field a very good team that’s not very expensive.

To see if the Oakland A’s actually followed this blueprint, Hakes and Sauer needed to connect three dots:

- They needed to uncover how various performance characteristics impact wins in Major League Baseball.
- They needed to figure out what individual teams were willing to pay for each performance characteristic.
- They needed to determine whether the salaries that various performance characteristics command is consistent with how those measures impact wins.

To cut to the chase, Hakes and Sauer found that “...hitters’ salaries during this period (2000-2003) did not accurately reflect the contribution of various batting skills to winning games.” Furthermore, “this inefficiency was sufficiently large enough that knowledge of its existence, and the ability to exploit it, enabled the Oakland Athletics to gain a substantial advantage over their competition.”²²

How did they reach this conclusion? First, data was collected on team winning percentage, team on-base percentage,²³ and team slugging percentage²⁴ for all 30 MLB teams from 1999 to 2003. They then ran a simple regression.

Okay, we get ahead of ourselves. What’s a “simple regression?” Regressions²⁵ are essentially the test tubes of economics. When a chemist seeks to understand the world, he or she steps into a laboratory and starts playing around with test tubes. These test tubes allow a chemist to conduct controlled experiments. Hakes and Sauer, though, could not conduct a controlled experiment with Major League Baseball (at least, Major League Baseball probably wouldn’t let them do this). What they could do, though, is employ regression analysis. This is simply a standard technique economists employ to uncover the relationship between two variables (like player salary and on-base percentage), while statistically holding other factors constant.

When properly executed, regression analysis allows one to see if the relationship between two variables exists; or more precisely, if the relationship between two variables is statistically significant.

Beyond statistical significance, we can also measure the economic significance of a relationship,²⁶ or the size of the impact one variable has on another. Consider how on-base percentage and slugging percentage relate to team wins. Hakes and Sauer found both to be statistically significant. On-base percentage, though, had twice the impact on team wins. Such a result suggests that players should be paid more for on-base percentage. The study of salaries, though, suggested that prior to 2004, it was slugging percentage that got a hitter paid. In fact, in many of the years these authors examined, on-base percentage was not even found to have a statistically significant impact on player salaries.

After 2004, though, the story changed.²⁷ An examination of data from 2004 to 2006 reveals that on-base percentage had a bigger impact on player salaries than slugging percentage. In other words, an inefficiency exploited by Billy Beane was eventually eliminated.²⁸

It's important to note, though, how long this took. The National League came into existence in 1876. All of the data necessary to calculate on-base percentage was actually tracked that very first season in the 19th century. However, it was not until the 21st century—or after more than 100 years—that these numbers were understood by decision-makers in baseball. It appears that decision-makers in baseball made the same mistake in evaluating talent year after year, and this continued for a century. Such a tale suggests that maybe all those fans are on to something. Maybe coaches and general managers are capable of repeating the same mistakes.

Of course, one story from the real world of sports doesn't make a point. What we need is a multitude of stories. And that's what we provide. The stories we tell give insight into how free agents are evaluated, how teams make decisions on draft day, and even how choices are made on game day. We even present evidence that the

evaluation of coaches in the National Basketball Association (NBA) is less than ideal.

All of these tales from the world of sports tell one very important story. Decision-making is not often as rational as traditional economics argues. And that story has an impact on our understanding of both sports and economics.

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INDEX

Note: Page numbers followed by *n* are located in the Endnotes.

A

Abbott, Henry, 125, 180*n*, 205*n*
Abdul-Jabbar, Kareem, 84, 131, 206*n*
Abdur-Rahim, Shareef, 94-95
ACC (Atlantic Coast Conference), 49
Adelman, Rick, 123
adjusted field goal percentage (NBA), 16
adjusted plus-minus statistic, 183-184*n*
Adjusted Production per 48 minutes played (AdjP48), 203*n*
AFL (American Football League), 50
African-American quarterbacks
 history of, 50-55
 pay discrepancy between black and white quarterbacks, 63-66
 performance of, 55-63
age and performance, 126-129, 205*n*
Aguirre, Mark, 88-89
Aikman, Troy, 66, 168-170
Albeck, Stan, 124
All-Rookie Team (NBA), voting factors for, 27
Allen, Ray, 84
Allmen, Peter Von, 189*n*
Almond, Morris, 24
American Football League (AFL), 50

American International Group, Inc., 174*n*
Anderson, Dave, 202*n*
Anderson, Ken, 88-89, 168-170
Ariely, Dan, 173*n*
Ariza, Trevor, 178*n*
Arizona Cardinals, 113
Armstrong, Hilton, 152-153
Ashenfelter, Orley, 174*n*
assigning wins and losses, 47-48
assists (NBA), 16
Atlantic Coast Conference (ACC), 49
Auerbach, Red, 23, 133, 179-180*n*
Ayres, Ian, 174*n*

