Fantasy Football for Smart People: How to Cash in on the Future of the Game

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Some Free Fantasy Football Stuff for You

I like giving things away, so here's some stuff for you before we get started. The first is 10 percent off anything you purchase on **my site**—all books, all rankings, all draft packages, and even past issues of **RotoAcademy**—my fantasy football training school. Just go to **FantasyFootballDrafting.com** and use the code **"Smart10"** at checkout to get the savings.

The second freebie is an entire issue of **RotoAcademy**. Why an entire issue for free? Because I'm really excited about this product and I think if you start reading, you'll be hooked and become a full-time student. Remember, this is a year-long training course that's absolutely guaranteed to turn you into a dominant fantasy owner.

Go to **FantasyFootballDrafting.com** for your free issue (**RotoAcademy Issue II**), add the item to your cart, and enter "RA100" at checkout to get it free of charge.

Finally, I've partnered with **DraftKings** to give you a 100 percent deposit bonus when you sign up there. Deposit $500 and then bam! you got $1,000. **DraftKings** is the main site where I play daily fantasy football. Deposit there by clicking on the following ad (or use **https://www.draftkings.com/r/Bales**) to get the bonus, use the "Smart10" code to buy my in-season package at **FantasyFootballDrafting.com** (complete with **DraftKings** values all year long), and start cashing in on your hobby.

A whole lot of readers profited last year, with one cashing $25,000 in *multiple* leagues since purchasing **my in-season package**. There's an outstanding investment opportunity in daily fantasy sports right now, and there's really no reason for you *not* to get involved.

And of course, continue to check out the **Fantasy Football for Smart People series**; I add new books every year, and I'm confident they'll help you have success this season and beyond.

Fantasy Football for Smart People: How to Cash in on the Future of the Game

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I Preface

In 2012, I published a book called *Fantasy Football for Smart People: How to Dominate Your Draft*, which went on to become the most-read fantasy football book ever. I published a second edition of it this year, and I recommend checking it out if you play traditional fantasy football. I enjoyed writing that book enough to continue the ***Fantasy Football for Smart People* series**.

How to Cash in on the Future of the Game is the first book of its kind to break down the actual strategies used by the top owners in the world of weekly fantasy football. With weekly fantasy football growing at an exponential rate, there's a whole lot of money to be made, and advanced weekly owners are already cashing in to the tune of hundreds of thousands of dollars in profit. With input from one of the weekly fantasy football "sharks"—FFFC $150,000 winner Peter Jennings—*How to Cash in on the Future of the Game* will show you how to manage your money, select the perfect websites, make projections, and create lineups so that you can finally treat your hobby as you always wanted—as an investment.

If you find this book insightful and useful—even if it's a hard copy that you use to prop up a table—please consider checking out my draft guide, projections, rankings, and sleepers at **FantasyFootballDrafting.com**. I'll also be posting much of my content at **Fantasy Football Drafting** throughout the year, so stop by to check it out.

Finally, check out **RotoAcademy**—my fantasy football training school. It's a monthly service that delivers content from the top fantasy owners in the world—an entire book-length PDF, actually—right to your e-mail inbox. I guarantee it will be well worth the small cost of "tuition"—just a few bucks per month.

Thanks for your support.

II Foreword from Peter Jennings

I began playing fantasy football with friends when I was 13, and it quickly became one of my strongest passions. I played intensely through my high school days and into college, pursuing the game as a hobby while supporting myself as a full-time poker player. As a college student, I really knew I didn't want to go down the corporate road, so I was focused on finding a way to make a living playing poker. It was through some of my poker buddies that I was introduced to daily fantasy sports.

I began playing weekly fantasy football soon after that, but I was still making money primarily through poker. That came to a screeching halt once Black Friday went down and some of the world's largest online poker sites stopped offering cash games to users. In an instant, my "career"—what I thought I was going to do to generate income for the foreseeable future—evaporated.

Soon after that, I was forced into taking a corporate job working as a stock broker at Charles Schwab, but I was still playing daily fantasy sports pretty heavily. As the industry continued to grow, I realized there was a huge opportunity in daily fantasy sports. After about a year of working in the stock world, I quit my job to join StarStreet.

Even before joining StarStreet, though, I was considering leaving my job to play daily fantasy sports for a living. I was pretty convinced I could make a full-time career out of it. I won a few big tournaments, including the FFFC $150,000 grand prize, and I had demonstrated a pretty stable winning percentage and steady profits.

In the fall of 2012, Jonathan contacted me and told me about an idea he had for a book that he wanted to become "the Bible for weekly fantasy football." I loved the idea, and so I've had a large hand in making *How to Cash in on the Future of the Game* come to fruition. Daily fantasy sports are my passion, and my top priority right now is doing what I can to help the industry grow. I think this book can do just that, and in the process it can transform you from an average weekly fantasy football owner into a profitable one.

- Peter Jennings

III A Note from the Author

"Risk comes from not knowing what you're doing." - Warren Buffett

Back in college, a few buddies and I competed in a weekly poker tournament. It was generally for shits (no giggles), but we still played for cash. At a time of my life when 20 big ones could be strung out for a week's worth of food—Easy Mac and Spaghettios, obviously—those 10 and 20-cent blinds seemed a whole lot more substantial than they do now.

The majority of my poker-playing days are a blur, for more reasons than one, but there's one particular hand that really stands out in my mind. After losing some cash earlier in the night, I received the good fortune of landing pocket Aces. For those who don't play poker (more specifically, Texas Hold'Em), that's the best starting hand you can be dealt.

I raised and headed to the flop with just one caller. Now clearly I don't remember the exact three cards that came out on the flop, so it's a lie when I say they were a 2, 4, and King. It's only a half-lie, though, because the cards were at least close to that, and we all know a half-lie is far more pragmatic than the truth in storytelling. I raised post-flop, again getting a call. On the turn came a 9 and yet another raise. My opponent called to go all-in. We flipped over our cards, and my pocket Aces were beating his Ace and King.

Now if you've ever heard anyone tell a poker story, you can pretty much guess what's coming next. I mean, would I really be going through all of this if the river was a deuce and I took down the pot? No, obviously that fifth card out was a King and I lost the hand. Ridiculed by my buddies, I knew that I still made the correct move.

So what's the moral of this story, besides perhaps rethink starting a book with what has quickly turned into a horribly-boring and mostly-false college poker tale? The moral is that *the end doesn't necessarily justify the means*. There are good ways to play poker and bad ways to do it, and in a game that is inherently filled with luck, favorable outcomes are only *sometimes* a reflection of solid play.

"A game that is inherently filled with luck"—sound like another game many of you play? Look, fantasy football is absolutely as much a game of luck as it is one of skill. Your goal as a fantasy owner—whether on a season or week-long basis—is like that of the poker player; you can't guarantee success in the short-term, but you can still excel by maximizing your chances of it. Like going all-in with pocket Aces that are the best hand and OH MY GOD HOW COULD HE CALL ME!?, great fantasy owners aren't characterized solely by wins, but by the means they implement to reach that end.

When it comes down to it, the result really has nothing to do with the process; if you get 10:1 odds on a single number of a fair, six-sided die, the fact that you'll lose on 83.3 percent of rolls does nothing to alter the quality of your bet. Focus on improving the *process* by which you make decisions, both in fantasy football and the real world—hey, this book is going to be deep—and the results will turn up in your favor over the long-haul.

The world of fantasy football is set to undergo massive paradigm shift. It's been estimated that well over 30 million participated in traditional season-long fantasy football leagues in 2012, yet only 300,000—one in every 100 of those owners—participated in weekly fantasy football.

By all accounts, we're about to see a repeat of the poker boom—a time when the popularity of online poker doubled nearly every year. Professional poker players made hundreds of thousands, even millions of dollars. With the infiltration of "donkeys"—long-term losers—even intermediate poker players were cashing in. Weekly fantasy football—which you can play on sites like FanDuel, DraftDay, DraftKings, DraftStreet, StarStreet, FanThrowDown, DailyJoust, or FantasyFeud—is the future of the game. With the industry on the verge of exploding, now is the time to jump into the mix.

Weekly fantasy football is a game that possesses the excitement of your fantasy playoffs without the luck of draft slots, injuries, and other fluky factors. It seems simple: allocate fake salary cap space to an entire lineup of players and compete against others doing the same. Hidden within the game of weekly fantasy football are all kinds of subtle nuances—strategies employed by the top players to gain an edge, sometimes a significant one, over opponents. Here, you'll learn about them, *and* how they can make you money.

At their cores, both poker and fantasy football are games ruled entirely by risk and reward. Like a trader buying and selling stocks, your goal is to jump at situations that offer positive expected value. In the stock world, that means buying a stock with a true worth that exceeds its perceived value. In poker, it means pushing when the probability of winning a hand multiplied by the total pot exceeds the potential losses. And in fantasy football—especially weekly fantasy football—you obtain positive expected value by grabbing players whose salaries don't properly match their expected production.

As you read through *Fantasy Football for Smart People: How to Cash in on the Future of the Game*, keep in mind that your choices should always be governed as a function of risk and reward. Regardless of your end goals, you always want to maximize your upside without significantly increasing risk. Your reasons for playing weekly fantasy football—the emphasis you place on excitement, profitability, and so on—will dictate how many risks you can take.

The goal of *How to Cash in on the Future of the Game* isn't to tell you which players to select or which leagues to enter, but rather to let you choose the fantasy football path that best supports your goals, maintaining a positive expected value along the way. First, we'll start with the most vital and oft-overlooked aspect of any game of monetary risk and reward—money management. Whether you play weekly fantasy football primarily as an investment or simply to increase the excitement of your Sunday afternoons, you want to stay in the game. When laying 25 percent of one's bankroll on a single team has become commonplace, the owners who properly manage their bankrolls are the ones who always have the last laugh.

Once you understand how to effectively manage your funds, you'll need to know what types of leagues to enter. Again, your choice of leagues will be a manifestation of your willingness to take on risk; a head-to-head league obviously holds less risk—but also less upside—than a 10-teamer. Most important, we'll take a look at how to properly diversify your league selections to acquire the best of both worlds.

Of course, the backbone of weekly fantasy football is picking the ultimate lineup—a group of players whose combined salary doesn't meet their expected production in a given week. In examining the process the best weekly owners implement to develop the optimal lineup, I'll discuss projections, consistency, comparables, and salary cap allocation. Whether you want a highly-volatile team that could strike it big or a safe "snoozer" that will win more often than it loses, your player projections and position consistency ratings will determine how to spread out available funds, always securing the most bang for your buck.

Along the way, I'll dive into some fairly specific topics—the merits of quarterback and wide receiver pairings, the worth of jumping on players who are "hot," the exact dollar amount that you should wager in each league—all with a sound understanding of risk and reward as the foundation of decision-making.

Joining us on our journey to weekly fantasy football dominance will be Gary the Gambler and Wally the Wise Guy. Let me introduce you to both. . .

Gary plays fantasy football for the pure excitement of it. He by no means expects to make a ton of money from fantasy football, but a little extra cash is always nice. Gary frequently enters leagues with a lot of participants in an effort to hit it big. He often chooses high-risk, high-reward players, especially those playing on national television—hey, what good is laying $50 on Jamaal Charles if you can't watch the Chiefs give him 10 total touches in a 21-point loss? Gary spends perhaps a little bit more money on individual leagues than he "should," but a high-variance strategy isn't as debilitating to him as some other owners because he's mainly in it to have fun.

Wally is much different from Gary as a fantasy football owner. Wally plays weekly fantasy football as an investment. His goal is to make money, and every decision he makes is a reflection of that. Wally often enters head-to-head leagues to minimize his risk, but he'll take on any leagues that offer him optimal expected returns. Knowing his fantasy football acumen will win out in the long-run, Wally doesn't mind forgoing the leagues with 20 members in favor of those with admittedly less upside. He'll still enter large-field leagues because his expected value is great, but never if it compromises the integrity of his bankroll. Wally is less concerned with whether or not players are considered "high risk," focusing more on how their salary in a given week compares to their probable production. When inconsistencies in salary and expected points arise, Wally exploits them. He often goes against "conventional" wisdom or public opinion to do it. Wally doesn't care whether his quarterback is playing on Monday night—actually, Wally prefers to not even watch his players—he just wants to increase his expected profits.

Chances are you've got a little bit of both players in you—a 'Wary' or 'Gally,' if you will. But the extent to which you exemplify the characteristics of each type of owner will dictate how you should approach weekly fantasy football. That is, many aspects of your weekly fantasy football philosophy are flexible. Others are everlasting; everyone wants to maximize the probability of winning.

The 10 Laws

At the end of each chapter, you'll find bottom-line analysis—the most vital take-home points for each section—in the form of "The 10 Laws." These notes will be pragmatic versions of more complex ideas—simplified so as to provide the foundation from which you can build the perfect lineups.

I think it's worth noting that I originally titled these sections "The 10 Commandments." I switched it to "The 10 Laws" because, while commandments are meant to be everlasting, laws are adaptable. They change in the face of new evidence, and your approach to weekly fantasy football should do the same. It would be a mistake to be so set in our ways that we miss the bigger picture and overlook the fact that the landscape of weekly fantasy football is constantly evolving. If our approach to the game is so rigid that it can't be altered, we've failed before even starting.

Whether you're primarily a gambler or a wise guy, the goal of *How to Cash in on the Future of the Game* is to increase both the enjoyment you gain from weekly fantasy football and your potential profits. It is my hope that you find the content of the book enlightening and practical as you select the optimal weekly fantasy football lineups. Best of luck this season!

1 Cha-Ching!: Money Management as the Backbone of Weekly Fantasy Football

> *"No matter how good you are, you're going to lose one-third of your games. No matter how bad you are, you're going to win one-third of your games. It's the other third that makes the difference."* - Tommy Lasorda

If you've ever searched for fantasy football advice, the term "LOCKS" (all capital letters, usually) has become part of your vocabulary. Like the sports betting guru who offers "cant-miss" picks, many fantasy sports "experts" suggest that certain players are sure things in a given week. Calvin Johnson facing the league's 29th-ranked pass defense—you can pretty much take 150 yards and two touchdowns to the bank, right?

One of the most important steps in becoming a fantasy football master is realizing that you're going to be wrong. You're going to be wrong *a lot*. In a game filled with so much luck, your advantage over even a novice in a head-to-head weekly matchup might be, say, 2-to-1, i.e. you're still going to lose 33 percent of the time.

Since the NFL is ruled by probabilities, even a perfect fantasy owner will lose. It's vital to understand that even if you're the world's premiere fantasy owner, you're not infallible. Just as a professional poker player can lose multiple hands in a row to a novice, so too can Wally lose to Gary (and on a much more frequent basis than even most accomplished fantasy owners understand).

The same misunderstanding of probability that leads some to claim (and sometimes really believe) that their picks are fail-safe also often results in poor money management. After all, if you're wagering money as if you're a 70 percent long-term winner when you're really no better than a coin flip, that's going to lead to an empty bankroll. Thus, the percentage of your bankroll—the total amount of money with which you plan to play weekly fantasy football—that you wager on each team should be a reflection of, among other things, your expected winning percentage.

Understanding Bankroll

Since your total bankroll will be the primary factor in determining how much you can wager in a given league, it's important that the amount of money you use in your calculations is your *true* bankroll, i.e. the maximum amount of money you're *willing to lose* playing the game. If you put $1,000 into your weekly fantasy football account but plan to remove the funds if you hit a certain low point, your true bankroll is $1,000 minus your low limit. If you calculate your bets as a function of the $1,000, they'll be too high and you'll be more likely to go bankrupt. Similarly, if you plan to add more funds to your account, formulating your bets with a perceived $1,000 bankroll will potentially lead to lost profits.

There's a reason I'm kicking off this weekly fantasy football book with something that doesn't have anything at all to do with football; if your expenditures are too high, you're going to

eventually lose your money. It might take a week or it might take two years, but it will happen. I really want to hammer this idea home. . .

Imagine a magical fantasy football genie has come to you and offered an enticing proposition: a guaranteed 80 percent winning percentage in weekly fantasy football. Um, sign me up. The offer comes with one caveat, though; you must bet 25 percent of your bankroll on each team, and you need to participate in a minimum of 500 leagues. Do you take the offer?

While an 80 percent winning percentage is likely unattainable over the long-run even for an expert owner, there's still no way you can take the genie's offer. Even with just a 20 percent chance of losing a game, it's going to happen. And occasionally, it will happen twice in a row. And once in a while, you'll lose three consecutive games. And, wait for it. . .over any four-game stretch (even with an incredible 80 percent expectation), you actually have a 0.16 percent chance of losing all four games—as in once in every 625 games, on average.

Would you go broke after the first four games? Probably not. But would it eventually happen? Yes. You're basically playing Russian roulette with your bankroll when, if your goal is long-term profitability, you should take chance out of the equation as much as possible. Now consider that a more realistic expected long-term winning percentage of 60 percent would result in four straight losses at *16 times the rate* of an 80 percent winning percentage, and you can see how money management starts to become the backbone of your weekly fantasy football strategy.

How much is too much?

There are all sorts of theories regarding how much of your bankroll you should spend on each game. How should your expected return affect your bet size? How about the number of players in a league? These questions haven't really been answered as it relates to weekly fantasy football.

Professional sports bettors typically wager no more than five or six percent of their bankroll on any given game, and most wagers fall under that amount. There are differences between the professional bettor and the expert fantasy owner, however. While the majority of people who fall under either label can expect a long-term winning percentage that likely falls somewhere between 55 and 60 percent, the games on which professional sports bettors place money are typically independent of one another. That is, the Sunday Bills-Jaguars matchup does nothing to affect the outcome of the Monday night Redskins-49ers game.

When fielding multiple fantasy lineups, however, the results are inherently tied to one another. You might start one player on multiple teams, for example, or you might start a quarterback and wide receiver duo. You could have the No. 1 receiver on his respective team on one of your squads and the No. 2 receiver on a different one. The dependent nature of your fantasy lineups makes them inherently volatile, i.e. it would typically be unintelligent to wager as much as you would on independent events.

On top of that, your expected winning percentage won't be 60 percent if you enter anything other than head-to-head or 50/50 leagues. If you plan to enter a 100-team league that pays

out the top 10 teams, for example, you probably can't expect to win money much more than 15 to 20 percent of the time, regardless of your skills.

Your Maximum Investment: The Ultimate Formula

Whether you play weekly fantasy football for fun or for profit, you're presumably going to field more than one lineup. The number of teams you create and how you structure them—which will be a topic of later discussion—will depend on your willingness to take on risk; are you a Gary or a Wally? Nonetheless, there are some basic parameters to follow when deciding upon your optimal investment for each lineup.

In playing weekly fantasy football, I devised the following formula to determine the optimal amount to wager in each league.

- **[(Percentage of owners who won't win)/6)]*(Expected winning percentage)*(Bankroll)**

Let's take an example. Suppose your bankroll is $1,000 and you want to enter a three-team league. To determine the optimal amount to wager, you'd first need to figure out the percentage of players that wouldn't win any money in the league. In a typical three-man league, only one person wins, meaning 67 percent of the owners would lose their investment. Thus, the percentage of players who wouldn't win would be marked as "0.67." After dividing that number by 6, you'd multiply the result (0.11167) by your expected winning percentage in such a league. It is crucial that you don't overestimate your probability of winning. Actually, unless you have an established track record of success, you should estimate your chances of winning as the same as if the league were complete luck. In a three-man league, that would be 33 percent, or 0.33.