B

Banks, Don, 188*n*
Banks, Tony, 52-53, 71-73
Barkley, Charles, 194*n*
Barzilai, Aaron, 184*n*
base stealing, efficiency of, 103-106, 198-199*n*
Baseball-Reference.com, 181*n*
baseball. *See* Major League Baseball
Basketball-Reference.com, 176*n*, 182*n*
basketball. *See* National Basketball Association
BasketballValue.com, 183*n*
Batch, Charlie, 52-53
batting average, 33, 135

Beane, Billy, 8, 135
 Belfour, Ed, 43
 Belichick, Bill, 200*n*
 Bell, Bert, 68
 Bellisari, Steve, 74
 Bender, Patricia, 178*n*, 195*n*
 Bennell, Rick, 25
 Benson, Kent, 88-89
 Bias, Len, 88-89
 Bibby, Mike, 88-89
 Biedrins, Andris, 45
 Bird, Larry, 42, 84, 180*n*
 Birdsong, Otis, 88-89
 Birnbaum, Phil, 190*n*
 black quarterbacks
 history of, 50-55
 pay discrepancy between black and
 white quarterbacks, 63-66
 performance of, 55-63
 Blake, Jeff, 52-53, 73
 Blass, Asher, 181*n*
 Bledsoe, Drew, 71-73
 blocked shots (NBA), 16
 BMI (Body Mass Index), 191*n*
 Bockerstaff, Bernie, 205*n*
 Body Mass Index (BMI), 191*n*
 Bogut, Andrew, 93, 195*n*
 Bonds, Barry, 199*n*
 Boston Celtics, 84, 121
 Bowen, Ryan, 152-153
 Bowie, Sam, 88-90, 194*n*
 Bradbury, J. C., 33, 127, 181*n*, 206*n*
 Bradley, Shawn, 88-89
 Bradshaw, Terry, 57
 Brady, Tom, 168-170
 Brand, Elton, 88-89
 Brees, Drew, 73
 Briiks, Aaron, 52-53
 Briscoe, Marlin, 51
 Brock, Lou, 106
 Brodeur, Martin, 39-42
 Brodie, John, 168-170
 Brooklyn Dodgers, 68
 Brown, Devin, 152-153
 Brown, Kwame, 88-89
 Brown, Larry, 25-26, 124
 Brown, Shannon, 25-26

Bryant, Bear, 202*n*
 Bryant, Kobe, 44, 121
 Bucks Diary, 149
 Buffalo Bills, signing of James Harris,
 51, 56-57
 Bulger, Marc, 73
 Burford, Seth, 74
 Burger, John, 101
 Burke, Brian, 201*n*
 Butler, Rasual, 152-153

C

Calderon, Jose, 45
 Camby, Marcus, 44, 88-89
 Campbell, Jason, 52-53
 Carlisle, Rick, 204-205*n*
 Carr, David, 71-74, 77
 Carroll, Joe Barry, 88-89
 Carter, Quincy, 52-53
 Carter, Virgil, 168-170
 center averages (NBA), 178*n*
 Chamberlain, Wilt, 23
 Chandler, Tyson, 88-89, 152-153
 Chappell, Mike, 191*n*
 Chicago Bulls, 84, 89, 130
 Cincinnati Bengals, signing of Jeff
 Blake, 53
 Cleveland Browns, signing of Bill
 Willis and Marion Motley, 50
 Clifton, Nat, 186*n*
 coaches
 conflicting messages to players,
 23-28
 impact on performance, 119-126,
 203-205*n*
 coefficient of variation, 185*n*
 coin tosses, 7, 175*n*
 Coleman, Derrick, 88-89, 94-95
 Collins, Doug, 205*n*
 competitive balance, 68, 189*n*
 consistency
 consistency across sports, 38
 of hitters/pitchers in MLB, 34-35
 importance of, 181*n*
 Continental Basketball
 Association, 176*n*
 Cooper, Chuck, 186*n*

correlation coefficient, 184*n*
 Couch, Tim, 71, 77
 Craft, Kim, 185*n*
 Crawford, Jamal
 acquisition by New York Knicks, 19
 average minutes per game in New
 York Knicks, 177*n*
 games played as New York
 Knicks, 177*n*
 performance before coming to New
 York, 30-31
 performance in New York, 31
 salary with New York Knicks,
 29, 178*n*
 Cross, P., 174*n*
 Culpepper, Daunte, 52-53, 73
 Cummings, Terry, 88-89
 Cunningham, Randall, 51-53
 Curry, Eddy
 acquisition by New York Knicks, 19
 games played as New York
 Knicks, 177*n*
 performance before coming to New
 York, 30-31
 performance in New York, 31
 salary with New York Knicks,
 29, 178*n*
 Curtis, Joseph, 43

D

Daniels, Antonio, 152-153
 Daugherty, Brad, 88-89
 Davey, Rohan, 74
 Davis, Antonio, 178*n*
 Defensive Independent Pitching
 Statistics (DIPS), 35
 Delhomme, Jake, 73
 Denver Broncos, 51, 201*n*
 Detroit Lions, drafting of Joey
 Harrington, 74
 Detroit Pistons, 177*n*
 Diminishing Returns, Law of,
 130-132
 DIPS (Defensive Independent
 Pitching Statistics), 35
 Dobson, H. A., 135

Doman, Brandon, 74

draft

 MLB performance and, 100-102
 NBA draft
 draft position and performance,
 93-100, 196-198*n*
 intentional losses to secure
 better draft position,
 88-93, 194*n*
 NBA performance and, 88-89
 structure of, 87
 NFL draft
 factors determining draft
 position, 78-80
 history of, 68-69
 overview, 67
 player compensation and draft
 order, 73-77
 player productivity and draft
 order, 69-73
 purpose of, 69
 surplus value of drafted
 players, 69-70
 telecast of, 191*n*

Drexler, Clyde, 194*n*

Druckenmiller, Jim, 71

Dubner, Stephen, 194*n*

Dumars, Joe, 84

Duncan, Tim, 44, 83, 88-90, 94-95

Dunleavy, Mike, 204*n*

Dunningham, Randall, 168-170

E

Earned Run Average (ERA), 34-35

Easterbrook, Gregg, 107

economic significance of
 relationships, measuring, 10

economic value of sports
 industry, 174*n*

Edmonton Eskimos, 58

effective field goal percentage
 (NBA), 176*n*

efficiency in sports play

 base stealing (MLB), 103-106,
 198-199*n*

 decision-making on fourth down
 (NFL), 106-113, 200-201*n*

“hot hand” phenomenon (NBA),
115-116, 202*n*
kickers, evaluating performance of
(NFL), 113-115, 201*n*
playing time, 116-118
walks (MLB), 106, 199*n*
efficient labor markets,
characteristics of, 8
82games.com, 149, 182*n*
Elam, Jason, 201*n*
Ellison, Pervis, 88-89
Elway, John, 58, 66
Ely, Melvin, 152-153
ERA (Earned Run Average), 34-35
Esiason, Boomer, 168-170
Evans, Vince, 51-53
*Evolution of the Draft and
Lottery*, 194*n*
Ewing, Patrick, 88-89

F

Fasani, Randy, 74
Favre, Brett, 65, 73
FBS (Football Bowl
Subdivision), 193*n*
FCS (Football Championship
Subdivision), 193*n*
Ferry, Danny, 88-89
field goal attempts (NBA), 16
Fitch, Bill, 122, 204*n*
Fitzsimmons, Cotton, 124
Follis, Charles W., 50
Football Bowl Subdivision
(FBS), 193*n*
Football Championship Subdivision
(FCS), 193*n*
football. *See* National Football
League (NFL)
Ford, Chris, 123-124, 205*n*
Ford, Phil, 88-89
forward averages (NBA), 178*n*
fourth down decision-making,
106-113, 200-201*n*
Fouts, Dan, 168-170
Fowler, J. W., 186*n*
Fox, Justin, 194*n*
Francis, Steve, 88-89, 178*n*

Francoeur, Jeff, 4, 174*n*
Fratello, Mike, 124
free agents
max players, 23
NBA performance factors and free
agents' salaries, 20-23, 178-179*n*
NHL goalies study, 46, 185-186*n*
free throw attempts (NBA), 16
free throws (NBA), 202
Frefotte, Gus, 72
Froese, Bob, 43

G

Game Score (NBA), 156-157
Garcia, Jeff, 72-73, 168-170
Garnett, Kevin, 44, 84, 94-95
Garrard, David, 52-53, 74-75, 190*n*
Gasol, Pau, 44, 203*n*
gate revenue (NBA), 92, 195*n*
Gentry, Alvin, 204*n*
George, Jeff, 71
Gerrard, Bill, 175*n*
Gibbs, Joe, 106
Gilliam, Armon, 88-90
Gilliam, Joe, 51-53, 57, 187*n*
Gilmore, Artis, 130-131, 206*n*
Gilovich, Thomas, 115
Gladwell, Malcolm, 175*n*
goalies (NHL), evaluating
performance of, 39, 42-47
Goals Against Average (NHL), 45
Goldman, Lee, 175*n*
Goodrich, Gail, 89
Goukas, Mike, 204*n*
Grant, Horace, 84
Gray, Quinn, 52-53
Green, Trent, 168-170
Greenwood, Dave, 88-90
Griese, Brian, 168-170
Griffith, Darrell, 88-89
Grove, William, 175*n*