After multiplying 0.11167 by 33 percent to obtain 0.03685, you'll multiply that final number by the amount of your bankroll ($1,000). The proper amount to wager for someone in a three-team league that pays out one person is 3.685 percent, or $36.85.

Note that as you alter your expected winning percentage, the amount you should wager changes as well. If you were confident you could take down 45 percent of three-man leagues, for example, your optimum bet would increase to $50.25. Using such a method, you can change the amount you wager on your best lineups. If you participate in five head-to-head leagues and estimate your expected winning percentage to be 65 percent for the best combination of players and 55 percent for the worst, your ideal bet size with a $1,000 would gradually decline from $54.16 to $45.83.

Further, you can see how leagues with a low payout percentage subsequently lower the amount you should wager. If you're in a 100-man league that pays out just 10 percent of owners, for example, your optimal bet with a bankroll of $1,000 would shrink to only $20.00.

Depending where you play weekly fantasy football, you might be able to set your own entry fees. Most times, however, you'll be entering weekly leagues with pre-set fees, often $5, $10, $25, and so on. In general, you should go on the low end of your optimal bet calculation, i.e.

if the formula says to bet $8 per game, stick with $5 leagues the majority of the time. If you have a little Gary in you, go ahead and bump it up from time to time to increase your upside.

If you play solely on sites with pre-determined entry fees and you want to be very precise about the leagues you enter and the frequency with which you bet specific dollar amounts, use the following formula to determine how you allocate funds:

- **(High-End Entry Fee – Ideal Entry Fee)/(High-End Entry Fee – Low-End Entry Fee) = Percentage of Leagues With Low-End Entry Fee**

Take your ideal entry fee (as determined by the first formula) and look up the closest dollar amounts you could wager on both the high and low ends. If your ideal bet size is $20 and the closest leagues have $25 and $10 entry fees, use the $25 league as your "High-End Entry Fee" and the $10 league as your "Low-End Entry Fee." In that example, the percentage of leagues in which you'd enter with the low-end fee would be ($25-$20)/($25-$10), or 33.3 percent, i.e. one-third of the leagues you enter should be $10 and two-thirds should be $25.

Being Flexible on Bet Sizes

In addition to your willingness to take on risk, the nature in which you formulate your weekly lineups will dictate your bet sizes. Namely, if you add the same players on multiple teams, the volatility of your bets increases. If you theoretically used the same lineup for every team and wagered 25 percent of your bankroll, for example, a very poor week could legitimately leave you with no returns for the week, depending on your league structure. On the flip side, if your player selection is very diverse, i.e. the same players aren't on multiple teams, you can increase the amount you place on each squad. The above formulas can provide you with a strong baseline from which to work, but the exact amounts you wager on each lineup should be molded according to a variety of factors.

I'll talk more about player selection in subsequent chapters, but it's important to know that it goes hand-in-hand with the size of your wagers. Remember, your goal as a fantasy owner is to increase upside without significantly increasing risk. Thus, the relationship between player selection and bet sizes should be an inverse one; the more you diversify your lineups to limit downside, the more money you can place on each team to subsequently improve your upside.

In the Bonus

There's no easier method by which you can accrue profit while playing weekly fantasy football than by unlocking bonuses when you deposit money. Take advantage. Some sites offer ridiculous bonuses on your first deposit and that can turn into a hefty sum of cash if you play your cards right. The big initial bonus offered by most weekly fantasy sports sites is a major reason to deposit your whole bankroll right from the start. If you say to yourself, "I'll deposit $1,000 now and $1,000 later," you could be missing out on a sizeable amount of bonus money. You'll need to earn your bonus by participating in leagues, but as long as your money management on point, you should have no trouble unlocking the entire initial deposit bonus.

Can proper money management lead to long-term winnings?

When you participate in weekly fantasy football, you don't get to do it for free. The sites obviously need to profit, so they take out what's known as "juice" or "the rake"—the percentage of total money that doesn't go back into the pockets of owners. The rake is calculated by simply subtracting the total payouts from the total money wagered, then dividing by the total money wagered. If you're in a 10-team league with a $100 entry fee and the site pays out $900, for example, the juice is (1,000 – 900)/1,000 = 0.1, or 10 percent. I'll return to the rake in a bit, but it should be the first aspect of any league you examine prior to entering. Juice might be delicious in the real world, but not so much in the realm of weekly fantasy football.

The question is whether or not weekly fantasy owners can overcome the juice to make money. The industry standard rake for weekly fantasy football is 10 percent, but it can be as high as 12 percent or as low as nothing in big-money leagues. Typically, it's somewhere around the 9.1 percent juice charged by sportsbooks on standard 11-to-10 bets.

So if weekly fantasy sites pay out around the same amount as sportsbooks and only a handful of people in the world can make money betting on sports over the long-run, does my Uncle Bruce who sets his fantasy lineups in his boxers while he's eating homemade beef jerky have any chance at profitability? The answer isn't much different than it is for sports betting; most people are going to lose their money in the long-term, but some can win. Actually, it's easier to win weekly fantasy football than it is to bet on sports, despite potentially reduced payouts. Here's why. . .

Weekly Fantasy Sports vs. Sports Betting

There's a pretty widespread perception that when a sportsbook sets lines, it does so based on public opinion. That is, they care less about how the game will turn out and more about taking in even money on each side of every game. That's not actually true, however.

At one time when sports bettors were pretty square as a whole, sportsbooks could get away with setting a line based entirely on public perception simply because there were very few wise guys who could beat those lines. In a world filled with analytics and in-depth stat analysis, though, the average sports bettor has improved. A lot. Now when the brilliant minds in Vegas set lines, they do so primarily based on reality; if they set a weak line, wise guys will quickly exploit it and the squares will follow. Thus, the nature of sports betting has changed. Vegas might post a weak line now and again, but for the most part, their lines properly reflect the quality of the participating teams, meaning you have to outsmart them to win.

What that means is that the average sports bettor is no longer betting against the general public as he once was. Sure, there are elements of perception inherent to every line, but these days bettors are basically going up against Vegas—their data heads and advanced computers included. Only the cream of the crop—which probably isn't you, sorry—can make a living betting on sports.

Along with the boom in popularity of fantasy sports has come the return of betting against the general public. When you play weekly fantasy football, you don't need to outsmart a professional statistician, but rather Joe Dillard from Billings, Montana who has four kids and a pet iguana named Lester, just lost his job at T.G.I. Friday's, and puts 20 percent of his bankroll on each team. Yeah, go ahead and give me Joe. ***If Joe is really out there and decides to buy my book, that's going to be a *super* awkward e-mail exchange.***

Ultimately, the fact that weekly fantasy football allows you to compete against other owners makes the reduced payouts worth the hassle. Again, most owners still won't be able to overcome the 10 percent juice, but some will. As it relates to long-term investment strategies, wise guys—Wallys—can truly make a living playing weekly fantasy football. But (and like Sophie Turner, this is a big 'but'), you aren't going to be able to sustain long-term profits without astute money management.

Reduce the Juice

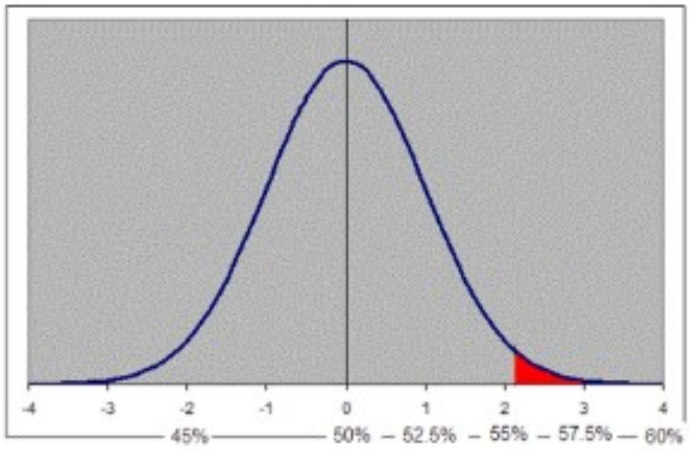
Regardless of the exact payout, you want to reduce the amount of juice taken in each league. A site that takes out 12 percent of all league entry fees and one that removes eight percent might not sound all that different, but let's do the math. . .

Assume you participate in head-to-head leagues with $100 entry fees. One league pays out $176 to the winner and the other is $184. Who cares about a measly eight bucks, right? Well, imagine you enter 15 such leagues per week over the course of a 17-week season—255 total leagues. With a stout 60 percent winning rate, you'll take down 153 leagues and lose 102 of them. On the site with the reduced eight percent juice, you'll bring in $12,852 and lose $10,200 for a net profit of $2,652.

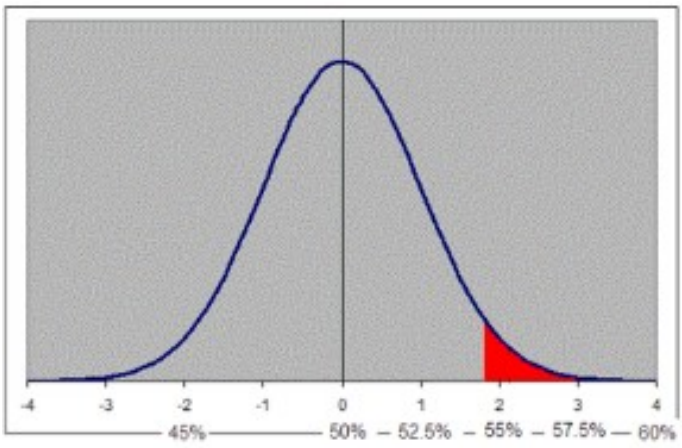
Playing out the same scenario on the site that takes a hefty 12 percent commission, however, would net you a total profit of just $1,428—a difference of $1,224 (nearly 50 percent) over the course of the year. More important, to make as much cash on the site with the higher juice, you'd need to win 61.7 percent of those 255 leagues instead of an even 60 percent, and that 1.7 percent jump is a bigger one than you think.

How big? Take a look at this passage in an article at RotoGrinders.com entitled *How Lower Rake Dramatically Increased the Percentage of Profitable Players*:

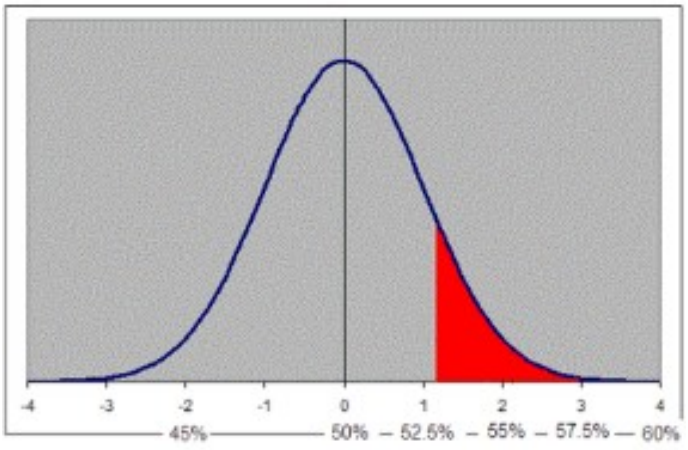
> *At a standard 10% rake you would need to win 55.6% of your HU leagues to break even. For the sake of this post, I am going to assume that 4% of all players can beat a 55.6% rake long-term. The percentage of winning players in online poker is known to be around 10%, and it is also known that the percentage is lower than that for daily fantasy sports. For a 10% rake with 4% beating it you get the following distribution.*



The red area of the curve indicates the winning players, and the gray area under the curve indicates the losing players. Now let's say that you lowered the rake to 7.5% for a 25% rake reduction from 10%. You would get the following curve.



As you can see, you have more than doubled the number of winning players by reducing the rake by 25% as now you only need to win 54% of your leagues to break even. As the rake gets lowered you capture more and more players into the "winning" area of the curve. This is the power of the normal distribution. Our rake goes down to 6% which requires a 53.2% winning rate to beat long-term. Below is what that would look like.



> *Now we are talking! The move from 7.5% to 6% more than doubled the number of players that can be long-term profitable. Going to the extreme of 0% rake would allow 50% of players to be long-term profitable.*

Unless you have some screws loose, reduce the juice. Moose.

Other Perks

Juice is important, but you don't necessarily need to be confined to the site or two that collect the lowest rake. Different sites offer different perks, and sometimes things like higher bonuses can make up for increased juice. Plus, in the same way that sports bettors shop around for the best lines, you too should shop around for the best player prices. If you really love Robert Griffin III in a given week, you might be able to put up with a slightly higher juice from one site if RGIII's salary (in terms of the percentage of the total cap) is much lower than anywhere else.

Similarly, sites weight each position differently. One might have the top quarterback salary as 16 percent of the total salary cap when another has the same guy at 19 percent, so you should rank players based on the percentage of your salary cap they exhaust. If Site X offers 90.9 percent payouts but has the quarterback you covet at 16 percent of the overall cap and Site Y offers 91.5 percent payouts but has the same quarterback at 22 percent of the total cap, you might want to take the reduced payout from Site X in order to optimize your lineup and ultimately increase your winning percentage.

A Cautionary Tale

Every season, I pick the winner and score of every NFL game. Over the past three seasons, I've compiled a record of 510-257-1 straight up, 405-337-26 against the spread, and 402-349-17 on totals. If you placed $1,100 on every game using my recommendations, you would have won $52,400.

Of course, that assumes you have an unlimited (or very high) bankroll. Though I've demonstrated a decent long-term winning percentage on NFL bets, I go through losing streaks like everyone else. Actually, although I finished the 2012 season with a 135-114-7 record

against the spread, I began the season horrendously. I was 4-12 after Week 1 and 8-23-1 after Week 2. Through Week 6, I was barely staying afloat at 36-53. It wasn't until after Week 13 that I even hit .500 on the season! It took a ridiculous 52-26-1 record over the final five weeks of the season for me to even approach my long-term winning percentage.

The point is that no matter how much you know football, placing an exorbitantly high percentage of your bankroll on each wager simply can't be sustained. When the difference between a professional bettor and a coin flip is often just five percentage points, the most important aspect of profiting from betting—or weekly fantasy football—is effective money management.

To appropriately understand the dangers of poor money management, imagine that Gary began following my picks during Week 13 of the 2012 season. He would have thought I was a savant, hitting on nearly 70 percent of my picks over a decent sample size 79 games. Gary wants a piece of that pie, so he decides that he's going to use my knowledge to start the 2013 season. And he's so confident in my system that he decides that he's going to wager $1,100 of his $10,000 bankroll on each game—11.1 percent. Had he done that at the end of the 2012 season, he would have profited $23,400 in only five weeks. Cha-ching.

Except there's one small problem. Instead of continuing my hot streak to start the 2013 season, imagine that it begins as the 2012 season did. After Week 1, I'm 4-12. Guess what? Gary just lost $9,200—92 percent of his money. With a bet size that was too high—but not unheard of from novices—Gary basically went broke in a single week.

The 10 Laws of Money Management

If you want to play weekly fantasy football—and you want to play it for more than a few weeks before going bankrupt—you absolutely must have a sound financial plan. It doesn't have to be complex, but if you're consistently placing 11 percent of your total bankroll on each matchup, you're going to lose your money.

Law No. 1: You will not believe in "sure things."

Weekly fantasy football is a game ruled by probability. You might be a quality owner—say, a 60 percent long-term winner in head-to-head leagues—and you'll still lose all of your money if you're playing as if you're an 80 percent long-term winner. There are no sure things, and you have to understand the percentages in order to profit from weekly fantasy football.

Law No. 2: You will not wager more than you can afford to lose.

Your bankroll is the total amount of money you're willing to *lose*. If you place $1,000 into an account but plan to remove the money if you dip down below $500, your bet sizes—based on a $1,000 bankroll—will be too large in relation to your actual bankroll of $500.

Law No. 3: You will bet a percentage of your bankroll that resembles the result of this formula: [(Percentage of owners who won't win)/6)]*(Expected winning percentage)*(Bankroll)

Your bet sizes should be flexible based on a variety of factors, but this formula can provide you with a useful baseline.

Law No. 4: You will seek bonuses whenever possible.

You can greatly enhance your bankroll—especially if you're new to weekly fantasy football—by taking advantage of deposit and reload bonuses. Similarly, look for any opportunities for free money, such as freerolls (which I'll discuss in the next chapter).

Law No. 5: You will reduce the juice whenever possible.

There are lots of ways to maximize your profits when playing weekly fantasy football—searching for bonuses, tweaking your lineups to increase your expected winning percentage, seeking out weak opponents—but the easiest is to minimize the amount of money you "pay" for playing, i.e. the rake given to the site. When analyzing each site or particular matchup to enter, the first thing you should do is calculate the cost to play.

Law No. 6: You will play weekly fantasy football on multiple sites.

There are a variety of benefits to playing on numerous sites, including maximizing your bonuses and benefiting from all of the perks each site has to offer. You can even search for the cheapest prices for your favorite players in a given week, using specific players on particular sites where they don't eat up too much of your cap space.

Law No. 7: You will not wager more on "hot streaks."

When I finished the 2012 season on a roll, I wasn't really "hot" in that I was picking games better; I used the exact same methodology that led to my horrible start to the season. In effect, I was just lucky. You're going to go through hot streaks and cold spells, but don't let those significantly affect your wagers. Not only will that not lead to long-term profitability, but it will actually increase your chances of going bankrupt.

Law No. 8: You will understand the difference between weekly fantasy football and sports betting.

While there are obvious similarities between weekly fantasy football and sports betting, the primary difference between the two is that the former pits owners against one another. That means that instead of competing against a sportsbook filled with math geniuses who rarely mess up a line, you're competing against a wide range of other fantasy football owners, many of whom are just like you. That allows for long-term profitability for more than just a handful of sophisticated bettors.

Law No. 9: You will know your long-term winning percentage.

You simply cannot properly manage your bankroll without some sort of idea of your long-term winning percentage. If you don't have a track history of weekly fantasy football league results, you should estimate your winning percentage to be nothing more than totally random, i.e. 50 percent in a head-to-head league, 33 percent in a three-team league, and so on.

Law No. 10: You will maximize upside and minimize risk.

You don't need to seek upside at all costs, nor do you need to always minimize your risk. But you need to do at least one of them. If you're playing with one lineup—an inherently risky decision—you need to diversify your league selection so that you don't have too much money riding on one outcome. The amount of risk you're willing to take on should be a reflection of your bankroll, your expected winning percentage, and your overall goals.