H

Haden, Pat, 187*n*
Hakes, Jahn, 8
Hamilton, Richard, 25

Hanners, Dave, 26
 Hardaway, Anfernee, 94-95, 178n
 Hardaway, Tim, 94-95
 Harrington, Joey, 74, 77
 Harris, Al, 204n
 Harris, James, 51-53, 56-57, 168-170
 Hart, Jim, 168-170
 Hasek, Dominik, 43
 heart attacks, diagnosing via statistical model, 175n
 Heeran, Dave, 156
 help factors (NBA), 16
 Henderson, Rickey, 106
 Hextall, Ron, 43
 Hill, Grant, 94-95
 hitters (MLB)
 age and performance, 127
 consistency of, 34-35
 Hockey-Reference.com, 182n, 185n
 hockey. *See* National Hockey League
 Hollinger, John, 144, 156, 176n
 Hones, Bert, 168-170
 Horn, Keith van, 88-90
 Horowitz, Ira, 202n
 Houston Oilers, signing of Warren Moon, 59
 Houston Rockets, 90
 Houston Texans, drafting of David Carr, 74
 Howard, Dwight, 44, 88-89, 94-95
 Hruddy, Kelly, 43
 Huard, Damon, 168-170
 Huizinga, John, 202n
 Humphreys, Brad, 174n

I

An Inquiry into Nature and Causes of the Wealth of Nations (Smith), 120
 instrumental rationality, 173n
 Iverson, Allen, 88-91, 195n, 206n

J

Jackson, Phil, 120-125, 132, 203n, 205n
 Jackson, Tarvaris, 52-53
 James, Bill, 135-136, 175n, 198n

James, Jerome, 178n
 James, LeBron, 44, 83, 88-90, 94-95
 James, Mike, 152-153
 Johnson, Kevin, 196n
 Johnson, Larry, 88-89
 Johnson, Magic, 42, 83-84, 88-90, 121
 Jones, Chipper, 4, 174n
 Jones, K. C., 123
 Jordan, Eddie, 204n
 Jordan, Michael, 42, 84, 121, 194n, 203n
 Joseph, Curtis, 42

K

Karl, George, 122, 204n
 Kelley, Kevin, 107
 Kelly, Jeff, 74
 Kelly, Jim, 66
 kickers (NFL)
 evaluating performance of, 113-115, 201n
 Kidd, Jason, 44, 88-89
 Kilmer, Billy, 168-170
 King, Peter, 188n
 King, Shaun, 52-53
 Kiprusoff, Miikka, 43
 Kirilenko, Andrei, 94-95
 Kitna, Jon, 190n
 Kittner, Kurt, 74
 Klingler, David, 71
 Kostka, Stanislaus, 68, 80-81, 189n
 Koufos, Kosta, 25
 Krautmann, Anthony, 189n
 Kuper, Simon, 207n

L

LA Lakers, 84, 203n
 labor markets
 characteristics of efficient labor market, 8
 market for sports executives, 174n
 Laimbeer, Bill, 177n
 Landry, Greg, 168-170
 Lane, Ferdinand, 135
 Law of Diminishing Returns, 130-132

Lead to Succeed: 10 Great Traits of Leadership in Business and Life (Pitino), 203n

Lee, David, 44

Leftwich, Byron, 52-53

Lehrer, Jonah, 198n

Lemon, Cleo, 52-53

Lewin, David, 193n

Lewis, Michael, 175n, 201n

limitations of personal observation, 6

Lindbergh, Pelle, 43

Lindsey, George, 182n, 199n

Linear Weights, 182n, 207n

Lloyd, Earl, 186n

Los Angeles Rams

signing of James Harris, 51

signing of Kenny Washington, 50

losses

assigning, 47-48

intentional losses to secure better draft position, 88-93, 194n

Loughery, Kevin, 123-124, 205n

Lucas, Ray, 52-53

Luhn, Steve, 180n

Luongo, Roberto, 43

luxury tax in National Basketball Association (NBA), 180n

M

Macaulay, Fred, 194n

Madden, John, 199n

Madden NFL 2008®, 107, 199n

Magliore, Jamaal, 94-95

Majerle, Dan, 94-95

Major League Baseball (MLB)

batting average, 135

draft and MLB performance, 100-102

efficiency of base stealing, 103-106, 198-199n

efficiency of walks, 106, 199n

evaluating player performance in age, 127

consistency of hitters and pitchers, 34-35

DIPS (Defensive Independent Pitching Statistics), 35

ERA (*Earned Run Average*), 34-35

identifying the most useful numbers, 33-35

New York Yankees, 8

Oakland A's case study, 7-10

on-base percentage

definition of, 175n

impact on team wins, 10

importance of, 135

racial integration, 49

relationship between payroll and wins, 13-14

repeated mistakes by

decision-makers, 136

slugging percentage

definition of, 175n

impact on team wins, 10

Manning, Danny, 88-89

Manning, Eli, 71, 77

Manning, Peyton, 63, 71, 73, 168-170

Marbury, Stephon

acquisition by New York Knicks, 15, 19

career averages, 16-18

games played as New York Knicks, 177n

on his style of play, 23

performance before coming to New York, 30-31

performance in New York, 31

salary with New York Knicks, 29, 178n

Marino, Dan, 168-171

Marion, Shawn, 94-95

Marks, Dean, 152-153

Marshall, George Preston, 187n

Martin, Andrew, 174n

Martin, Kenyon, 88-89

Massey, Cade, 69

Mathletics (Winston), 207n

max players (NBA), 23

Mays, Dave, 51-53, 187n

McCarthy, Ryan, 205n

McCloskey, Deirdre, 175n

McCown, Josh, 74-75

McCracken, Voros, 182n

McDyess, Antonio, 45, 88-89
 McGwire, Dan, 71
 McHale, Kevin, 84
 McNabb, Donovan, 52-53, 65,
 168-170, 188n
 McNair, Steve, 52-53, 65, 71, 73,
 168-170
 McNeal, Don, 107
 measuring Wins Produced
 for NBA players
 adjusting for position played,
 150-151
 adjusting for production of
 teammates, 148-150
 alternative statistics, 156-157
 basics of regression analysis,
 141-143
 calculating value of player's
 production, 148
 calculating WP48 and Wins
 Produced, 151-154
 modeling wins in NBA, 143-148
 objections, 158-159
 Win Score and PAWS48,
 154-156
 for NFL players, 161-162, 166-167,
 170-171
 media coverage of sports industry, 3
 Meehl, Paul, 175n
 Miami Dolphins, 106
 Miles, C. J., 25
 Milicic, Darko, 88-90
 Miller, George, 6
 Miller, Mike, 44
 Ming, Yao, 88-89, 94-95
 Minnesota Golden Gophers, 68, 189n
 Minnesota Vikings, signing of Warren
 Moon, 60
 Mirabile, Mac, 192n
 MLB. *See* Major League Baseball
 modeling wins in NBA, 143-148
 Moe, Doug, 205n
 Moiso, Jerome, 196n
 Montana, Joe, 58, 168-170, 187n
 Moon, Warren, 51-53, 58-61, 63
 Morrison, Adam, 26, 180n

Morton, Craig, 168-170
 Moseley, Mark, 106
 Motley, Marion, 50
 Motta, Dick, 122
 Mourning, Alonzo, 88-89
 Murphy, Troy, 44
 Mutombo, Dikembe, 94-95
The Myth of the Rational Market
 (Fox), 194n

N

Nagurski, Bronco, 68, 81
 Nall, Craig, 74
 Namath, Joe, 168-170, 187n
 National Basketball Association
 (NBA)
 All-Rookie Team, voting factors
 for, 27
 Boston Celtics, 84, 121
 box score numbers, 16
 Chicago Bulls, 89, 130
 coaches
 conflicting messages to players,
 23, 25-28
 impact on performance,
 120-126, 203-205n
 Detroit Pistons, 177n
 draft
 draft position and performance,
 93-100, 196-198n
 intentional losses to secure
 better draft position,
 88-93, 194n
 and NBA performance, 88-89
 structure of, 87
 evaluating player performance in
 age, 126-129, 205n
 average center numbers, 178n
 average power forward
 numbers, 178n
 average shooting guard
 numbers, 177n
 factors determining player
 productivity, 98
 factors producing wins,
 132-133

- Game Score*, 156-157
"hot hand" phenomenon,
 115-116, 202n
measuring Wins Produced,
 141-159
NBA Efficiency, 156-157
*performance factors and free
 agents' salaries*, 20-23,
 178-179n
playing time, 116-118
*relationship between
 possessions utilized and
 efficiency*, 22, 179n
shooting efficiency, 206n
teammates and performance,
 130-132, 206n
top 20 players in 2008-09,
 44-45
 gate revenue, 92, 195n
 Houston Rockets, 90
 LA Lakers, 84, 203n
 luxury tax, 180n
 max players, 23
 New Orleans Jazz, 89
 New York Knicks case study,
 14-20, 28-31
 Pareto Principle, 83-84, 87
 Philadelphia 76ers, 205-206n
 relationship between payroll and
 wins, 14
 repeated mistakes by
 decision-makers, 136-138
 salary cap, 180n
 San Antonio Spurs, 130
 top three producers of wins on NBA
 champions 1978-2008, 87
- National Football League (NFL)**
 Arizona Cardinals, 113
 Buffalo Bills, signing of James
 Harris, 51, 56-57
 Cincinnati Bengals, signing of Jeff
 Blake, 53
 Cleveland Browns, signing of Bill
 Willis and Marion Motley, 50
 coin tosses, 7
 decision-making on fourth down,
 106-113, 200-201n
- Denver Broncos, 51, 201n
 Detroit Lions, drafting of Joey
 Harrington, 74
 draft
 *factors determining draft
 position*, 78-80
 history of, 68-69
 overview, 67
 *player compensation and draft
 order*, 73-77
 *player productivity and draft
 order*, 69-73
 purpose of, 69
 Scouting Combine, 78-79
 *surplus value of drafted
 players*, 69-70
 telecast of, 191n
 evaluating player performance in
 *identifying the most useful
 numbers*, 35, 37-39
 kickers, 113-115, 201n
 measuring Wins Produced,
 161-162, 166-167, 170-171
 *performance of black
 quarterbacks*, 55-63
 Quarterback Rating, 161
 Houston Oilers, signing of Warren
 Moon, 59
 Houston Texans, drafting of David
 Carr, 74
 Los Angeles Rams
 signing of James Harris, 51
 *signing of Kenny
 Washington*, 50
 Minnesota Vikings, signing of
 Warren Moon, 60
 quarterbacks
 compensation and draft order,
 75-76
 *factors determining draft
 position*, 78-80
 history of black quarterbacks,
 50-55
 *NFL Quarterback Wonderlic
 Scores*, 192n