2 A League of Your Own: How to Select the Proper Weekly Leagues to Enter

"Alice came to a fork in the road. 'Which road do I take?' she asked.
'Where do you want to go?' responded the Cheshire Cat.
'I don't know,' Alice answered.
'Then,' said the Cat, 'it doesn't matter." - *Lewis Carroll, Alice in Wonderland*

In the opening chapter, I showed that the entry fee and total payout aren't all that matter in the world of weekly fantasy football. While fantasy owners and stock traders alike are primarily concerned with their investment as it compares to the potential reward, they also need to be worried about their expected winning percentage. Remember, you'd be prudent to decline the offer from the hypothetical genie that gives you incredible odds but requires continual bets of 25 percent of your total bankroll.

As a result, other factors—such as the size of a league and the manner in which winnings get distributed—should be a component of your league search. Regardless of the site(s) you choose, there are a few general types of weekly leagues, differentiated by entry fee, size, payout format, salary cap, and game structure.

League Sizes

Weekly fantasy football leagues range from just two entrants to thousands. Head-to-head leagues *can be* the safest of the bunch (more on that in a bit), allowing owners to assume a relatively low level of risk. Three and five-man leagues are also fairly safe; if they were random, you'd possess a 33 and 20 percent chance of winning each, respectively.

After that, things begin to get a bit dicey. If you're regularly participating in 10-man leagues, your chances of winning as an average owner are obviously just 10 percent. Even as a decent owner, you could easily participate in 50 (yes 50) consecutive 10-man leagues without winning a single one. As the league sizes increase, your odds of winning do the opposite.

Interestingly, however, big leagues can actually offer the best long-term profitability for Wally-esque owners. Since Wally doesn't bet an inordinate amount of his bankroll in any given league, he's capable of playing in multiple 10, 20, and even 100-man leagues without fear of significantly cutting into his bankroll. While playing in such leagues is obviously a big risk in regards to win expectation, the high number of Gary-type owners in such leagues makes them easier from which to profit in the long-run. The key is making it through the ups and downs. Let's do the math.

In a head-to-head league, Wally might own, say, a 2-to-1 advantage over Gary; that is, Wally's win expectation is 67 percent. If Wally and Gary were to play 100 games at $25 apiece, the most likely outcome would be 67 wins for Wally, netting him a total profit of $515 (assuming a 90 percent payout).

However, if Wally were to participate in the same number of 100-man $25 leagues, his win expectation relative to the "average" would be better because he'd be superior to nearly all players. In effect, it's like facing lots of Gary-type owners all at once. In such a league that hypothetically pays out only the winner, Wally might be expected to win, say, five out of 100 games (in terms of percentages, that's well above the 1-in-100 average). After those 100 games, Wally's total profit would be $8,750. The upside is obvious enough. Even in $5 leagues with 100 players, Wally would profit $1,750 over the average 100-game sample—still well above his theoretical profit in 100 head-to-head leagues at $50 a pop.

The downsides are apparent as well; first off, Wally isn't going to be winning very much. A five percent win expectation might net big gains over a huge sample size, but the catch-22 is that it's difficult to obtain a massive sample of games when the win expectation is so low. Thus, the amount wagered in each league must be substantially lower than head-to-head or other leagues with minimal participants. It's generally advantageous to maximize upside, but *never* if it puts your bankroll at risk of significant depletion.

Plus, some sites pay out a lower percentage in leagues with a lot of entrants, in which case their potential value is limited. If you're going to tackle some 20, 50, or 100-plus leagues, make sure you do it on a site that doesn't juice you at an abnormal rate.

50/50s

An oft-overlooked league format is the 50/50 league—one that pays out the top half of all scores—and it can be both safer and more volatile than head-to-head leagues, depending how you utilize it. When used properly, though, there's no doubt that both head-to-head and 50/50 leagues should really be the foundation of Wally's weekly fantasy football game plan.

The reason that a head-to-head league is safe is that, since there are only two owners, an above-average weekly score makes a victory likely. In a three-team league, you almost assuredly need an outstanding score to win. In a five-teamer that pays out just one person, you simply won't be in the money without a well above-average week. In all three leagues, you can have an elite week—in the top five percent, even—and lose. That increases the volatility of even small leagues.

In a 50/50 league, on the other hand, great scores are always rewarded. Whereas a score in the 95th percentile could theoretically fail to provide a win in a head-to-head league, such an atrocity will never occur in a 50/50 league. In effect, a 50/50 league is a giant head-to-head matchup in which astute selections are (nearly) always rewarded and poor ones aren't. It's like Barry Bonds against Roger Clemens: a head-to-head matchup on steroids.

And the more people in your 50/50 league, the safer it becomes. Think of it like this; the range of possible fantasy football scores in a given week falls on a bell curve. In a large sample, a few scores will fall on one end of the curve, and a few on the other. Most scores won't be outliers, however; they'll be situated somewhere near the middle of the curve. In most instances, you'll be somewhere near the middle of the distribution of possible fantasy scores (hopefully closer to the high end than the low end), and a 50/50 league makes it improbable that outliers will beat you. The more people in the league, the closer the

distribution of scores will resemble a bell curve and the more likely it will become that your great score gets rewarded.

The safety of 50/50 leagues is the major reason why Wally takes advantage of them. Even though his occasional low score will be guaranteed to lose him money, he's more concerned with "getting what he deserves." Over the course of time, that will help him limit the luck through which less-talented owners can beat him.

However, it's important to note that 50/50 leagues *can be* quite volatile if they're used improperly. In any given week, you'll have an optimal lineup; the best of the best values that you'll want to start as much as possible. If you were to start that same lineup in multiple head-to-head leagues, chances are you'd win some and lose some. Thus, head-to-head leagues are safe whether you start 100 different lineup combinations or just one; if you finish in, say, the bottom 25 percent in a given week, you'll still beat one-quarter of all lineups. In a 50/50 league, however, a poor finish means you simply won't be paid. Submitting the same lineup in multiple 50/50 leagues is extremely risky; if you have a below-average week, you'll lose all of that money.

If you plan to start relatively few lineups (i.e. player combinations), head-to-head leagues are your best bet; you can play the same combination of players in multiple leagues with relatively low risk. Meanwhile, 50/50 leagues are safe if (and only if) you play different lineups. It's a give and take; the value of the safety in 50/50 leagues is limited by the fact that you're forced to play some sub-optimal lineups in order to "unlock" that safety.

Ultimately, Wally assesses his expected winning percentage with various lineups in a given week and determines his league structure from there. If he sees a whole bunch of players as great values, he might be more inclined to enter extra 50/50 leagues where those lineups can be utilized. If Wally's assessment of player values results in limited action, however, he'll be more likely to stick with lineups in head-to-head leagues.

Meanwhile, 50/50 leagues can be good for Gary, too, depending how he uses them. Specifically, if Gary has hopes of becoming a long-term winner, i.e. he wants to be like ~~Mike~~ Wally, then 50/50 leagues can be a supreme learning tool. Since the score distribution of 50/50 leagues often resembles a bell curve (especially over large sample sizes), Gary can quickly learn where he stands among other owners. For example, if Gary plays in 100 or so 50/50 leagues, he can get a fairly accurate sense of his long-term winning percentage by assessing where his scores fall in relation to others. If Gary finds himself finishing at or above the 50th percentile, he could potentially improve enough to become more Wally-like.

However, if Gary's sole goal will always be about entertainment and "striking it big," 50/50 leagues won't offer him much. Since a typical Gary wants to maximize his upside and doesn't have an exceedingly high win expectation, he really wants as much volatility in his leagues as possible. That doesn't mean he can play recklessly or wager too much in any particular league, but a little extra luck in his matchup with Wally is always a good thing. Submitting one lineup in multiple 50/50 leagues might provide Gary with the volatility he seeks, but

using the leagues in the same manner as Wally isn't going to help Gary *unless* he cares about the long-term and wants to determine his future winning percentage as quickly as possible.

The 50/50 league displays an important aspect of the money management formula I provided you in the previous chapter. In essence, it isn't really the size of the league that matters per se, but rather the payout structure relative to the number of competitors. That is, what percentage of owners will receive money in a given league?

Payout Structure

The 50/50 league is a beautiful example of how even large leagues *can* possess limited volatility. Thus, the first thing you should do before entering any weekly fantasy football league is check both the payout percentage and the payout structure. You'd be surprised to learn that most of the 2,500-man "mega" tournaments out there are really only twice as risky as many five-man leagues. That's because most of the larger leagues available pay out around 10 percent of entrants, whereas some five-teamers pay out just one person—20 percent.

If you can properly manage your money (admittedly a big 'if'), large leagues can provide lucrative long-term returns. However, you have to be prepared to make money when winning 10, 15, or at most, 20 percent of the time. Of course, such leagues aren't worth the trouble if the payout percentage is much lower than in other leagues. Search around for the best offers; some weekly fantasy sports sites charge the same price to play in all leagues, while others offer superior payouts in smaller leagues.

The take-home point is that the payout structure determines your risk. Some sites reward only one winner in five-man leagues, for example, while others pay out the top two. That difference goes a long way in determining the amount of money you can lay down.

What kinds of owners are entering each league type?

Earlier, I mentioned that a daily fantasy site that typically collects, say, a 10 percent rake can be superior to one that juices at nine percent (or even lower) if an owner can expect easier competition at the former site. Many of those most popular daily fantasy sites are frequented by Gary and his trusty money-giving minions. Simply put, Wally wants to play Gary as much as possible, and choosing a site with a lot of newbies allows that.

In much the same way, Wally can find Gary in certain types of leagues, too. Everyone wants a shot at a big pay day—one of the reasons Wally can secure long-term profits by effectively managing his bankroll around a plethora of leagues with large fields. Similarly, since Gary doesn't usually enter too many 50/50 leagues because it hinders his upside, they lose some value for Wally.

In this way, there's quite a bit of game theory in league selection. In theory, if Wally wants to enter a single lineup into a single league and his sole concern is his expected return, a 50/50 league would hold as much value as a head-to-head league. In practice, however, Wally's expected return is typically greater in head-to-head leagues because he's less likely to run into an owner against whom he'd be at a disadvantage. I've written more extensively on game theory in fantasy football in the past.

Searching for Player Histories

Perhaps the most advantageous characteristic of head-to-head leagues is that you can hand-pick your opponents. That's beneficial for numerous reasons, the most obvious of which is avoiding wise guys. Whether you're a Wally or a Gary, you don't want to go toe-to-toe (fin-to-fin?) with a shark.

One of the best tools out there to decipher the talent of your opponents is RotoGrinders' "Search Your Opponents." Simply type in the username of a potential opponent and RotoGrinders will provide all sorts of useful information on them, including the daily sites at which they play, their recent activity, biggest wins, average entry fee, average win, and more. By scouting and hand-selecting opponents, you can dramatically increase your expected winning percentage, perhaps to a greater degree than through any other single avenue.

Mixing It Up

So what would an ideal mix of leagues look like in a given week? Well, let's take a look at how Wally might construct his leagues with a $1,000 bankroll:

- **Three head-to-head leagues at $50: $150 (15.0 percent of bankroll) – Optimal Value Lineup**
- **Two head-to-head leagues at $25: $50 (5.0 percent of bankroll) – No. 2 Value Lineup**
- **Two 50/50 leagues at $50: $100 (10.0 percent of bankroll) – 1 Optimal Value, 1 No. 2 Value**
- **One three-man league at $25: $25 (2.5 percent of bankroll) – Optimal Value**
- **One 10-man league at $25: $25 (2.5 percent of bankroll) – Optimal High-Upside Lineup**
- **Three mega-leagues (100+ entrants) at $10: $30 (3.0 percent of bankroll) – Top Three High-Upside Lineups**

Total: 12 leagues for $380 (38.0 percent of bankroll)

Note that the number of leagues in which Wally competes isn't extraordinary. A lot of weekly fantasy owners compete in many more leagues each week, but that could create problems. Specifically, once you reach a certain threshold of leagues, your lineups become sub-optimal.

In a given week, there will be plenty of players whose actual value (expected output) exceeds their perceived value (salary), but not so many that you can create five dozen teams without either 1) using the same players very often/using only one lineup or 2) choosing mediocre options. Both are problems.

Let's assume that of the 15 or so "start-able" quarterbacks in a week, you like five. If you participate in 30 leagues, you'll either need to start those players six times each or choose

different, inferior players. But to maintain your high win expectation, you never want to select players whose actual value doesn't significantly exceed their perceived value. Remember, you basically have to "pay to play" in that sites take a cut from each league, so even if you label a group of players as "slightly undervalued," they won't make up for the cost to play in the long-run.

Now, that doesn't mean you can't place the same player on multiple squads. I'll touch on this idea later, but you can certainly add a specific player you really like to four or five lineups. As a general rule, your top-of-the-line, start-of-the-week, most-undervalued player shouldn't be in any more than 50 percent of your lineups (or, more accurately, on 50 percent of your *money wagered* for the week). Once you get much higher, the fortunes of your teams are no longer relatively independent of one another. When you load up on the same players, you're unnecessarily increasing your risk. Sure, you could have a monster week, but you could also easily lose 30 percent of your bankroll. Even if you're a Gary, you can't play with so much volatility that you could theoretically be bankrupt in a few weeks.

Even with a handful of lineups per week, you'll be able to see an advantage (assuming you own one) over the course of an entire season. If you have a 60 percent win expectation and play in five leagues a week, betting a total of 25 percent of your original bankroll each week, for example, you'd see a 59.5 percent return on your investment over the course of a 17-week season—try to beat that in the stock market. If you alter your bet size based on your increasing bankroll—my recommended strategy—the profits would be even greater.

A Balancing Act

As you can see, league selection is really a balancing act; you need to play your optimal lineups as much as possible without significantly increasing your risk. The greater the risk you're planning to take on in a given week, the lower percentage of your total bankroll you should wager. There's no problem with wagering 30-plus percent of your bankroll if you diversify your leagues and lineups, but putting down that much on one lineup in a bunch of 50/50 leagues could be disastrous. You want to get as much action as possible without playing sub-optimal players, but on the flip side, you have to diversify your player selection enough to hedge against a down week from your optimal selections.

Salary Cap Restrictions

So you know your ideal entry fee and you've chosen both the size of your leagues and the league structures you want to enter, knowing how the payouts affect your risk and reward. What now?

When I first began playing weekly fantasy football, I was initially attracted to the "beginner" leagues. After all, if there's a chance to steal a little cash, it's probably from someone entering such a league, right?

Wrong. Beginner leagues often have the bottom tier of fantasy owners, but they're still more difficult to win. The reason is that in any beginner league, the salary cap is much higher—to the point that you can pick near-studs at every position. Even if you have a great feeling

about a low-salary sleeper, there's no reason to pick him when you can just start Aaron Rodgers, Calvin Johnson, and Arian Foster all on the same team.

Great fantasy owners make money by removing as much luck as they can from a game that is inherently filled with it. Wally and his cohorts don't generally play in beginner leagues because they increase the amount of luck needed to win; the potential player pool is reduced because there's no incentive to start anyone below a certain level.

Standard leagues and even expert leagues—those with a lower salary cap than the average league—on the other hand, offer a better investment opportunity for Wally. Even though the owners in those league types are overall superior to those in beginner leagues, they also require a much higher standard of knowledge. Unlike in a league with an exorbitant cap number, expert leagues reward your understanding of an exponentially larger pool of players.

Let's say a beginner league is composed of 70 percent luck and 30 percent skill and an expert league is 50 percent luck and 50 percent skill. Even if you're a 4-to-1 favorite in a beginner league (in terms of pure skill alone) and only a 7-to-3 favorite in an expert league, the latter will provide better returns. Whereas you'll split the 70 "luck points" and acquire 24 of the 30 "skill points" in a novice league (for a total of 59 points and a theoretical 59 percent win expectation), the expert league will provide you with 25 "luck points" and 35 "skill points" (for a total of 60 points and a theoretical 60 percent win expectation).

In short, if you anticipate being at a long-term advantage over most other owners, you can make more money with a lower expected winning percentage when skill is strongly rewarded, i.e. in leagues with low salary caps. Thus, I suggest anyone who would consider themselves a long-term favorite to play almost exclusively in standard (and some expert) leagues. For Gary, on the other hand, beginner leagues are preferable.

Timing Is Everything

In the same way that salary cap can affect the size of the player pool, so too can the timing of the leagues in which you play. Traditional Sunday and Monday leagues, for example, typically offer players from teams competing in double-digit NFL games. That makes deciding upon players more difficult and thus enhances the skill required to win, i.e. good for Wally. On the other hand, Primetime-only leagues can include players from as few as two NFL games, making the fantasy implications a total crapshoot.

In order of the size of the player pool (smallest to largest), here are the basic weekly fantasy football league formats:

- **Primetime**
- **1pm-Only**
- **Sunday-Only**
- **Standard (Sunday and Monday)**

- **Thursday Night (Standard Plus Thursday Night)**

Not surprising, the list is also a ranking of inherent luck (from most to least). Of course, Primetime leagues are far flukier than any other type, and there's not a dramatic difference between Sunday-Only and Thursday Night leagues (typically two NFL games).

Why Thursdays Are Valuable

One of the undiscussed traits of our fictitious fantasy owners is the excitement level they seek in playing weekly fantasy football. In it for fun, Gary loves to pick players who will be on national television, i.e. on Sunday, Monday, and Thursday nights. Wally doesn't really care when his players are scheduled to play; he simply wants to find value in relation to players' salaries.

By the time Wednesday evening rolls around, Gary is itching to start building some lineups. On Thursday afternoon, he can't stand the anticipation. Frequently, Gary signs up for leagues that begin on Thursday night and places at least one or two players who are playing that night in his lineup. After all, what fun is playing fantasy football if you can't watch your players score? Actually, sometimes Gary gets really antsy and will fill three-quarters of his team with guys playing just on Thursday night. A quick glance at a deep Thursday night league will prove that there are more Gary-type players out there than you think (one of the reasons that large leagues can offer high-quality returns).

Wally understands that Gary might force a player or two (or five) into his lineup simply to watch them play. Wally wants to leverage Gary's excitement into money in his own pocket. While Gary is busy figuring out who will perform best in Thursday night's game, Wally fills out his lineup as per usual. Actually, he might be slightly more inclined to skip over the players in that night's game; he knows Gary will jump all over them and, if they perform well, the two will simply be tied and Wally will be left with fewer players on which his advantage over Gary can show up.

Below, I've listed the potential outcomes for Thursday night games (how the players performed, if you picked them, and how your post-game situation compares to that prior to the game in relation to Gary).

- **Well, Yes – Worse**
- **Well, No – Possible slight disadvantage**
- **Poorly, Yes – Even at best**
- **Poorly, No – Much better**

You can see that the best overall scenario (for Wally) is to fade the Thursday-night players and have them play poorly, putting Gary in an early hole. If Wally selects players on Thursday night and they perform relatively well, he could still actually be in a worse position than when he started. If Gary picked the same guys (or arranged a comparable Thursday night

lineup), Wally will be in the same boat in terms of points, but instead of having nine players left, he'll have just eight (or seven, or six), increasing randomness and decreasing his win expectation. On the other hand, if Wally picks Thursday night players and they perform poorly, he'll still be even with Gary, and again randomness rears its ugly head.

However, if Wally fades the Thursday night players and Gary has a handful of them play well, Wally can still potentially make up the gap; it doesn't help by any means, but it isn't a death blow. Thus, the final outcomes for choosing multiple Thursday night players are being in a worse or comparable situation to your opponent(s), while the results of forgoing those players are slightly worse (or possibly even) and much better. Simply put, more good stuff can happen if you generally choose Sunday and Monday players in your Thursday night leagues, especially when your opponent is likely overvaluing them.

The above example is of course an oversimplification of the situation for demonstration purposes; if you have a player in a Thursday night game ranked well ahead of his salary, there's no reason to bypass him. Further, you can't expect a league of 20 competitors to all be Gary-types. If the perceived value of the Thursday-night-player-in-question is minimal, however, it might be best to lay off.

I Have a Question-able

And as if I couldn't write more about a very specific sub-category of weekly fantasy football in an already perhaps-too-specific book, here's yet one more reason that Wally puts the majority of his funds in Thursday night leagues: questionable players.

Even with a handful of the players chosen in Thursday leagues playing that night, Gary will still generally fill most of his squad with guys playing later in the week. Since the lineups for Thursday leagues are set just after kickoff of the Thursday night game, however, one has to be very careful about the players chosen. While Gary says "screw it" about a questionable player he really wants in his lineup and simply figures he'll play, Wally leverages that mistake into a competitive advantage. He picks all safe players without questionable statuses in Thursday leagues. In a 100-man league, Wally might beat a half-dozen or so owners right off the bat simply because they weren't careful about how they structured their teams.

Flexibility in League Selection

I can't emphasize enough how vital it is to be flexible with your decisions on league selection. There are of course some definite "no-no's"—such as never place all of your money into one lineup and then use that lineup solely in 50/50 leagues—but for the most part, your league choices don't need to be set in stone. Here are just a few factors that can and should affect the leagues you enter:

- **Website**

You know that each website charges specific rates to play in certain leagues, but you might not be aware that many juice you at different rates based on the types of leagues you're entering. For example, some sites charge a much higher rake to enter big-field tournament-style leagues than they do to play in head-to-head leagues. Others charge a flat rate in all

league types. You need to be aware of the differences and act accordingly. A website that has an otherwise unenticing rake but uses a flat rate for all league types might actually be attractive for large-field leagues.

- **Week of Season**

Remember, Gary likes to play in large-field tournaments, which makes them a good-looking option for Wally as well. There's never a better time to jump into those leagues than at the start of the season, because that's when all of the newbies are spending their money. By Week 17, many of the worst owners have already whittled away their bankrolls, so the competition is much stiffer. Whether you're a Gary or a Wally, a very large percentage of the money you'll win will be off of the bottom 10 percent of owners. When they're gone, your profits could potentially evaporate as well.

- **Other Owners**

In addition to playing heavy early in the season to seek out newbies, you should also search for Gary in certain types of leagues, i.e. those with high upside. Gary will be more likely to play in large-field leagues than 50/50 leagues. Whether you're a Wally or a Gary yourself, you always want to target the weakest owners.

Interestingly, the leagues that are inherently the best for Wally—50/50s and head-to-heads—can become less attractive if too many high-quality owners participate. Thus, you need to judge the quality of the owners in specific league types on each site. Some of the bigger sites have Gary-esque owners in every type of league, while other sites possess a less diverse allocation of newbies.

- **Players (Number and Volatility)**

Last, your projections and lineups should weigh heavily in your league selection. If you like an unusually large number of players in a particular week, for example, you can potentially participate in more leagues like 50/50. Remember, it can be risky to place a single lineup in a bunch of 50/50 leagues because a really poor week could wreak havoc on your bankroll. By diversifying your lineups, you can enter more 50/50 leagues and enjoy their ability to minimize luck.

Meanwhile, you should also concern yourself with the inherent volatility of your lineups. If you like a lot of quarterback and wide receiver pairs, for example, you should consider entering more mega leagues than normal. Pairing a quarterback with one or more of his receivers is a high-risk, high-reward strategy—perfect for use in large-field tournaments, but not as optimal in head-to-head or 50/50 leagues.

Freerolls and Guaranteed Prizes

Numerous sites offer freerolls—free entry into money leagues—to attract new customers. Take advantage. If you're trying to build a bankroll, there's no better low-risk way to do it than by entering freerolls. The potential return on investment in a freeroll is infinity percent.

Similarly, you can increase your return on investment by entering leagues with a guaranteed prize but a low number of entrants. Sometimes, sites offer guaranteed prize pools to attract owners. Many times they fill up quickly, but sometimes they don't. By uncovering leagues where the total money wagered is less than or slightly more than the money given away, you can reduce or even eliminate the rake. For example, if you enter a $10 league with guaranteed total prizes of $10,000, anything less than 1,000 participants means not only would you be playing juice-free, but the site would actually be *paying you* to play. The amount the site loses in any league is known as the 'overlay.' Always, always jump into leagues with overlay if you can afford it.

Minimum Winning Percentages

With projection methodology and salary cap allocation just around the corner, let's look at the minimum winning percentage you must maintain to break even over the long-run. The first number after each league type is the winning percentage needed in a league that pays out 89 percent of entry fees, the second number assumes eight percent juice (92 percent payouts), and the third number is the winning percentage in a truly random league.

- **Head-to-Head or 50/50: 56.2 percent/54.3 percent/50.0 percent**
- **3-Team League (Pays out one): 37.5 percent/36.2 percent/33.3 percent**
- **5-Team League (Pays out one): 22.5 percent/21.7 percent/20.0 percent**
- **10-Team League (Pays out three): 33.7 percent/32.6 percent/30.0 percent**
- **20-Team League (Pays out three): 16.9 percent/16.3 percent/15.0 percent**

For the record, the formula to determine breakeven percentage is as follows:

- **B = N*(F/P), where B is breakeven percentage, N is number of people paid, F is fee to play, and P is total payout**

In a 10-team league that pays out three people, charges 11 percent to play, and costs $50 to enter, the formula would be Breakeven = 3*(50/445) = .3370 = 33.7 percent.

When you look at the cost of playing in terms of breakeven percentage instead of the total juice a site charges, you can really see how important it is to maximize payout amounts, i.e. minimize the rake. There doesn't seem like there would be much of a difference between 89 percent and 92 percent payouts, for example; after all, the latter is only three percentage points higher than the former. In a head-to-head league, however, your breakeven winning percentage in a league that pays out 89 percent of entry fees (56.2 percent) is 1.9 percentage points higher than that in leagues that pay back 92 percent of entry fees (54.3 percent). Since your winning percentage in an inherently random league would be 50.0 percent, the extra three percent juice means you'd need to find a way to increase your winning percentage (over randomness) by an extra 44.2 percent (1.9/4.3) just to break even!

Like I wrote earlier, there is more than just the rake that goes into selecting sites and specific leagues, such as the bonuses each site offers, the scoring system they use, the way in which they structure players' salaries, and so on. Nonetheless, the vast difference in the winning percentage required to break even based on the percentage of payouts taken from each league sure makes you want to shop around for the best payouts, bonuses, and player salaries, huh?

The 10 Laws of League Selection

Your choice of leagues is very important and it should be a reflection of your goals and expectations. Whenever possible, you want to limit risk and maximize upside to enhance your expected return on investment.

Law No. 1: You will seek Gary at all times.

Whether you're a Wally or an owner who is new to weekly fantasy football, you want to play the weakest players as much as possible. You can search for Gary-type owners through RotoGrinders. You can also typically find Gary in tournaments and other large-field leagues, whereas more advanced owners tend to participate in 50/50s.

Law No. 2: You will never place all of your money into 50/50s.

50/50 leagues can be useful in that they minimize luck, but they can also increase variance if you don't use them properly. If you participate in a lot of 50/50 leagues and don't diversify your lineups, you'll be taking on too much risk. On the other hand, if you create a different lineup for each league, you'll be starting sub-optimal players.

Law No. 3: You will always understand the payout structure.

There's a massive difference between a five-man league that pays out two owners compared to a five-man league that rewards only the winner. If you don't understand the payout structure of a league, you can't properly allocate your funds. The payout structure is a major factor in determining the risk involved with each league.

Law No. 4: You will diversify your league types.

If you play solely one type of league, you'll be at a disadvantage. Head-to-head leagues offer safety and should be used as the backbone of your weekly fantasy football game plan, but they don't have a ton of upside. Tournaments do, but they're too unpredictable to rely on as your only league type. Diversify your league selection to get the best of both worlds.

Law No. 5: You will never wager more than 50 percent of your bankroll in a given week.

This is really an absolute ceiling and you should be well below it in most weeks. Once you start putting more of your bankroll into a single week, you'll necessarily either be taking on too much risk or playing weak lineups.

Law No. 6: You will avoid beginner leagues unless you're seeking variance.

Only Gary should play in beginner leagues. Due to their inherent instability cause by a high cap figure, beginner leagues aren't a great investment opportunity for Wally.

Law No. 7: You will covet Thursday night leagues.

Not only does Gary play in a whole lot of Thursday night leagues, but he also fills his lineup with players who are playing that night, regardless of their expected value. On top of that, many owners select players who are questionable for their Sunday or Monday game but then end up not playing. Because of the amount of "bad money" in Thursday leagues, they're an awesome investment.

Law No. 8: You will never skip a freeroll or guaranteed prize pool with overlay.

Believe it or not, freerolls are FREE. Don't ignore them. GPPs with overlay are a weekly fantasy owner's best friend because, in many cases, sites *pay you* to play in that the total prize pool exceeds the money put into it. That means that the winning percentage required to obtain +EV (positive expected value) is much lower than normal.

Law No. 9: You will know the winning percentage needed to breakeven.

It's different in each league type, but you can figure it out with this formula:

- **B = N*(F/P), where B is breakeven percentage, N is number of people paid, F is fee to play, and P is total payout**

Law No. 10: You will always be flexible in choosing your leagues.

Your league selection shouldn't be set in stone each week. Different owners should play in different types of leagues. In addition, things like the websites you use and the number of players you like in a given week should be factors in your league search.

3 Projections and Rankings with FFFC Winner Peter Jennings

> *"You can have all of your fancy numbers, but humans play the game. I draft based on my gut." - My father, before subsequently drafting DeDe Dorsey in the ninth round*

I initially decided to write *How to Cash in on the Future of the Game* early in the 2012 season. I had been playing weekly fantasy football for a while prior to that, but it was around that time when I really began to become obsessed with the idea of the game as a money-making tool. The industry is really set to explode within the next five years, and I don't see any reason why the most sophisticated owners can't bring in serious amounts of cash in the same way that the top poker pros did during the poker boom.

I consider myself a quality owner. I've developed a model to project players and I have an established 60 percent winning percentage in head-to-head leagues. I'm a good owner, but Peter Jennings is a remarkable one. His 2012 FFFC $150,000 win wasn't a fluke. Peter would never say it, but he's one of the top daily fantasy sports owners in the world. He creates models much more sophisticated than my own and dominates weekly fantasy football by employing a unique combination of analytics and subjective analysis.

Soon after I penned the first word of this book, I began consulting with Peter to learn more about his methodology. We spoke for hours and Peter graciously provided insight after insight into the world of weekly fantasy football.

When it came time to write this chapter on projecting players, I knew I couldn't do it alone. Weekly fantasy football is *all* about projections; if you can accurately project players and manage your money, you can and will win. On the flip side, there's no way to get around mediocre projections, no amount of trickery you can utilize to become a long-term winner in weekly fantasy football.

With that said, let's get into the meat and potatoes of weekly fantasy football strategy, with the bulk of these thoughts coming directly from the man, the myth, the legend—Peter Jennings.

Projections: A Trip to Vegas

Making projections is really difficult. There's a lot that goes into it—assessing a player's talent, his projected workload, the defense, the weather, and so on—and figuring that stuff out is time-consuming. Whenever possible, you want to let experts do as much of the work for you as possible.

There are no experts out there who understand football better than the guys who set the lines in Vegas. They have millions of dollars on the line each week, so it's in their best interest to make sure the spreads they set are as strong as possible. And they are. Over large sample sizes, the point spreads hold up, making it really difficult to beat them on a consistent basis.

In analyzing Vegas game lines and totals, you can get a really good sense of how a contest will unfold. When the guys in Vegas set the over/under on the Pats-Broncos game at 51 points, that's meaningful and useful information.

Further, they break down the totals to be team-specific; in that hypothetical game, they might have the Pats' total at 27 points and the Broncos at 24. With the click of a button, we've uncovered really accurate projections for the final score of each team.

I started off this section discussing the Vegas lines because they can be a really powerful tool. If you have a solid grasp of who will win a game and how many points they'll score, you'll also have a good idea of how fantasy points will be dispersed, at least among teams.

Turning the Line Into Projections

Using the line, we can make assumptions regarding how many touchdowns or field goals the sharps in Vegas expect a team to score. If they have the Pats' total at 27 points, you're looking at three touchdowns and two field goals. While field goals are very random and difficult to project, touchdowns aren't as fluky. If you want to know how many touchdowns you can project a team to score in a given game, there's no better tool than the Vegas lines. They can really be used as a building block for your projections.

So now that we know that the most likely outcome for the Pats in their matchup with the Broncos is to score three touchdowns, we can start to make initial projections based on how New England's touchdowns are typically dispersed. If Tom Brady has thrown for 80 percent of their total touchdowns, you can predict that he'll score 80 percent of the three touchdowns against Denver, or 2.4 touchdowns.

Now, obviously Brady can't throw 2.4 touchdowns in a game, but that doesn't matter as it relates to our projections. It's just an average and it incorporates our uncertainty of the situation, which any good projection should do. In effect, it's like saying "If Brady throws either two or three touchdowns against the Broncos, there's a 60 percent chance that it will be two and a 40 percent chance that it will be three." A lot of novice owners make the mistake of predicting whole touchdowns, and that leads to bad projections.

You can use the same general process to create projections for the other offensive players. You know that Brady's projection is 2.4 touchdowns, so you can then allocate those scores among his offensive weapons based on the percentage they've scored in the past. If Rob Gronkowski is the recipient of 40 percent of New England's receiving touchdowns, then you can projection him at 2.4 * 0.4, or 0.96 touchdowns.

In the beginning of the season, you can simply use stats from the prior year. Gronkowski was on the receiving end of 11 of Brady's 34 touchdown passes in 2012, but he also played in only 11 games. If you project Gronkowski to score 16 touchdowns in a full season (but you don't alter Brady's touchdown total), you'd have the tight end with a 47.1 percent market share of New England's receiving touchdowns. After you use the Vegas line to calculate Brady's expected passing touchdowns, that's the number you'd use to determine Gronkowski's projected receiving touchdowns.

As the season rolls along, you can place more and more emphasis on that year's data. Since the nature of NFL offenses changes so rapidly, you should be using solely in-season results by around Week 8.

Heating Up: Streaks and Trends

Human beings are predisposed to finding patterns in nature, even when no such pattern actually exists. If you think about it, that makes sense; from an evolutionary standpoint, the downside to identifying a pattern or trend that doesn't exist isn't nearly as costly as overlooking a pattern that actually exists.

As it relates to the NFL, people are constantly searching for patterns in data, but in almost all cases, it's just "noise", i.e. random. When a mid-tier running back puts together two top 10 performances, all of a sudden he's labeled as "hot" and forced into lineups around the country. But there are lots of reasons that a running back might have strung together two quality games, the most likely of which is simply that he had two favorable matchups.

When you're formulating your projections and creating lineups, you have to be wary of your innate tendency to recognize trends, even if they have no basis in reality.

When a Streak Is Really a Streak

None of this is to say that players can't get "hot" in football, and there are times when a past streak is meaningful. As it relates to weekly fantasy football, you want to look for when a streak is predictive, meaning it can be used to accurately project a player in the future. In the case of the running back with two great matchups, his past success probably isn't too indicative of abnormal future success.

The easiest way to determine when a streak is likely to continue is when a player sees a jump in opportunities—a running back who has seen a steady increase in carries or a wide receiver whose targets have jumped substantially. Those players are far more likely to produce quality fantasy numbers in the future than, say, a wide receiver who had a random outburst of three receptions for 100 yards and two touchdowns. Efficiency is great, but there's absolutely no substitute for opportunity.

Sites are Usually Slow to Compensate

When there's good reason to believe that a player's increased workload and production will continue into the future, he often offers value because most sites are slow to update the salaries for rising players. When Philadelphia Eagles running back LeSean McCoy went down in the tail portion the 2012 season and rookie Bryce Brown stepped in, most sites had Brown's salary outside of the top 25 running backs, even though he was really the Eagles' only option on the ground. It didn't matter that we hadn't see Brown play yet; the fact that he was set to see a drastic increase in opportunities was enough to pounce on him. Even after Brown ran for 178 yards and two touchdowns against the Panthers, his salary in the subsequent week was still relatively low. He ran for 169 yards and two touchdowns against the Cowboys, and I killed in both of those weeks by using Brown more than any other player. I actually collected over half of my 2012 profits during that two-week span alone.

Having said that, you can't just buy players who figure to have an increased workload. You should avoid players whenever their salary cap hit exceeds their expected production, regardless of past trends. Ultimately, you're basically looking for players who have shown indications of success but haven't necessarily put up big-time numbers. When an elite running back goes down and his backup figures to see lots of opportunities, for example, that's usually a time to buy in. On the other hand, if a running back's salary recently increased because he had two quality performances against really bad run defenses, that's probably a time to fade that player.

Contrarian Thinking

In many cases, great weekly fantasy owners are characterized by contrarian thinking, i.e. taking a position opposed to the masses. Contrarian thinking is useful because, in the same way that public opinion is factored into a sports betting line, the general fantasy football consensus also determines player salaries on weekly fantasy football sites. When the masses are down on a particular player, it can sometimes be good to add him because he'll often get downgraded too far. Similarly, be wary of players who have recently seen a surge in price, since their jump probably came on the heels of performances which were at least partially fluky.

A major reason that contrarian thinking is useful is because most owners' decisions are strongly affected by short-term biases. If Aaron Rodgers throws four touchdowns in a game, he's often heavily picked the following week, for example. Short-term biases result in a small group of players taking up the majority of roster spots in a given week. Shrewd weekly fantasy owners understand that and often fade those players because, even if they have big weeks, they often won't lead to victories since they're in a huge number of lineups.

Great contrarian thinkers understand when a player is really playing poorly and when he has just been unlucky. A lot of Wally's decisions are dictated by contrarian thinking, and he'll often have a lot of exposure to players who actually played poorly in the week or two prior, but only because they had difficult matchups. If Marshawn Lynch recently faced the Bears and Niners, for example, he'll probably be coming off of two lackluster performances. His salary will drop and he'll be out of the public consciousness. That makes him a great play for three reasons: he'll be cheaper than he should, he won't be in a lot of lineups, and his production will improve with a superior matchup.

Contrarian thinking is extremely useful in tournaments when it's even more advantageous to go against the masses. If you hit on a player who isn't in many other lineups, that's a big bonus in large-field leagues.