- pay discrepancy between black and white quarterbacks*, 63-66
performance of black quarterbacks, 55-63
productivity and draft order, 71-73, 77
recent Hall-of-Fame quarterbacks, 59
Relative Plays, 190n
Relative WP100, 191n
- racial integration
history of black quarterbacks, 50-55
overview, 49-50
pay discrepancy between black and white quarterbacks, 63-66
performance of black quarterbacks, 55-63
- relationship between payroll and wins, 14
- repeated mistakes by
 decision-makers, 137-138
 San Diego Chargers, signing of James Harris, 51
 Scouting Combine, 191n
 Super Bowl XVII, 106
 Washington Redskins, 13
- National Hockey League (NHL)**
 evaluating worker performance in
goalie performance, 39, 42-47
identifying the most useful numbers, 37-39
 New York Rangers, 13
 relationship between payroll and wins, 14
- NBA. See National Basketball Association**
- Nelson, Don, 124, 204-205n
- Net On Court/Off Court, 182n
- Net48, 182n
- New Orleans Jazz, 89
- New York Knicks, 14-31, 138
- New York Rangers, 13
- New York Yankees, 8, 13
- NFL Quarterback Wonderlic Scores, 192n
- NFL. *See National Football League*
- North, Douglass, 173n
- O**
- O'Brien, Jim, 124, 205n
- O'Donnell, Neil, 73
- O'Neal, Shaquille, 88-89, 94-95, 121, 203n
- O'Sullivan, J. T., 74
- Oakland A's, 7-10
- Oakley, Charles, 94-95
- offensive scoring (NFL), 163-164
- Okafor, Emeka, 88-89
- Olajuwon, Hakeem, 83, 88-90, 194n
- Oliver, Dean, 144, 177n, 179n, 184n, 197n
- Olowokandi, Michael, 88-89
- on-base percentage
 definition of, 175n
 impact on team wins, 10
 importance of, 135
- OPS (on-base percentage plus slugging percentage), 33
- P**
- PA (Possessions Acquired), 145-146
- Palmer, Carson, 71-73
- Palmer, Pete, 207n
- Pareto Principle, 83-84, 87, 194n
- Pareto, Vilfredo, 83
- Parish, Robert, 84
- Pate, Wes, 74, 190n
- Paul, Chris, 44, 94-95
 calculating Wins Produced for, 148-154
- PAWS48 (Position Adjusted Win Score per 48 minutes), 154-156
- payroll expenditures
 Boston Celtics, 20
 in National Football League (NFL)
factors determining draft position, 78-80
pay discrepancy between black and white quarterbacks, 63-66

- player compensation and draft order*, 73-77
- Miami Heat, 20
- New York Knicks, 20, 29, 178*n*
- relationship between payroll and wins, 13-14
- San Antonio Spurs, 20
- Payton, Gary, 88-89
- Peete, Rodney, 51-53
- Pennington, Chad, 71
- PER (Player Efficiency Rating), 156
- personal fouls (NBA), 16
- personal observation, limitations of, 6
- Peterson, Morris, 152-153
- Philadelphia 76ers, 205-206*n*
- Philadelphia Eagles, 68
- Phillips, Bum, 119, 122, 202*n*
- Pierce, Paul, 84, 94-95
- Pippin, Scottie, 84
- pitchers (MLB)
 - age and performance, 127
 - consistency of, 34-35
 - DIPS (Defensive Independent Pitching Statistics), 35
- Pitino, Rick, 120-124, 203*n*
- Player Efficiency Rating (PER), 156
- player performance, evaluating
 - adjusted plus-minus statistic, 183-184*n*
 - age and performance, 126-129, 205*n*
 - assigning wins and losses, 47-48
 - consistency, 34-35, 38
 - identifying the most useful number, 33-35, 38-39
 - NBA "hot hand" phenomenon, 115-116, 202*n*
 - NFL kickers, 113-115, 201*n*
 - NHL goalies, 42-47
 - Oakland A's case study, 7, 9-10
 - overview, 4-5
 - performance of black quarterbacks, 55-63
 - playing time, 116-118
 - plus-minus statistic, 38, 182*n*
 - shooting efficiency, 206*n*
- teammates and performance, 130-132, 206*n*
- Wins Produced for NBA players
 - adjusting for position played*, 150-151
 - adjusting for production of teammates*, 148-150
 - alternative statistics*, 156-157
 - basics of regression analysis*, 141-143
 - calculating value of player's production*, 148
 - calculating WP48 and Wins Produced*, 151-154
 - modeling wins in NBA*, 143-148
 - objections*, 158-159
 - Win Score and PAWS48*, 154-156
- Wins Produced for NFL players, 161-162, 166-167, 170-171
- playing time, 116-118
- plus-minus statistic, 38, 182*n*
- points scored (NBA), 16
- Points-Per-Shot (PPS) in NBA, 176*n*
- Pollard, Fritz, 186*n*
- Popovich, Gregg, 124
- Posey, James, 152-153
- Position Adjusted Win Score per 48 minutes (PAWS48), 154-156
- position played, adjusting for (NBA players), 150-151
- possessions (NBA), 16, 176*n*
- Possessions Acquired (PA), 145-146, 176*n*
- Possessions Employed, 176*n*
- power forward averages (NBA), 178*n*
- PPS (Points-Per-Shot) in NBA, 176*n*
- Prater, Matt, 201*n*
- Predictably Irrational* (Ariely), 173*n*
- Price, Paul, 174*n*
- proathletesonly.com, 189*n*
- Providence College, 121
- Przybilla, Joel, 44
- Pulaski Academy, 107