Another way to gain a leg up on the competition in tournaments is to target studs who actually have bad matchups. For example, in Week 14 of the 2012 season, I was very high on Adrian Peterson. Since the Vikings were facing off against the Bears, Peterson's salary dropped, but he still got little love in weekly fantasy leagues because he was the priciest running back playing the league's best run defense. Knowing that Peterson can have a monster day against any team, I jumped on him and he rushed for 154 yards and two

touchdowns. In that scenario, I used contrarian thinking in regards to a matchup that, although sub-par, certainly wasn't as poor as everyone believed. By plugging Peterson into my tournament lineups, I was able to create more unique player combinations that increased my odds of winning.

Ultimately, contrarian thinking should be a component of all of your weekly fantasy football decisions. If you can utilize others' short-term biases against them, you'll have a leg up on the field.

Matchups

If you want to accurately project players, you really have to have a solid grasp on matchups. This is where weekly fantasy football can get the most subjective. While there are all kinds of useful numbers out there to help you with your projections, most players don't have a large sample size of games against specific opponents. If you use a player's stats against a particular defense but he's played them just twice in his career, that will lead you astray. A lot of fantasy owners head down a dangerous path by putting too much stock in a small sample of past outcomes.

Matchup-based analysis is still in its infancy, but there are a handful of intriguing sites out there that have shown the ability to overcome small sample sizes. Football Outsiders is one of them. There, you can sort through tons of game data, and they do an outstanding job of separating individual success from team efficiency. So if you want to know how many yards a running back should have gained independent of his offensive line, they can tell you. Then, you can sort through defensive stats to determine whether a run defense is above-average (or poor) due primarily to their defensive line, linebackers, or secondary. It's really useful information that you can use to create matchup-based projections.

Another great site out there—and a relatively new one—is NumberFire. NumberFire is geared toward actual fantasy football, and they provide projections each week. Using various models, they sort through past matchup data and assign more importance to meaningful events:

> *The first step of our process involves digging into the box score. We know that it means a lot more to throw for 300 yards against the Steelers than it does against the Browns, so why simply use yards as an indicator for how good a quarterback is? Using a series of mathematical models, we break down the action in order to have a better and more accurate understanding of what teams and players are performing well and which are paper champions.*
>
> *The next step of process involves using the power of predictive and regressive modeling to more accurately project future performance. Using our advanced metrics combined with state-of-the-art predictive algorithms, we leverage the power of science to come up with the most accurate, data-driven projections around.*

> *We do all the number crunching - all you have to do is win. And win you will: if you used our fantasy projections instead of the platform defaults, you'd have a 30% higher chance of winning your league*.

At both Football Outsiders and NumberFire, the goal is really to determine which aspects of a player or team's current stats are due primarily to skill, and thus repeatable, and which won't reoccur in the future because they resulted mostly from randomness.

Daily Fantasy's Best Resource

Of all the tools out there for daily fantasy sports owners, however, RotoGrinders is the best of the bunch. The site is truly a one-stop shop for everything you need to dominate your leagues, from projections to lineup creation tools to the most interactive and helpful forum in the industry.

For the NFL alone, RotoGrinders has over a dozen awesome tools to make your life a whole lot easier. Some of the tools are for premium members only, but I've teamed up with the site so that you'll get everything for free if you deposit money at any of the daily sites by clicking on any link within this book. You can deposit at FanDuel, DraftDay, DraftKings, DraftStreet, StarStreet, FanThrowDown, DailyJoust, or FantasyFeud to get free RotoGrinders incentives. It's well worth the money.

So what does RotoGrinders have to offer? You can see all of the incentives right here.

NFL Projections

Weekly NFL projections based off of advanced offensive and defensive stats

Algorithm-Projected Lineups

Auto-generated lineups optimized for projected points; tailored to site-specific salaries and scoring systems; seven different lineups for use at the industry's most popular daily fantasy sites

Grind Down+

Expert picks each week at every position; 3-4 plays at each position from each expert; key stats for each selection; site-specific top-tier plays and value options; experts include FFFC Finalists and Top 25 Grinders

Basic/Advanced Player Stats

Basic player stats updated each Tuesday; in-depth advanced stats for every offensive position; red zone attempts, offensive line ranks, targets, deep catch percentages, and more

Targets

A page dedicated entirely to targets; targets per game, red zone targets, completion rates; week-specific target differentials

Ceiling/Consistency
Metrics used to predict risk/reward and high-upside plays; useful to know which players best in heads-up leagues, which best in tournaments; season-long and three-week game data

Offense vs Defense
Average of each team's offensive passing, rushing, and receiving stats against their upcoming opponent's defensive passing, rushing, and receiving stats; matchup-specific data

Defense & Kicker Analysis
Site-specific salary analysis for defenses and kickers; numerous metrics, including FPPG-WTD, which measures a number of kicker and opponent stats to provide soft projection for each kicker

Matchup Notes
Expert-generated matchup notes for every game; outside-the-box thinking ranging from recent history stats to player splits against certain teams to weather concerns

Market Watch
Incredibly useful tool comparing player salaries on seven daily fantasy sites; data on market trends for each player, allowing you to acquire maximum value on each site

Bargain Bin Ballers
Expert picks for cheap players with upside; explanations for each choice

Vegas Odds and Lines
Data from Vegas to help aid in projections

Site Scoring Comparison
Data on each daily fantasy site's NFL scoring system

NFL Cheat Sheets
Multiple matchup-based plays for every position; specific players to target based on favorable matchup data

So there are about a bazillion tools at RotoGrinders to help you become a long-term winner. You should utilize all of them when necessary; they're basically a foundation from which you can implement all of the other resources you have.

The most useful tools on the site could very well be those that provide site-specific information. You can find weekly projections all over the web, but you'll have a difficult time uncovering projections that are customized for each daily fantasy site. That next-level analysis is unique and allows you to prepare your lineups in the most efficient manner possible. Instead of spending hours researching Vegas lines and searching for player salaries on each site, for example, you can get that data in minutes and spend your time more effectively to truly optimize your lineups.

Going Beyond the Box Score

Even if you don't utilize advanced analytics in your projections, you can still maintain accuracy by simply separating reality from public opinion. Your typical fantasy owner—your Gary—makes projections by looking at the overall strength of a defense, maybe in terms of total yards against or total rushing yards allowed, and then picks players who are matched up against those defenses.

There are lots of reasons a defense might be good and allow a lot of yards or poor and not give up that many, though. Some defenses might have given up a lot of yards in recent weeks simply because their offense hasn't been able to stay on the field. If you have to defend 80 plays instead of 55, there's going to be a sizeable difference in fantasy points. Once those fluctuations even out, the defense won't perform so poorly.

Similarly, lots of owners place too much emphasis on the number of passing or rushing touchdowns a defense has allowed. Those stats have a really high level of variance, so they aren't really that useful in making projections.

Typically, efficiency stats are superior to bulk stats in terms of future play. So if a defense has given up 6.0 yards-per-carry in their last five games but they haven't been on the field much because their offense has been playing really well, they'll probably allow for a favorable matchup once the offense comes back to reality. And since most owners aren't specifically targeting the running back matched up with that defense, the back's salary will be more likely to offer value than one going against a defense that has recently allowed tons of yards.

A Return to Vegas

If you recall from the discussion of Vegas lines, you should let the experts and their sophisticated computers do as much work for you as possible. You can and should run through the numbers yourself, but the projections you generate from Vegas's lines should be a foundation from which you can build.

If you use the over-under numbers provided by Vegas in your weekly fantasy projections, you can formulate fairly accurate touchdown projections. As mentioned earlier, when the bookmakers tell you that the Patriots are most likely to score 27 points in a game, you can pretty much take that to the bank. It isn't probable that they'll score exactly 27 points, but it's the *most likely* single-score outcome.

But what about receptions, carries, and yards? Guess what. . .the bookmakers project those for you too. At most sportsbooks, you can find prop bets throughout the week that offer an over-under on receptions, carries, and yards for just about every relevant player you might start in weekly fantasy football. And just like the game totals, those prop bets are generally a decent reflection of reality. When the bookies set Gronkowski's total receiving yards at 80, that's a really solid basis for your weekly projections. Remember, Vegas has a strong incentive to get those numbers as close to "the truth" as possible, and they have hours upon hours to do it—way more time than your typical Gary.

Injuries

Regardless of your particular strategy in a given week, the backbone of sound weekly fantasy football strategy is finding underpriced commodities. One of the best opportunities to do that is to target backups who have recently been thrust into the lineup due to an injury. I talked about such a situation with Bryce Brown in 2012.

When an elite running back goes down, though, it's not a given that his backup will step in and contribute comparable fantasy numbers. You need to determine how much of a running back's success is due to his own talent and how much is simply because he has a dominant offensive line. This is where advanced analytics come into play; you could look at stats like Football Outsiders' "Adjusted Line Yards" to see just how good each offensive line really is.

"Adjusted Line Yards" accounts for changes in game situations to appropriately determine the quality of an offensive line in the running game. From the site:

> *Teams are ranked according to Adjusted Line Yards. Based on regression analysis, the Adjusted Line Yards formula takes all running back carries and assigns responsibility to the offensive line based on the following percentages:*
>
> - *Losses: 120% value*
> - *0-4 Yards: 100% value*
> - *5-10 Yards: 50% value*
> - *11+ Yards: 0% value*
>
> *These numbers are then adjusted based on down, distance, situation, opponent, and the difference in rushing average between Shotgun compared to standard formations. Finally, we normalize the numbers so that the league average for Adjusted Line Yards per carry is the same as the league average for RB yards per carry.*

In 2012, the New England Patriots ranked fourth in the NFL in Adjusted Line Yards at 4.43, but their backs averaged only 4.32 YPC. Those numbers suggest that if Stevan Ridley goes down, his primary backup—likely Shane Vereen—could probably produce at least comparable numbers. On the other hand, the Minnesota Vikings checked in at 10th in Adjusted Line Yards with 4.17, but their backs—meaning Adrian Peterson—averaged a full 1.50 YPC more than that. If AP goes down, his backup wouldn't be nearly as valuable as most others around the league.

On a deeper level, you should think about how injuries can affect the roles of everyone else on the team. If Arian Foster gets injured, you know the Houston Texans are going to pass the ball a whole lot more often. Quarterback Matt Schaub might not be as efficient without his workhorse running back taking pressure off of him, but quarterback fantasy points are most strongly correlated with attempts, not efficiency. An expected bump of even seven or eight attempts per game could easily be three fantasy points. That might not sound very valuable,

but if you could add three points to all of the teams you create in your weekly leagues, your winning percentage would take a substantial jump.

Utilizing "Wisdom of the Crowds" With Aggregate Projections

Using the Vegas lines to create projections is beneficial because it's a relatively quick process and, with a little math, you can create accurate initial projections that can be tweaked with new information. Another way to create your baseline projections is to use a "wisdom of the crowds" approach. "Wisdom of the crowds" is a phenomenon by which the collective opinion of a group of experts tends to be more accurate than the majority of individual expert opinions taken in isolation.

Here's an example: I've been studying sports betting trends over the past few years and one of the most remarkable is that the consensus winners chosen by expert handicappers—the team and total chosen most often in each matchup—has outperformed just about every individual bettor by himself. It takes me about five minutes to collect such information and, just like that, I have predictions that are more accurate than those from most of the experts.

The reason that "wisdom of the crowds" works when it comes to predictions is that it factors out small errors or biases each of us inevitably possess. I might think that Trent Richardson should be projected to rush for 80 yards and 0.8 touchdowns in Week 1, while another expert thinks it should be a 60/0.6 line. The truth is that the best projection for Richardson is probably somewhere between our two estimates. As we gain more and more expert opinions, the average of those projections should come closer and closer to reflecting reality (assuming our opinions are independent of one another).

Well guess what? There's aggregate "wisdom of the crowds" data already out there at a site called Fantasy Pros. There, expert analysts—myself included, although I prefer the term "obsessed writer who has all day to break down fantasy football data" over "expert analyst"—upload their projections for players on a season-long and weekly basis. There are incentives for analysts to do this, meaning the rankings and projections they put into the system are really their best predictions.

By combining all of the expert opinions, Fantasy Pros offers a unique "wisdom of the crowds" approach to weekly fantasy football projections—and it's an accurate one at that.

A Web of Information

So we've got Vegas-derived player projections, analytics-driven projections at NumberFire, the "wisdom of the crowds" from Fantasy Pros, a host of tools at RotoGrinders, and our own subjective thoughts based on objective information (injuries, offensive line strength, matchups, weather, team motivation, and so on). How can we best combine all of this information?

One way to do it is to blend the Vegas-based predictions, NumberFire/RotoGrinders projections, and Fantasy Pros data into a single baseline projection, then tweak the projection just a bit based on any and all new information. And don't be afraid to add your own projection source in there if you have one that you like. 4for4.com is yet another site—

one with perhaps the best track record in the business—that produces amazingly accurate projections. In general, the more sources of independent expert opinions, the better (which is why Fantasy Pros is so valuable).

Remember, though, that the baseline projection is derived from human beings factoring all of the same information into their projections as you would; if Tony Romo goes down, for example, you can bet all of the new projections out there will account for his absence. Unless you think you have information that's truly not factored into your baseline projection, you can probably leave it as is. That's the beauty of aggregating expert opinions; you can let the smart guys do the heavy lifting for you.

Excelling in Weekly Fantasy

As the daily fantasy sports industry continues to grow, there will be more and more widespread analytics available for any owner who wants them. That's obviously a positive, but only if that data is harnessed correctly. It doesn't do us much good to know that Aaron Rodgers is coming off of four 300-yard performances and going against a bottom five defense if we have no idea how that might affect his projection and salary cap hit.

To properly utilize the data that has the potential to greatly aid your weekly fantasy football efforts, it's recommended—perhaps even necessary—to use Excel or some other type of spreadsheet software. If you want to calculate the mean projection for quarterbacks in a given week, that would take a few minutes to do manually. Other calculations might take hours. In Excel, they can be performed in seconds.

Exporting League Results

A lot of the daily fantasy sports sites are aware of the increased use of analytics and offer all kinds of exportable data that can be implemented into Excel. This even includes your past league results which can be exported to allow for optimal lineups. Once you participate in a solid sample size of leagues—a few hundred, perhaps—you can export that data and try to figure out which sorts of leagues are providing the best return for you. Is it head-to-head leagues, three-man leagues, leagues with a lowered salary cap, leagues that start two quarterbacks?

Another cool feature of the data offered by most sites is that you can see how many points you scored in each league type. For example, in 2012, I scored an average of 118.2 points in standard heads-up leagues on one particular site, but my average winning score was 126.2; that latter number is probably an accurate reflection of the score you'll need, on average, to win in a head-to-head league on that site. In standard three-man leagues, I averaged 117.9 points, but my average winning score was 131.2—higher than that in the heads-up leagues, as expected due to more competition.

As you're creating lineups, you can use the Excel data to determine your expected winning percentage. If I build a lineup that I have projected to score 126 points in a standard head-to-head league, I can probably expect somewhere around a 50 percent long-term winning percentage.

Exporting Salaries and Determining Value

The most useful data offered by most sites is player salaries. You simply can't determine a player's value without two pieces of information: his projection and his salary. The good news is that's really all you need. Yes, it's necessary to understand things like risk and upside, but in terms of pure value regardless of league structure, the path to becoming a profitable weekly fantasy football owner is a clear one if you have both projections (accurate ones, of course) and salaries.

You can create a simple formula to determine value by exporting salaries and comparing them to your projections. The most common of those are "dollars per point" (DPP) and "points per dollar" (PPD). DPP is calculated by dividing a player's salary by his projected points. If you have Peyton Manning projected to score 25 points and his salary is $7,500, for example, his DPP would be $7,500/25, or $300. With DPP, lower is better since you want to pay as little of your cap space as possible for each point you anticipate scoring.

PPD is calculated by simply dividing your projected points for a player by his salary (in thousands). So if you have Peyton Manning projected for 21 points and his salary is $7,000, his PPD would be 21/7, or 3. Using a more complex example, let's assume you have Doug Martin projected for 20.4 points and he costs $7,800 on one particular site. His PPD would be 20.4/7.8, or 2.615. PPD is more of a "power rating," and unlike with DPP, higher is better with PPD. You can use whichever method is easiest for you. I'll discuss value in terms of DPP from here on out, but the two metrics are interchangeable.

Value Is Relative

It's important to remember that DPP is a relative value. The DPP values for two players are only meaningful if 1) they're on the same site with the same salary cap structure and 2) they play the same position. Manning's $300 DPP value means nothing in relation to Martin's $382.35 DPP. You have to select a designated number of players at each position anyway, so you're really just concerned about how each player's value fits within the distribution at his particular position. If the next-best quarterback behind Manning has a DPP of $301 and the next-best running back below Martin has a DPP of $485, Martin's DPP would be more valuable to you than Manning's because of the scarcity at the running back position, even though it's actually more costly.

Understanding When to Bypass Value

In most cases, you'll want to try to play all of your best values. Sometimes, however, many of your best values in terms of DPP will be mid-tier players, so their salaries might not add up to nearly the entire cap. Since in most instances you'll want to come as close to using all of your cap space as possible—given that you aren't ever limiting your projected points—it's okay to sometimes bypass the best values to favor projected points.

For example, assume you're working with a $60,000 cap and all of your best values add up to $55,000. Instead of substituting a bunch of your mediocre values in for your best values, it can be advantageous to just remove one player and substitute in an elite option who you have projected to score a bunch of points, even if his DPP value isn't phenomenal. You never want

to choose a player whose expected production doesn't exceed his cost in terms of cap hit, but sometimes you can choose bulk points over the very best values. Remember, your aim isn't to maximize value, but rather to maximize projected points (with value being the most effective tool you can use to reach that goal).

Tiered Power Rankings

Once you have your DPP values set, you can play around with different lineups to see which offer the most projected points. At the end of the day, that's all that really matters. One way to make your lineup creation easier is to produce power rankings.

Power rankings are very easy to generate by simply listing players from lowest DPP to highest and separating them by position. On most sites, you'll need six lists—one for quarterbacks, running backs, wide receivers, tight ends, defenses, and kickers. Sometimes, you'll need to combine different positions to create power rankings for a flex spot. Either way, it's recommended that you create tiers within your power rankings, separating players when there are major gaps in value. That can help you identify who is scarce at a particular position, and thus valuable.

For example, let's assume I've ranked my top five quarterbacks according to DPP and they look like this:

1. **Tom Brady: $280**
2. **Tony Romo: $320**
3. **Matt Ryan: $321**
4. **Joe Flacco: $325**
5. **Russell Wilson: $326**

In this example, you can see that Brady is far and away the best quarterback option for that given week. That means you should place him in his own tier, with the other four quarterbacks all occupying the second tier. By separating Brady from the rest of the pack, you're making it easier to realize the true value of each player. Standard rankings aren't enough.

After you've created power rankings for each position, you want to do your best to get the scarcest players into as many lineups as possible (without unnecessarily increasing your risk, of course). There should be a positive correlation between a player's scarcity at his position and your exposure to him in a given week.

League Selection Based on Power Rankings

Think about that last sentence again: *There should be a positive correlation between a player's scarcity at his position and your exposure to him in a given week*. In my hypothetical example with Brady rated well ahead of the other passers, we'd surely want a good portion of

our money on teams with Brady as the signal-caller. But that creates volatility; if Brady flops that week, you could lose a lot of cash.

That's the reason that the nature of your power rankings should affect your league selection. If you remember from the chapter on selecting league types, certain sorts of leagues can be far more volatile than others. If you placed Brady and a handful of other players on the same teams in a bunch of 50/50 leagues and those guys end up underperforming, there's a good chance you'd be losing a lot of money. Meanwhile, you could minimize the damage by playing more heads-up leagues.

The degree of scarcity in your power rankings should affect the diversity of your lineups, which should in turn alter how you set up your leagues. Without an abundance of scarce players, you can "diversify your player portfolio," so to speak, and perhaps take on more variance in your league selection.

Paint By Numbers

As more and more Gary-level owners make their way into weekly fantasy football, the opportunity to "steal some more money," as Floyd Mayweather would say, will continue to rise. With so many owners blindly picking players based on superficial stats, hunches, or even because of who is on TV, you can acquire an advantage—and a substantial one—just by creating player valuations based on your projections and their salaries. Heck, you could even export reputable projections from sites like numberFire or Fantasy Pros, combine them with the player salaries from your favorite weekly fantasy football site, create a very simple formula to generate DPP calculations for each player, and end up with a really solid basis for lineup creation that will outperform the "gut feel" of just about anyone out there. Numbers are powerful, and they don't have to be incredibly complex to yield magical results.

The 10 Laws of Projections and Rankings

Law No. 1: You will factor expert opinions into your projections.

This is the number one rule for making projections: don't do it alone. The guys in Vegas are experts at what they do, and they do it very well. Use their game lines to make touchdown projections and the lines they set for prop bets to make yardage projections. In the blink of an eye, you can have very accurate baseline projections for every player. You can also use Fantasy Pros and the "wisdom of the crowds" approach to projections in your own rankings.

Law No. 2: You will know the difference between a truly "hot" player and randomness.

We're programmed to look for patterns, but most of the time they're really just random, even in the NFL. When you're analyzing players who are on steaks, jump on those who figure to see a big surge in opportunities and fade those who won't see an increased workload. There's a big difference between a backup running back set to replace an injured starter and one who just got lucky with a couple touchdowns in the past two weeks.

Law No. 3: You will be a contrarian.

If you haven't noticed, a major theme of this book is contrarian thinking, i.e. going against the masses. In general, players who are "cold" or guys who play in small markets are undervalued by the public, and that's reflected in their salaries. By going against the grain, you have a better shot of acquiring value than by following the crowd (unless that "crowd" is an aggregate of experts, of course).

Law No. 4: You will seek advanced stats on specific matchups.

Sites like Football Outsiders and NumberFire have lots of awesome data that can help you with your matchup-based projections. Superficial stats like "rushing yards against" will already be factored into player salaries, but advanced stats like "Adjusted Line Yards" are more useful and can more easily be leveraged into a competitive advantage.

Law No. 5: You will become a "Grinder."

Through this book, you can gain free access to RotoGrinders' premium tools by clicking on a link to a daily site and depositing money. Utilize it. There's no better destination for daily fantasy owners; the site aggregates all kinds of information and provides unique analysis you can't find anywhere else. If you want to play like Wally, you need to go where Wally goes. RotoGrinders is where the pros prepare for daily fantasy sports.

Law No. 6: You will aggregate your projections.

You should factor as much information as you can into your projections. By taking the "consensus" from multiple sources—including Vegas, Fantasy Pros, NumberFire, 4for4, and your own projections—you can obtain projections that will typically be more accurate than the projections provided by any of those sources alone.

Law No. 7: You will utilize Excel.

There are numerous reasons to use Excel, the most obvious of which is that it will make projecting and rankings players a whole lot easier. After you project players, you can simply import player salaries from various sites to properly understand value. You can also import your league histories to learn the types of leagues that are providing you with the best returns and to find out how your projected points relate to your expected winning percentage.

Law No. 8: You will create a DPP (or PPD) value for each player.

PPD, or points-per-dollar, is an excellent way to measure a player's value, or how his expected production compares to his salary. The lower the DPP (or the higher the PPD), the better.

Law No. 9: You will occasionally bypass the best values.

I'll discuss lineup creation more in a later chapter, but there are times when you can bypass a top-rated player (although it's generally not recommended). You might do it in favor of a

player with more bulk points or you might seek a highly-volatile player if you're participating in a tournament, for example.

Law No. 10: You will create tiered power rankings.

When you create tiers within your DPP rankings, you can gain a sense of which players are scarce within their respective positions. All other things equal, you want players who are as much of "outliers" as possible. The more a player's DPP deviates from others at his position, the higher the percentage of lineups you can place him in.

4 Risk, Reward, and Uncertainty: Using Comparables as a Projection Methodology

"I can live with doubt and uncertainty and not knowing. I think it is much more interesting to live not knowing than to have answers that might be wrong. If we will only allow that, as we progress, we remain unsure, we will leave opportunities for alternatives. We will not become enthusiastic for the fact, the knowledge, the absolute truth of the day, but remain always uncertain. In order to make progress, one must leave the door to the unknown ajar."
– *Richard Feynman*

In March of 2008, a man writing under the pseudonym "Poblano" developed a blog that aimed to forecast the outcome of the 2008 Presidential Election. Using an aggregate of polls from around the country, Poblano correctly predicted the winner in 49 of the 50 states, missing only Indiana, in his Five Thirty Eight blog—since purchased by the *New York Times*. Along with his predictions on the 2008 Democratic primary elections, Poblano substantially outperformed the majority of professional pollsters and television pundits.

Of course, by the time the presidential election rolled around, "Poblano" had revealed himself to be Nate Silver—a fulltime writer for the sports media company known as Baseball Prospectus. Silver, whose fame has since skyrocketed with his incredibly accurate 2012 election predictions (when he forecasted the winner in all 50 states) and subsequent book *The Signal and the Noise*, sought to make sense of all of the political data that had become available in recent years. By tracking polls to judge their past accuracy and then weighting them accordingly in his model, Silver has become perhaps the biggest name in politics outside of, you know, Barack.

PECOTA

Although he's now regarded as one of the most respected political prognosticators, Silver has a penchant for making accurate forecasts in other domains. Specifically, Silver developed one of the most accurate baseball player projection systems of all-time in PECOTA: Player Empirical Comparison and Optimization Test Algorithm. Created in 2002, PECOTA is a proprietary model that seeks to predict player performance by making comparisons between two players: the more similar the players' attributes, the more likely it is that their careers will resemble one another.

PECOTA uses a "nearest neighbor" analysis that matches players with others who are most similar to them. "Similar" players are those who have comparable production metrics (batting average, strikeout rate), usage metrics (career length, plate appearances), and physical attributes (height, weight). In uncovering the closest "comparables" for each player, PECOTA can provide a distinct range of outcomes for specific situations. To predict the performance of "Player X"—a 6-3, left-handed, 26-year old centerfielder with a .279 career average, 29 home runs per season, and a .355 on-base percentage—PECOTA finds the players most similar to Player X and shows how they fared in the past. In many ways, PECOTA resembles weather

predictions by understanding that results can go in a number of directions and accounting for that uncertainty.

Comparables in Weekly Fantasy Football

PECOTA sought to project baseball players for entire seasons, but the same methodology can be applied to weekly fantasy football. By uncovering comparables for specific players entering particular situations, we can make extremely accurate predictions regarding their future performance.

Of course, there isn't all that much data out there on comparables, partly because it's somewhat complex to determine which traits really make one player similar to another. Is a 6-3, 220-pound receiver going against a particular defense more similar to a 5-11, 185-pound receiver who played the same defense, or is he more comparable to a receiver with the same build versus a less similar defense? That's a difficult question to answer, but it can be accomplished by understanding the predictive capabilities of each trait. If we know that a wide receiver's height/weight can explain twice as much of his production as his speed but only three-fourths as much of his production as the defense he's playing, for example, then those measurables can be weighted accordingly to uncover similar players and make accurate projections.

The primary issue with comparables is that, since they require a lot of in-depth analysis, they're difficult (or impossible) to create without some sort of algorithm. Once we weight the importance of specific traits, we can create a model using past game data to uncover similar players in similar situations to the player we're studying.

I submit this idea to you because I think it's really the future of weekly fantasy football. The projection methodologies I outlined in the last chapter are the standard, and using them appropriately can make you a long-term winner. Using similarity scores to generate comps for each player, however, has so much promise as a projection method of the future that I thought I'd be remiss if I didn't share it.

rotoViz

One man who is ahead of the curve when it comes to fantasy football comparables is Frank DuPont—the founder of rotoViz. His site is really the future of fantasy sports, and it can be an awesome tool for weekly fantasy football owners. At rotoViz, you can find all sorts of custom visualization apps, including those which display comparables for players in both year-long and weekly fantasy football leagues. Frank has performed the majority of the grunt work, assigning comparables to each player at each position using "similarity scores."

The best part of similarity score-based comparables—and really the only aspect that matters—is that they're predictive. If you want to understand the range of potential outcomes for Player X against Defense Y, there's perhaps no better way to do that than researching how players similar to Player X performed against defenses similar to Defense Y in the past.

Frank was kind enough to guide us through his process:

During the fantasy football season, it's common to hear statements that resemble this one: "Player X has averaged 85 yards and 1.5 touchdowns against Team Y over the past two seasons." Such declarations form the basis of a number of decisions in fantasy football and you can't blame owners who look at a player's past matchups against a team in order to try to predict the future. But the problem with doing that is that, in general, looking at past matchups will constrain the sample size that you are looking at to maybe three or four games.

*The issue that I describe above—the idea that looking at past matchups is a decent place to start a forecast if not for the fatal flaw of a small sample size—was the problem that was on my mind when I came up with the idea of **G**ame **L**evel **S**imilarity **P**rojections, or GILLESPIE. By making a very simple tweak to the process of looking at past matchups between Player X and Team Y, I was able to maintain the same matchup-based idea and overcome the fatal flaw of a small sample. GILLESPIE just adds similar players and similar defenses to the mix.*

Let's look at an example to see what I'm talking about. Let's say that you have a player like Demaryius Thomas in 2012 and you want to forecast his fantasy production in an upcoming matchup with the Cleveland Browns. Because Thomas hadn't played the Browns before, we don't have any actual past games to examine. By searching through past box scores, it's relatively easy to uncover some historical matchups between players similar to Thomas and defenses similar to the Browns that might serve as the basis of our projection.

Now for the really neat part about GILLESPIE. We can average up the number of passing yards that the comparable defenses have allowed to opposing wide receivers; it's 221 yards per game. In fact, if we go through the statistical measures for the comparables, we see that they are so close to the subject matchup as to appear almost as if something magic is taking place.

Once we have the list of comparable matchups we can do a number of things with them that might be helpful in a weekly fantasy football format. First, we can derive a simple projection by just looking at the median fantasy points scored by our comparable players when they faced off against the comparable defenses. In the case of the matchup we've been looking at above, the median would have been 10.2 fantasy points in standard scoring and 17.3 points in a PPR format. In this case, it's superior to use the median over the mean because 20 observations is still a relatively small sample size and thus subject to outsized influences on the mean by outliers.

Using the median as described above would be a very good way to construct a lineup in a weekly fantasy football format. But what if your goal is not to reduce forecast errors, but to get the best sense of which players in a given week might have the most upside? Then you might not be interested in the overall mean or median and you might instead want to look at just a slice of the distribution of Thomas's comparables. GILLESPIE makes it easy to break the comparable results into quantiles

as well so that you can pursue a strategy tailor-made to the kind of weekly fantasy game you're playing in. In a multi-player tournament, you obviously have an incentive to pursue a high-variance strategy, or what might be called a dominant strategy. In that case, you're interested primarily in upside.

If you were constructing a team for a multi-player tournament, you might start with any reserve players who have low salaries and heavy odds to outperform those salaries. Then you might fill the rest of your team with players who have the highest points at the 75 percent quantile in an effort to maximize your chances of finishing in the money.

This would be a high-variance strategy. You would not care about the possibility that you might finish dead last since that doesn't cost you any more than finishing barely out of the money. But you would be interested in maximizing the ceiling of your lineup. GILLESPIE essentially allows you to customize your projections based on how risk-tolerant you want to be. If you're interested in playing a safer strategy, perhaps in a heads-up game, you could use the median forecast (the same as the 50 percent quantile).

I should also mention (in case you're curious) that Demaryius Thomas actually went for 102 yards on nine catches with a touchdown in his game against the Browns. That means he actually exceeded even the 75 percent quantile projection in both standard and PPR scoring. I'm offering that fact not as proof that GILLESPIE works or doesn't work, but because I've spent so much time talking about this particular matchup that I thought it would be cruel to make you look it up separately.

Now that I've given you a sense as to what GILLESPIE is and how it can help you play weekly fantasy football, it's probably worth spending at least a little bit of time discussing GILLESPIE's soundness as a projection system. First, GILLESPIE is loosely based on an idea from the data mining world known as clustering. As Jonathan mentioned, Nate Silver's famous baseball projection system PECOTA reportedly includes one of the most widely used clustering methods—the nearest neighbor search.

Like clustering algorithms, GILLESPIE is a lazy forecasting model, which is to say that we're most interested in feeding variables into the model and reducing forecast errors in aggregate and we don't spend any time doing things like ascertaining whether variables might have a linear relationship, or whether we should include interactions between variables in our model. The actual process that GILLESPIE uses is automated and involves measuring players and defenses in terms of how many standard deviations they are apart from each other on statistical measures. So GILLESPIE is both careful because it involves a mathematical process, and it is effortless because it is all contained in automated code.

A reasonable question to ask is 'why don't we just use a linear model to forecast instead of GILLESPIE?' First, the results would be similar. I've found that GILLESPIE

performs either similarly to a linear model, or slightly better than a linear model, depending on the application. For instance, I use a variation of GILLESPIE to forecast year-over-year fantasy football results and the adding things like age and weight into the model allows it to outperform a linear model by enough to make it extremely valuable. Variables like age and weight (which do not have linear relationships with fantasy scoring and which might also interact with other variables) are the perfect reason to use a lazy forecasting system like GILLESPIE. But fantasy football is a game that has a lot of non-linear relationships, so a clustering projection system like GILLESPIE has a lot of appeal as one of the tools that you use.

Uncertainty in Projections

In my view, GILLESPIE's greatest contribution to weekly fantasy football is accounting for the uncertainty that is inherent to just about any prediction. We don't really *know* how a player will perform in a specific game—and you could even argue that such knowledge is intrinsically "unknowable"—but we can use math to determine the *most likely* outcomes.

Assume you have both Calvin Johnson and A.J. Green projected at six receptions for 100 yards and a touchdown. In a traditional projection system, you'd rate them equally. Using GILLESPIE, that might not be the case. By examining the range of potential outcomes for Johnson and Green in a particular week, we can see how their potential performances are dispersed.

Even though Johnson and Green could have the same mean projection, it's very possible that the most likely outcome for each player is far different. In PPR leagues, the duo would be projected to score 22 points each, but we can reach that total in a variety of ways. Maybe Johnson's comparables have fallen primary at the extremes of the range of outcomes. For simplicity, we'll say 10 of them have scored 12 points in the past and 10 others have scored 32 points. Meanwhile, Green's comparables might all be tightly clustered right around the 22 PPG mark.

The deviation of each player's comparables is vital information for weekly fantasy owners. In my hypothetical example, Green would be a low-risk play, while Johnson would be more of a high-risk/high-reward option. As Frank pointed out, both players have their uses, but not in the same league structures. Using traditional projections, you'd never know that Johnson is a better choice for tournaments and Green is the superior option for head-to-head leagues.

Embracing Uncertainty

Uncertainty is all around us—from the movement of electrons to the bounce of a football—and it's an integral part of making predictions. Rather than simply ignoring uncertainty, which is basically what happens when we make traditional projections, we should embrace it. There's no easier way to increase the accuracy of our predictions than by admitting that we don't know everything and subsequently utilizing uncertainty.

As it relates to weekly fantasy football, we can apply uncertainty into projections via comparables, as Frank DuPont does at rotoViz. In doing so, it becomes far easier to identify

risk and reward—an essential aspect of projections and perhaps the most overlooked aspect of weekly fantasy football. Ceiling and floor projections are incredibly useful—even more so than in traditional fantasy football—and they should be the basis for your lineup creation. Without a proper understanding of risk, reward, and uncertainty, you simply won't be able to formulate optimal lineups.

Even if you don't use GILLESPIE to aid you in your week-to-week projections, the foundation of the entire concept of comparables—harnessing uncertainty in predictions—should be a major component that drives your weekly fantasy football decisions.

The ~~10~~ 5 Laws of Comparables

Similarity score-generated comps can be a powerful tool in your arsenal if you're willing to dig a little deeper to gain a leg up on the competition.

Law No. 1: You will understand that each player has a range of outcomes.

It's been a running theme in this book to acknowledge that we simply don't know as much as we all think we know about players' fortunes on a week-to-week basis. The sooner we embrace the uncertainty inherent to weekly fantasy football predictions, the sooner we can reach a more accurate system of projecting players.

Law No. 2: You will always search for traits that are predictive.

With any projections system, we're always looking for signs that can help to predict a player's future. It really doesn't matter what it is; if a specific stat or trait can help us make more accurate predictions, then it's useful. The more predictive it is, the more it should be weighted into our rankings.

Law No. 3: You will avoid small sample sizes.

The primary advantage of GILLESPIE is that it avoids very small sample sizes by assigning comparables to each player. That's a far more useful way to study players than to think they'll repeat their performances from a past matchup or two. Just because a particular cornerback held a receiver to 20 yards in their last meeting doesn't mean it will happen again.

Law No. 4: You will sort player projections into quantiles to understand risk and reward.

There's nothing about a comparables-based projection system that is cooler than being able to truly understand risk and reward. We see certain players labeled as "high risk" or "high reward" all of the time, but what's really the basis behind those labels? By sorting through a player's comparables, we can get a really good idea of his true ceiling and floor production.

Law No. 5: You will choose high-ceiling players in large-field leagues.

There's no easier way to confirm a high ceiling than through comparables. Those players should be chosen in large-field leagues when you need upside. You could even generate your

DPP rankings by comparing a player's "ceiling production"—the past production from his top five comparables—to his player salary (as opposed to comparing the salary to a projection that incorporates all of his comps). In tournaments, comparables could very well be the best projection system.

5 Winning With Regularity: Understanding Stacking and Position Consistency in Lineup Creation

> *"The only relevant test of the validity of a hypothesis is comparison of prediction with experience." - Milton Friedman*

So you've sorted through your money management. You understand which leagues are the best for you and how much you can afford to wager. You've used Vegas, "wisdom of the crowds", comparables, and other systems to project players, and you've subsequently created your DPP rankings. You're finally ready to turn those rankings into lineups. Now what?

There's really no set way to generate the best possible lineups; some experts out there create algorithms to do it, but that's not necessary. All you need to do is mess around with various lineup combinations to figure out which maximize your projected points. That might sound like a ton of work, but remember that, for the most part, you'll be sticking to the same group of players. You'd never start a player whose DPP is $450 when you have five guys at his position under $350 DPP, for example.