Q

QB Score, 166

quarterbacks (NFL)

black quarterbacks

*history of, 50-55**pay discrepancy between**black and white quarterbacks,*
63-66*performance of, 55-63*

compensation and draft order, 75-76

evaluating performance of

identifying the most useful
*numbers, 35**measuring Wins Produced,*
161-162, 166-167, 170-171*performance of black*
*quarterbacks, 55-63*factors determining draft position,
78-80NFL Quarterback Wonderlic
Scores, 192nproductivity and draft order,
71-73, 77

QB Score, 166

Quarterback Rating, 161

recent Hall-of-Fame
quarterbacks, 59

Relative Plays, 190n

Relative WP100, 191n

Quinn, Kevin, 174n

R

racial integration in sports

black quarterbacks

*history of, 50-55**pay discrepancy between**black and white quarterbacks,*
63-66*performance of, 55-63*

overview, 49-50

Rackers, Neil, 113-114, 201-202n

Ramsay, Jack, 205n

Ramsey, Patrick, 74

Randolph, Zach

acquisition by New York Knicks, 19

performance before coming to New
York, 30-31

performance in New York, 31

salary with New York Knicks, 29

randomness, wrath of, 7

rationality of decision-making

definition of rationality, 3-4

instrumental rationality, 173n

limitations of personal observation, 6

overview, 2

repeated mistakes by decision-
makers, 136-139

rebounds (NBA), 179n

regression analysis, 141-143

regressions, 9

relationships, measuring economic
significance of, 10Relative Plays (NFL
quarterbacks), 190nRelative WP100 (NFL
quarterbacks), 191n

Rhoden, William, 14

Richardson, Jason, 26

Richardson, Quentin

acquisition by New York Knicks, 19

games played as New York
Knicks, 177nperformance before coming to New
York, 30-31, 177n

performance in New York, 31

salary with New York Knicks, 29,
178n

Riggins, John, 107

Riley, Pat, 120-122, 203n

Rivers, Doc, 24

Robinson, David, 88-90, 94-95, 196n

Robinson, Glenn, 88-89

Robinson, Jackie, 198n

Rodman, Dennis, 94-95, 177n

Roethlisberger, Ben, 73, 167

Romer, David, 108, 200n

Rondo, Rajon, 44, 84

Rose, Malik, 178n

Rosenbaum, Dan, 184n
 Rottenberg Invariance
 Principle, 189n
 Rottenberg, Simon, 189n
 Rovell, Darren, 194n
 Roy, Brandon, 44
 Roy, Patrick, 43
 running backs (NFL), evaluating
 performance of, 36
 Ruseski, Jane, 174n
 Russell, JaMarcus, 52-53
 Ruth, Babe, 103
 Rypien, Mark, 168-170