Remember that although your lineups should be dictated by value, you're looking to maximize projected points. It's not necessarily the best strategy to place all of your top values on the same team because, in some cases, they'll be mid-tier players whose salaries won't come close to matching the cap. Rank your players according to value, but create your lineups according to projected points.

Head-to-Head vs Tournament Lineup Creation

When you're looking to create the optimal lineup for head-to-head leagues, you really need to worry only about value. A popular heads-up lineup strategy is to make sure the best of the best values are in the lineup, then fill it out from there to maximize projected points. Wally might want to emphasize safety in a head-to-head matchup while Gary should seek volatility, but both owners still need to play the best values.

We know that tournament lineup creation is much different because all you want to do is maximize your upside. Instead of searching for the best individual values, your goal when creating optimal lineups in large-field leagues and tournaments should be to uncover the best combination of players who are dependent on one another. No idea what that means? Let's get into stacking. . .

Stacking Up Against the Competition

In most cases, the production of your fantasy players will be independent of each other. Unless they're playing in the same game, the play of your quarterback won't affect the production of your receiver.

But what if you pair the two together? This strategy—known as "stacking"—is extremely common in the world of weekly fantasy football. By pairing a quarterback with his wide

receiver (or two) or tight end, you can construct situations in which the production of one player is dependent on the play of another. That can be good or bad, depending how you utilize it.

If you recall from the chapter on money management, it's foolish to place a ton of money on individual lineups because, often times, you choose the same players for various rosters. That means the success of one is closely linked to that of another, and that creates a volatile situation. In terms of money management, that's bad.

But volatility can also be a positive. In tournaments, for example, you want to choose a high-variance lineup because you need all of the upside you can get. If you're in a 2,500-man league that pays out the top 250 owners, there's no difference between 251st-place and dead last. You don't want "solid" in a tournament. You want outstanding. By pairing a quarterback with his receivers, you can greatly enhance the ceiling of your team by relying on dependent events; if your quarterback throws for 400 yards and four touchdowns, you can bet his receivers will have monster games as well.

Volatility isn't always welcomed, though, as we've seen in head-to-head leagues. When you're playing against just one other owner, you don't want to seek upside at all costs. In many cases, you just want to maximize the "floor" of your lineup, i.e. create a safe group of players. That means it's probably best to select players whose production isn't dependent on anyone else in your lineup.

Owner-Based Variance

In addition to being affected by the types of leagues you enter, stacking should also be affected by the type of owner you are. If you consider yourself a Wally—or at least a favorite in a particular matchup—then you should seek as little variance as possible. In the same way that a team that is winning by 21 points in the fourth quarter should play as safe as possible, Wally should typically rely on safe choices to overtake Gary. In a heads-up matchup, it would typically be wise for Wally to avoid stacking. On the other hand, Gary—who needs as much luck as possible to take down Wally—should almost always stack his players, regardless of the situation. If you consider yourself an underdog (which is fine for any novice owner), go ahead and pair your quarterback with at least one of his receivers to secure much-needed upside.

Reverse Stacking

While typical stacking involves pairing players on the same squad, "reverse stacking"—a term I just made up—means choosing players on different teams but in the same game. Depending on how you pair players in the same game, you can either greatly enhance or decrease volatility.

Imagine the 49ers are playing the Bucs. You check the line and see that San Fran is a 13-point favorite over Tampa Bay—a hefty margin. You have a pretty good idea that the Niners are going to be winning the game in the fourth quarter, so you jump on running back Frank Gore because you think he'll see a lot of carries late in the game. Sound strategy.

But what if you're in a tournament and you weren't able to pair your quarterback and receiver? You could still increase variance (and subsequently improve your chances of finishing in the top 10 percent of the league) by selecting a wide receiver on the Bucs—Vincent Jackson being the obvious choice. Since you've already made a prediction that the Bucs will be losing the game in the fourth quarter, you can "double-down" on that bet by selecting Jackson, who should see a handful of late targets. If you're right about Gore's late-game production, chances are you'll also be correct about Jackson. The opposite is also true—if San Fran is down and Gore doesn't touch the ball, there's a good chance that Tampa Bay won't be passing as much to Jackson—which is why stacking (or reverse stacking) is a high-risk/high-reward strategy, i.e. optimal for Gary in all league types and smart for Wally in leagues that pay out fewer than 33 percent of owners.

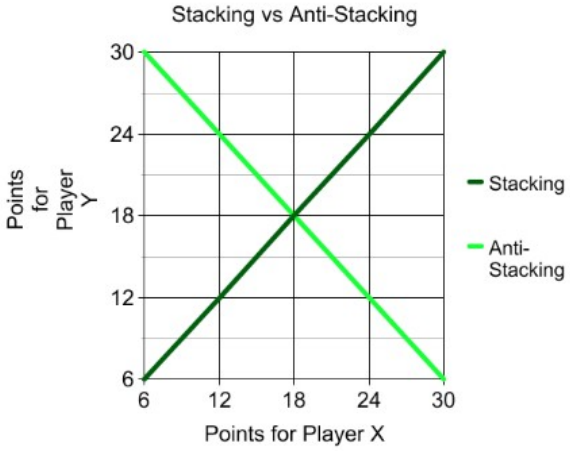
Anti-Stacking

Many times, owners "anti-stack" without knowing it. Anti-stacking is a good strategy only in a limited number of situations because it can significantly limit your upside. Remember, there are times to seek upside and times to play it safe, but you always have to be chasing one—upside or safety—to a certain degree.

Anti-stacking involves taking two players whose play is dependent on one another, but connected via an inverse relationship, i.e. as the production of one increases, the production of the other is likely to decrease. That's opposed to traditional stacking, which works via a positive correlation, i.e. when the production of one player increases, the production for the other will probably do the same.

An example of anti-stacking is taking two running backs in the same game but on opposite teams. It's highly unlikely that both of them will rush for 100 yards, but it's perhaps *more likely* that *one of them* will rush for 100 yards than if you chose two backs in separate games. Another example is selecting a quarterback and running back on the same team. Although they could both produce big-time numbers, there's still an inverse relationship there in regards to their production.

Let's visualize the difference between stacking and anti-stacking.



You can see that with typical stacking, the production of Player X increases as Player Y's production does the same. With anti-stacking, the relationship is just the opposite. To more easily recognize the difference, let's break down the possible outcomes in five games in which Player X scores 6, 12, 18, 24, and 30 points, respectively.

- **Total Points With Stacking: 12, 24, 36, 48, 60**
- **Total Points With Anti-Stacking: 36, 36, 36, 36, 36**

While we'd never expect the relationships to be as linear as they're shown here, the difference between the two strategies is obvious; stacking increases both upside and volatility, while anti-stacking does the opposite.

So why is anti-stacking generally a poor strategy? Well, in most situations, owners should emphasize upside over risk-minimization. That's the preferred strategy for all types of owners in most league types, and it's the optimal strategy for Gary—who wants to escalate variance as much as possible—in all league types.

The only time anti-stacking might be useful is for Wally in a heads-up matchup against a player over whom he knows he has a massive advantage. In such a situation, Wally might want to play as safe of a lineup as possible, even if it decreases the ceiling projection.

Back to the Tournament

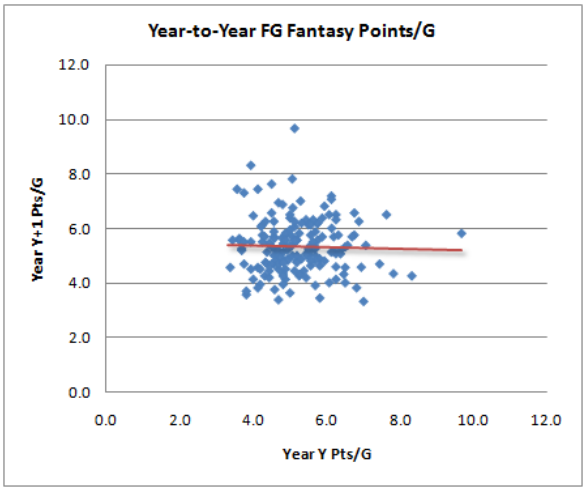
So as you're creating the optimal lineup for tournaments or leagues with more than five owners where upside is crucial, you should really base your decisions around the ideal player pairs. At the very least, you should be pairing a quarterback and a receiver, but it's not uncommon to pair a quarterback with both of his receivers or with one receiver and a tight end. As I showed you, you can also pair a quarterback-receiver combo with the opposition's running back to create a truly dependent situation. Remember, the best lineup in tournaments is the one with the most upside. Thus, while your heads-up lineup strategy revolves solely around value and maximizing projected points for each individual player, your large-field strategy should be based upon finding the best player combinations whose play will have a synergistic effect; when one of your players goes off, the others will be likely to follow.

Consistency

In my first book ***How to Dominate Your Draft***, I discussed the concept of position consistency ad nauseam; I think it's that important. We can spend countless hours making projections, but none of it matters if whatever we're trying to predict isn't consistent. The degree to which a particular stat or position remains consistent from year to year (or in the case of weekly fantasy football, from week to week) should directly coincide with how heavily we weight the value of said stat (or position) in our projections.

As it relates to traditional fantasy football, we all have at least a fundamental understanding of this already. No fantasy owner who has played for more than a week would draft a kicker early in the draft, even if he has him projected to score dozens of points more than any other

player at the position. That's because kickers are inherently volatile, and thus extremely difficult to predict.



In effect, consistency allows us to give a numerical value to the confidence we should have when projecting any stat or position. You might think a particular kicker is set to dominate in a particular year, but the historical lack of season-to-season consistency for kickers suggests you probably shouldn't be so confident in your assessment.

Our projections need to be as accurate as possible, but we can't be so set in our ways that we overlook the uncertainty involved with making predictions. If we "know what we do not know," we'll be in a much better position to make accurate projections in all realms of fantasy football. Thus, it is vital to understand the degree of consistency and uncertainty we can expect to encounter with each type of projection.

Consistency in Weekly Fantasy Football

Week-to-week consistency and season-to-season consistency are two very different animals—due primarily to sample size—but when I read articles on consistency, it seems as though most people treat the two the same. That's a mistake. When we discuss the consistency from one year to the next, we're really talking about a phenomenon that takes place over a large number of games. If we're analyzing the consistency even for one particular player over a three-season span, that could still be as many as 48 games. Further, the consistency of entire positions is based off of a sample size of thousands of games, so it's trustworthy.

On the flip side, many of the claims proposed regarding week-to-week consistency are based on smaller sample sizes and more susceptible to variance. It's almost as though owners treat each individual week as though it's its own season. That means that a lot of the consistency that we think we see from week to week probably doesn't exist.

I think there are two ways to look at consistency in regards to weekly fantasy football: that for individual players, and that for entire positions. One is primarily illusory, while the other is essential in creating the best possible weekly lineups.

Individual Player Consistency

Prior to the 2012 season, I had Minnesota Vikings wide receiver Percy Harvin ranked as my No. 4 overall wide receiver in PPR leagues. In addition to his game-breaking ability, one of the main reasons I ranked Harvin so high is that I consider him "slump-proof." The nature of Harvin's game is so versatile that defenses have a difficult time containing him; he can play outside, in the slot, at running back, or anywhere else you can imagine, catching screens or deep passes and running end-arounds or read-options. He can also be useful regardless of the score.

The truth is that Harvin is one of a limited number of individual players who I consider to possess true week-to-week consistency. The majority of what we perceive as weekly consistency on an individual basis is simply an illusion based on a limited sample size of games.

While certain players possess more season-to-season consistency than others, the short NFL season makes over-analysis of each game unavoidable. When a baseball player goes 1-for-10 over a two-game period, we often chalk it up to being unlucky. Meanwhile, when a quarterback turns in two poor performances in a row, the sky begins to fall in fantasy land.

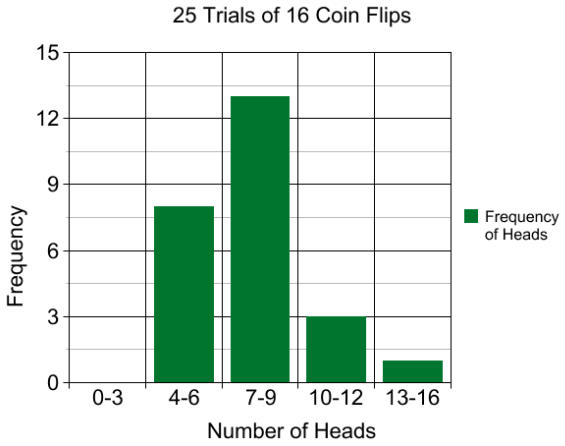
Imagine cutting up the MLB season into 16-game segments. Each player would have a few segments of really poor play and a few periods of outstanding play. Over the course of the entire 162-game season, those peaks and valleys tend to even out, which is why baseball players have such consistent stats from year to year.

Well, the NFL season is too short for those tendencies to always even out. Thus, we often place more emphasis on individual games than we should because, well, it's all we have to analyze. We label Player X as 'consistent' and Player Y as 'injury-prone,' not realizing we're really just looking at the equivalent of one of those little 16-game slivers that MLB players participate in 10 of each season.

Imagine that a group of 25 receivers all have a 50 percent chance of putting up respectable fantasy numbers in a given game (how you define 'respectable' is irrelevant to this example). For each player, the odds of posting quality fantasy stats are no better or no worse than a coin flip. What kind of results would we expect?

Typically, you'd see around half of players post between seven and nine respectable games. Almost all of the remaining players would fall between four and 12 respectable games, with a few outliers having either an outstanding season of 13-plus big-time performances or a horrible season of three or fewer quality games.

Actually, the results would closely resemble the graph below, which is a series of 400 coin flips I just completed (which sadly takes more time than you'd think and probably says more about me than anything you'll read hereafter). I broke down the coin flips into sets of 16 (to represent each game in an NFL season), tracking the number of heads that came up during each trial of 16 flips.



You can see that just over half of the trials ended up with exactly seven, eight, or nine heads. That's to be expected. What many people don't anticipate are the trials that end up as outliers: just a couple or all but a few flips being heads.

Actually, on my first 16 flips, 14 of them were heads. Even knowing that the chances of heads coming up was 50 percent, I began to think I was a biased coin-flipper. As I continued to flip, however, the number of tails "caught up", i.e. regressed toward the mean, and all was well in the world of randomness.

The takeaway here is that, in any set of random (or near-random) data, we'll see lots of "abnormal" results. If you assign Calvin Johnson a 50 percent chance of going for 100 yards and a touchdown in any given game, he'll probably wind up with somewhere around eight games with such numbers. But there's also a solid chance that he'll appear to have either an unusually outstanding or a very poor year. With a 50 percent chance of 100 yards and a score in any game, Megatron is probably around as likely to have *either* five or 12 stellar games as he is to have exactly eight.

Because the number of games in an NFL season is so low, it's really easy to see patterns in data that aren't really there. Over the course of even a few NFL seasons, we'd expect some players to appear to have a huge degree of weekly consistency, even if consistency were completely random. Similarly, even with total randomness, a handful of players would appear to be "all-or-nothing" fantasy options without much consistency, when in reality they possess just as much consistency as the most reliable performers.

Position Consistency

Even if individual consistency exists, it's really, really difficult to predict. That makes choosing among options within a particular position a complex task, at least in regards to consistency. On other hand, position consistency is more than just an illusion, and it can be an extremely useful tool for weekly fantasy owners.

Understanding the week-to-week consistency for each position provides insights regarding how to allocate cap space. Again, projections mean nothing if you're trying to predict

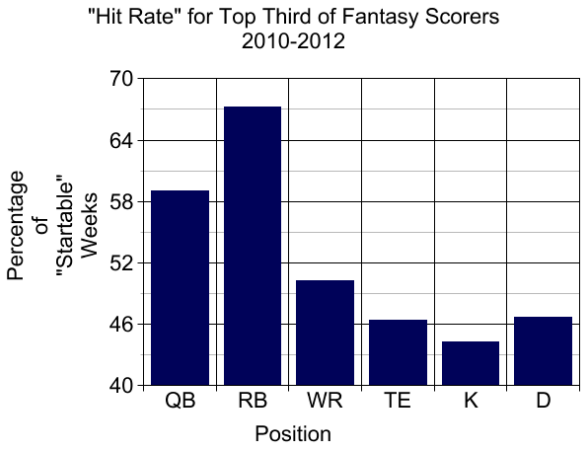
something that is inherently random. If you know the degree to which fantasy points carry over from week to week for each position, you can more aptly create the optimal lineup.

The Numbers

I dug around and compiled data on the top 270 players over the past three seasons—30 quarterbacks, 75 running backs, 75 wide receivers, 30 tight ends, 30 kickers, and 30 defenses. I charted the consistency of each individual player on a weekly basis, marking each performance as either “startable” or “top-tier.”

To be “startable” in a given week, quarterbacks, tight ends, kickers, and defenses had to rank in the top 10 at their position, while running backs and receivers had to rank in the top 25. To qualify for a “top-tier” start, the former group had to rank in the top two at their position for the week, while the latter group had to rank in the top five.

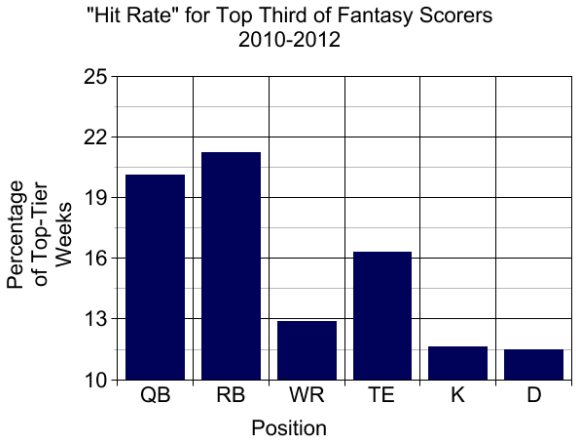
Below, I charted the combined “startable” performance rate for the top third of scorers at each position over the past three seasons.



When assessing the top third of scorers at each position, running back has been far and away the most consistent position on a week-to-week basis. On average, the top third of the league’s most consistent backs have ranked in the top 25 at their position in a given week 67.2 percent of the time. That’s well above second place—quarterbacks—at 59.0 percent.

The fact that running backs and quarterbacks are so far ahead of the other positions isn’t a shocker. Running backs typically see at least 15 touches per game, and often more, and quarterbacks usually throw the ball at least 30 times or more. As far as individual games go, those are large sample sizes. Compare those workloads to wide receivers and tight ends, both of whom are (very) lucky to see 10 targets in a single game. Actually, tight ends as a whole have actually been less consistent than defenses over the past three seasons.

Now, let’s take a look at the “top-tier” performances.