S

Sacred Hoops (Jackson), 203n
 Sagarin, Jeff, 184n
 salary caps in National Basketball
 Association (NBA), 180n
 sample variance, 179n
 Sampson, Ralph, 88-89
 San Antonio Spurs, 130
 San Diego Chargers, signing of James
 Harris, 51
 Sauer, Raymond, 8
 Saunders, Flip, 124
 Schatz, Aaron, 202n
 scoring factors (NBA), 16
 Scouting Combine (NFL),
 78-79, 191n
 Shelby Athletic Club, 50
 shooting efficiency, 206n
 shooting guard averages (NBA), 177n
 Shue, Gene, 123-124
 Shula, Don, 119, 122
 Shuler, Heath, 71-72
 Silas, Paul, 205n
 Siler, Russ, 180n
 Sloan, Jerry, 24, 122
 slugging percentage
 definition of, 175n
 impact on team wins, 10
 Smith, Adam, 120-122
 Smith, Akili, 52-53
 Smith, Joe, 88-89
 Smits, Rik, 88-89
Soccernomics (Szymanski), 207n

sports executives, market for, 174n
 sports industry, economic value
 of, 174n
 Stabler, Ken, 168-170
 Stafford, Matthew, 76-77
 standard deviation, 179n
 star power, effect on gate revenue,
 91, 195n
 statistical analysis
 advantages of, 6-7
 of chest pain symptoms, 175n
 compared to expert analysis, 175n
 economic significance of a
 relationship, measuring, 10
 regressions, 9
 of Supreme Court justices'
 votes, 174n
 of wine vintage quality, 174n
 Staubach, Roger, 58, 168-170
 stealing bases, efficiency of, 103-106,
 198-199n
 Stewart, Kordell, 52-53
 Stipanovich, Steve, 88-89
 Stojakovic, Peja, 152-153
 Strode, Woody, 50
*Success Is a Choice: Ten Steps to
 Overachieving in Business and Life*
 (Pitino), 203n
 Sunstein, Cass, 2
 Super Bowl XVII, 106
 Supreme Court justices' vote,
 predicting via empirical
 model, 174n
 surplus value, 69-70, 190n
 Swift, Stromile, 88-89
 Szymanski, Stefan, 207n

T

Tarkenton, Fran, 168-170
 Taylor, Beck, 194n
 Taylor, Maurice, 178n
 teammates and performance,
 130-132, 148-150, 206n
 TENDEX model, 156
 Testaverde, Vinny, 168-170
 Thaler, Richard, 2, 69
 Theismann, Joe, 168-170

Theodore, Jose, 43
 Thomas, Isaiah, 84, 88-89, 123-124, 138, 205*n*
 career as manager of New York Knicks, 14-20, 28-32
 career averages, 16-18
 ownership of Continental Basketball Association, 176*n*

Thomas, Tim, 43
 Thompson, Mychal, 88-89
 Thorn, John, 182*n*
 Thrower, Willie, 51
 Tisdale, Wayman, 88-89
 Trogdon, Justin, 194*n*
 True Hoop, 180*n*
 Tversky, Amos, 115

V

Vallone, Robert, 115
 Vanbiesbrouck, John, 43
 variation in winning percentage, 176*n*
 Veblen, Thorstein, 2
 Vick, Michael, 52-53, 71

W-X-Y-Z

Wade, Dwayne, 44, 121
The Wages of Wins (Berri), 18, 177*n*
 Walker, Antoine, 122
 Walker, James, 188*n*
 Walker, Moses Fleetwood, 186*n*
 Walker, Weldy, 186*n*
 walks (MLB), efficiency of, 106, 199*n*
 Wallace, Gerald, 44
 Wallace, Seneca, 52-53
 Walters, Stephen, 101, 174*n*
 Warner, Kurt, 72, 168-170
 Washington Redskins, 13, 106
 Washington, Kenny, 50
 Weaver, Earl, 103
 Webber, Chris, 88-89
 Weil, Sandy, 202*n*
 West, David, 152-153
 Westhead, Paul, 205*n*
 Westphal, Paul, 123
 Wilkens, Lenny, 122
 Williams, Doug, 51-53, 57, 63, 187*n*

Williams, Jay, 88-89
 Williams, Marvin, 93, 195*n*
 Willihnganz, Ty, 149
 Willis, Bill, 50
 Win Score, 154-156, 177*n*
 wine vintage quality, statistical models of, 174*n*
The Winner Within: A Life Plan for Team Players (Riley), 203*n*
 Wins per 48 Minutes (NBA), 18
 Wins Produced, 18
 assigning wins, 47-48
 measuring for NBA players
 adjusting for position played, 150-151
 adjusting for production of teammates, 148-150
 alternative statistics, 156-157
 basics of regression analysis, 141-143
 calculating value of player's production, 148
 calculating WP48 and Wins Produced, 151-154
 modeling wins in NBA, 143-146, 148
 objections, 158-159
 Win Score and PAWS48, 154-156
 measuring for NFL players, 161-162, 166-167, 170-171
 relationship between payroll and wins, 13-14
 Winston, Wayne, 184*n*, 190*n*, 207*n*
 Wolff, Alexander, 186*n*
 Wonderlic test, 78-79, 191*n*, 193*n*
 Wonderlic, Eldon F., 191*n*
 Worthy, James, 84, 88-89
 WP48 (Wins per 48 Minutes), 18, 151-154
 wrath of randomness, 7
 Wright, Anthony, 52-53
 Wright, Julian, 152-153
 Young, Steve, 168-170, 187*n*
 Young, Vince, 52-53