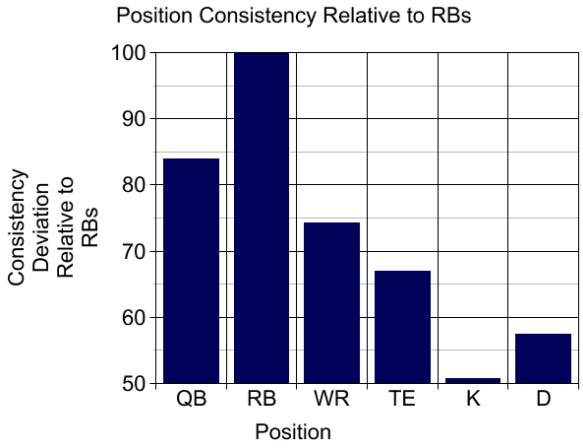
The results are comparable to the "startable" graph, although you can see that wide receivers and tight ends have flip-flopped. This suggests that although tight ends as a whole probably aren't as consistent as the other skill positions on a weekly basis, the truly elite players at the position—think Rob Gronkowski—have a good amount of weekly consistency. The change in the numbers might be due to the wide range of ways in which tight ends are deployed across the league—many are basically used as wide receivers—which allows for increased week-to-week consistency.

There's yet another way to measure week-to-week consistency. If we want to understand the predictability of each position as a whole—as compared to the top third of all scorers—we can measure the total deviation in consistency for every player. If a position is consistent, we'd expect a really large deviation of consistency; the top scorers in a given week at a consistent position should be more likely to remain as top scorers in subsequent weeks as compared to players at a less consistent position.

To measure the diversity in individual consistency, I calculated the average "startable" rate for every player at each position, and then I compared it to the same rate for players ranked in the top third and bottom third at their position.

For example, as a whole we know that 31.25 percent of defenses can rank in the top 10 at the position in any given week. If team defenses are consistent from week to week, we'd expect a big gap between the top third and bottom third defenses because 1) the best defenses should remain good and record a high "startable" rate and 2) the poor defenses should do just the opposite. On the other hand, if defenses have little consistency as a whole, we'd expect to see a smaller gap between the most and least consistent individual defenses over the past three seasons, with most hovering around the 31.25 percent mark.

With that horribly boring (but necessary) primer out of the way, let's get into the results. I charted the total deviation for each position as it compared to the most consistent of all positions—running back.



Overall, the results closely resemble the original graph. Using running back as a scale, here's how the deviation at each position compares:

1. **Running Back: 100.0 percent (uh, duh)**
2. **Quarterback: 84.0 percent**
3. **Wide Receiver: 74.3 percent**
4. **Tight End: 66.9 percent**
5. **Defense: 57.5 percent**
6. **Kicker: 50.7 percent**

Although the results are still an approximation of very complex phenomena, everything converges to suggest that running back is the most consistent position on a week-to-week basis (likely due to their heavy workloads), followed by quarterback, wide receiver, tight end, defense, and kicker.

A Look Back at Individual Players

Remember how I said weekly consistency is likely illusory on an individual basis? At best, it's really challenging to predict, although it becomes easier to manage when we look at position as a whole. There's another way to detect weekly consistency, however, and that's examining specific sub-categories of positions, i.e. big-play receivers, pass-catching running backs, and mobile quarterbacks.

- **Big-Play versus Possession Receivers**

To track past rates of consistency for receivers, I looked at high-performing wide receivers over the past two seasons. Of receivers with more than 60 catches, I examined the top 25 and the bottom 25 in terms of yards-per-reception. My hypothesis was that we'd see players with low yards-per-catch totals have the most consistent play. Those players—think Wes Welker, Danny Amendola, Percy Harvin—typically have a much higher reception rate (and often times

more targets) than the big-play threats like DeSean Jackson, Mike Wallace, and Brandon Lloyd.

The fact is that the *big-play receivers* were actually slightly more likely to have consistent play than the low-YPC receivers. That's after I adjusted for stat totals (the top 25 in YPC averaged 1,189 yards and 8.96 TDs per season, compared to 942 yards and 5.12 TDs for the bottom 25 in YPC). On average, the big-play receivers posted games with at least 6.0 percent of their final yardage total just over 9.5 times per year. For the low-YPC players—the ones who many consider to be very consistent on a week-to-week basis—the number was just under 9.5. The results are close enough to conclude that weekly receiving consistency, at least in terms of YPC, *doesn't* exist.

Like I said, I think there are a handful of players who are truly consistent. Slot receivers in particular (the Harvin's and Cruz's of the world) are more difficult to double-team than X or Z receivers, and thus less likely to be held down in any particular game.

As a general rule of thumb, though, beware of claims that Player X is a "safe bet this week" or Player Y is "really inconsistent." It's really, really easy to find patterns in past data, but really, really difficult to use those patterns to predict future data. As former philosophy majors (all 20 of us) like to say, labeling a player as 'consistent' is often done 'ex post facto,' or after the fact. In reality, weekly performances are a whole lot more random, and thus difficult to predict, than most people think.

- **Running Backs**

Even if consistency is valuable, it's quite unpredictable in regards to wide receivers. Among running backs, however, that might not be the case.

Before compiling any data, my hypothesis was that running backs who catch passes might be more consistent on a weekly basis than non-pass-catching backs because they have more ways to beat defenses. Running backs who can contribute as receivers necessarily have a lesser degree of volatility because they can score points in two ways.

To take a look at my theory, I sorted all running backs with at least 750 rushing yards over the past two years by the number of receptions they recorded. The top 25 running backs in terms of catches turned in an average of 10.3 "quality starts" per season. I defined a "quality start" as posting at least 6.0 percent of their year-end yardage total in any given game (and thus controlling for differences in talent and system). The pass-catching backs in this group include just who you'd imagine—Arian Foster, Ray Rice, and so on.

On the other hand, the bottom backs in terms of receptions—think Michael Turner, DeAngelo Williams, and Cedric Benson—recorded an average of only 9.0 "quality starts" per season. Remember, backs needed to turn in just 6.0 percent of *their own* year-end yardage total to obtain a "quality start," so the total production from each running back was irrelevant.

Thus, even in non-PPR systems, I think you need to at least consider paying for pass-catching backs over comparable players who don't haul in many passes. That might seem obvious, but I think the idea stands even if you have players projected for *the same number of points*.

- **Quarterbacks**

To determine if any certain quarterbacks are more consistent than others, I studied all quarterbacks who have thrown for at least 3,000 yards in a single season since 2007. Then, I sorted those passers by rushing yards.

I figured that versatile quarterbacks—those who can add points on the ground—are more consistent on a week-to-week basis. If so, we'd expect rushing quarterbacks to have more "quality starts" than the non-rushing quarterbacks. It turns out I was wrong. The top 25 quarterbacks in terms of single-season rushing yards posted an average of 10.1 games with at least 6.0 percent of their total fantasy points. Meanwhile, the pocket passers averaged 10.8 games with at least 6.0 percent of their year-end fantasy points.

So why haven't the rushing quarterbacks—a list that includes Cam Newton and Aaron Rodgers—been more consistent than the static quarterbacks? My hunch is that, despite some big names in the mobile quarterback category, the majority of the pocket passers are simply better than the running quarterbacks. In the latter category, for example, I examined five seasons from Peyton Manning alone. Drew Brees, Kurt Warner, and Brett Favre also fell into the non-rushing quarterback category on more than one occasion. On the other hand, some of the big rushing quarterbacks over the past five seasons include David Garrard, Josh Freeman, Ryan Fitzpatrick, and Matt Cassel.

Thus, I think what we're seeing is that there really aren't all that many passers whose rushing prowess can really make a fantasy impact. Actually, only Robert Griffin III, Russell Wilson, Cam Newton (twice), and Michael Vick (twice) have thrown for 3,000 yards and rushed for over 400 yards in the past six years. Three of those six seasons occurred in 2012. Of the six combined 3,000/400 seasons from RGIII, Wilson, Newton, and Vick, the average number of quality starts was 11.7—significantly higher than the total posted by pocket passers.

Ultimately, I think rushing quarterbacks really do possess more weekly consistency than other passers. The problem is that there aren't many true dual-threat quarterbacks out there. Sorry, but comparing a mobile quarterback like Jason Campbell or Ryan Fitzpatrick to Cam Newton is ridiculous.

As the nature of the college game changes and more RGIII-esque quarterbacks enter the league, you'll see a real change in how quarterbacks are viewed in fantasy circles. Why bank on Tom Brady beating defenses through the air when you can bet on Newton scoring points with both his arm and legs? Newton, Wilson, RGIII, and future NFL quarterbacks can throw for only 150 yards and still post spectacular fantasy numbers. While the risk of injury is always slightly greater with rushing quarterbacks, that's not as big of an issue in weekly leagues. Now is the time to jump on versatile quarterbacks before the general public catches up.

The Bottom Line on Consistency

Projecting players should be done on a case-by-case basis, but it's still useful to understand position consistency as a whole. Since their large sample size of plays makes running backs and quarterbacks the most consistent positions from week to week, Wally can gain an advantage by paying bigger bucks for those spots. Wally knows that when you allocate a lot of cap space to one player, you (typically) want as close to a "sure thing" as possible. Paying for consistency limits the volatility of Wally's lineups.

Meanwhile, Gary might actually want to consider paying for elite wide receivers and tight ends. Remember, since Gary is usually an underdog, he really wants to create as much variance in his lineups as he possibly can. Paying for wide receiver and tight ends—whose week-to-week play is more of a roller coaster than for quarterbacks or tight ends—could actually be a wise move.

In addition to analyzing entire positions, you should also be looking at position sub-categories. Certain types of players—namely mobile quarterbacks and pass-catching running backs—are more consistent on a weekly basis than other sorts of players. Such players possess a versatility that limits their downside; they stay relevant at all times, regardless of game situations. I remember owning Reggie Bush when he was on the Saints and wishing that New Orleans would get down early so that my pass-catching back could score some points; that's the power of position versatility. Harness it.

The 10 Laws of Lineup Creation

Once you have your player values sorted out, creating lineups is a piece of cake. You'll generally want to load your teams with the best values, but that's not always the case.

Law No. 1: You will always try to maximize projected points.

Although DPP is important, it's really just a tool that allows you to maximize the peak projected points for your team. You win weekly fantasy football by scoring points, not by maximizing value. It's usually best to fill your teams with the best values, but that's not always the case.

Law No. 2: You will occasionally bypass value.

In some cases, it is okay to bypass the best values to obtain pure bulk points. If your top values add up to only 90 percent of the cap, for example, you could substitute an elite player in for just one of those top values to maximize the overall projection of that lineup.

Law No. 3: You will seek maximum DPP in heads-up leagues.

Your heads-up strategy should be dictated by individual values. Fill your lineup with the top-rated values and see how the projected points match up with other lineups you can create. Ideally, you want your top values to fill up the cap and maximize projected points.

Law No. 4: You will maximize upside in tournaments.

In any league with more than five owners, you'll need a high-ceiling approach to win. In such leagues, you should be concerned solely with upside. You could search through the GILLESPIE comparables at rotoViz and look for the comps with the highest ceilings, for example. You'll also want to perform Law No. 5.

Law No. 5: You will always stack in tournaments.

There's no better way to maximize upside than by stacking—pairing a quarterback with one or more of his receivers/tight ends. You can also pair a quarterback-receiver duo with the opponent's running back. Stacking is generally not recommended in heads-up leagues.

Law No. 6: You will generally avoid anti-stacking.

Anti-stacking is pairing two players whose production is connected via an inverse relationship, i.e. as one goes up, the other will likely go down. An example of anti-stacking would be using two running backs in the same game.

Law No. 7: You will understand the week-to-week consistency of each position.

On a week-to-week basis, running back has proven to be the most consistent position, followed by quarterback, wide receiver, tight end, defense, and kicker.

Law No. 8: You will pay for consistent positions.

You should generally pay for the positions that are most likely to provide you with the points you're expecting—quarterback and running back. You can do this in all league types, but the primary goal in heads-up matchups should be maximizing total value—which is influenced by consistency—while the aim in tournaments should be maximizing upside, regardless of consistency.

Law No. 9: You will pay for pass-catching running backs and mobile quarterbacks.

Pass-catching running backs have proven to be more consistent than running backs who don't catch a lot of passes, even in non-PPR leagues. With more ways to beat defenses, pass-catching backs never really become irrelevant within the course of a game. The same appears to be true for running quarterbacks, although we need more data to know for sure.

Law No. 10: You will often fade elite wide receivers.

This isn't always the case, especially if you can pair an elite wide receiver with a high-upside quarterback. However, top receivers from one week are just barely more likely than defenses and kickers to finish near the top again in the next week, so you should focus your cap space on quarterback, running back, and even tight end.

A Look Ahead

As I mentioned at the start, I published *How to Dominate Your Draft* in 2012, and I have a revised edition available this year. I also published another new book called *What the Experts Don't Want You to Know*. Here are descriptions of both:

- **Fantasy Football for Smart People: How to Dominate Your Draft**

Fantasy Football for Smart People: How to Dominate Your Draft offers in-depth fantasy football draft strategy. The aim of the book is to provide advanced material for experienced fantasy football owners and "bottom line" analysis for novices. The book is not a collection of player rankings or projections, but rather an assessment of various draft strategies and fantasy football tenants. It will provide a solid foundation from which you can improve as an owner to dominate your draft for a decade to come.

- **Fantasy Football for Smart People: What the Experts Don't Want You to Know**

Fantasy Football for Smart People: What the Experts Don't Want You to Know contains solutions to 25 of fantasy football's most pressing questions. What's the best draft spot? Do running backs really break down after a lot of carries? How should you project rookies? What's the best waiver wire strategy? *What the Experts Don't Want You to Know* will answer these important questions—and give you a wealth of fantasy football knowledge along the way—to provide the edge you need to make the jump toward becoming an advanced fantasy football owner.

If you liked *How to Cash In on the Future of the Game,* I promise you'll enjoy my two other titles and all of the other new books in my **Fantasy Football for Smart People** series. To prove it, I decided to publish a sample from each. Enjoy.

What the Experts Don't Want You to Know

What's the typical age (and rate) of decline for each position?

Did you know running backs come into the NFL at near peak efficiency? How about that quarterbacks can produce elite fantasy numbers well into their 30s? Did you know the peak age of production for wide receivers is 26? Up until a little while ago, neither did I.

Understanding the age at which players break down has numerous uses in both redraft and keeper leagues. Actually, I'd argue that drafting with a keen understanding of rates of decline is one of the easiest ways to improve your team. It's also something hardly anyone does.

The ultimate goal with every single one of your fantasy football picks is to acquire players whose past production doesn't reflect how they'll perform in the future. There's no better way to predict when a player will break out than to know at which ages other players at his position have done it in the past.

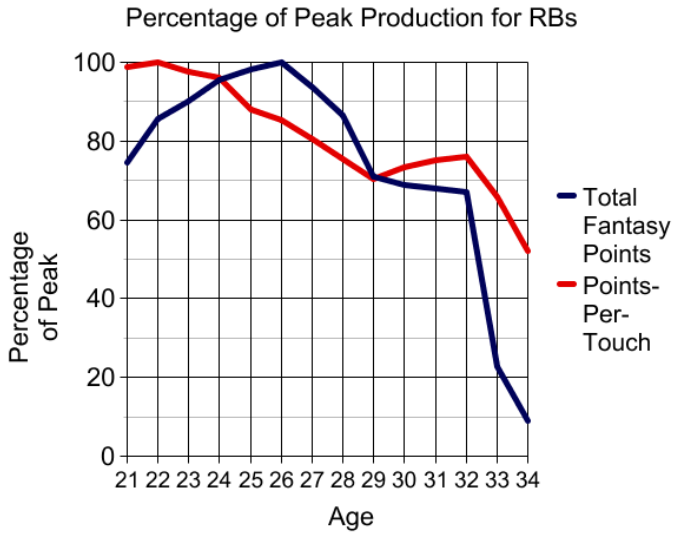
- **Running Backs**

Heading into the 2012 season, many fantasy owners were high on Benjarvus Green-Ellis. After proving to be a touchdown machine in New England, "The Lawfirm" was set to rack up touches as Cincinnati's lead running back.

Green-Ellis did indeed see a heavy workload in 2012 with 300 total touches. Despite finishing with the 10th-most touches for any running back in the league, Green-Ellis checked in at just 22nd in fantasy points at the position, due primarily to horrible efficiency; 3.9 YPC, 4.7 YPR, and a touchdown on just two percent of his touches.

So what went wrong? Green-Ellis was in a running back-friendly situation in Cincinnati. Further, at age 27, Green-Ellis was just entering the prime of his career, right? Maybe not.

I recently researched the production for all running backs with at least 100 touches in a season since 2000. Below, I charted those backs based on their total production and efficiency at each age.



Contrary to popular belief, running backs don't see a dramatic drop in their total production around age 30. Instead, that decline typically occurs after their age 26 season. Yes, the typical running back's overall production peaks before his 27th birthday. From there, the drop is a steep one, with the average 29-year old back producing only 70 percent of the fantasy points he generated at his peak.

The decline in efficiency is even more amazing. The average NFL running back records the highest points-per-touch at age 22—usually his rookie season or second year in the league. From there, the drop is pretty steady until age 30, when there's a slight increase. That small jump is probably due to more talented backs staying in the league while lesser players have been forced out. The rise is short-lived, with the average running back seeing a dramatic decrease in efficiency by age 33.

Looking at the chart, it's pretty clear that running backs don't peak at age 30. Actually, if you're considering drafting a 30-year old back, you can probably expect his production to remain steady for at least a couple of years. That production is nowhere near his past peak, but as long as that's factored into your decision on where to draft him, you should be fine.

The running backs that you might want to avoid most are those around the ages of 27 to 29. Most backs in that range are going to see a drop in production and efficiency—often a dramatic one—but it usually won't be accounted for in their ADP. That means you'll be paying for a player as if he's producing at his peak when he's more likely to give you about 85 percent of what you're expecting.

The best value on running backs, perhaps, is in the 21-24 range. Young running backs who have produced at a good-but-not-great level are typically undervalued. By age 24, both their efficiency and overall production should be within about five percent of its peak.

Looking at the graph, you can see just how valuable rookie and second-year running backs can be in dynasty leagues. Those players will inevitably see spikes in production, whereas runners in their mid-to-late 20s will likely see a drop in the coming years.

Let's assume you're considering two backs: a 23-year old coming off of a season with 1,000 total yards and eight touchdowns and a 27-year old back coming off of a season with 1,200 yards and 11 touchdowns. For most, the decision to grab the older runner would be an easy one. But let's take a look at their three-year outlooks, assuming they follow the typical running back production curve. . .

23-Year Old Back (Year Y = 148 points)

- **Year Y+1 = 155 points**
- **Year Y+2 = 167 points**
- **Year Y+3 = 170 points**

Three-Year Average: 164 points

27-Year Old Back (Year Y = 186 points)

- **Year Y+1 = 179 points**
- **Year Y+2 = 163 points**
- **Year Y+3 = 130 points**

Three-Year Average: 157 points

Although the older back would be projected to score more points in the upcoming season, he'd be below the younger back in the subsequent two years. Over a three-year period—a good timeframe to consider in dynasty leagues—the younger back with the lesser stats would be projected at an average of seven fewer points per season. Those are points you'd miss if you believed running backs were in their peak years until age 30.

It's also interesting to see just how little deviation there is in the projections for the young running back as opposed to the 27-year old—a difference of only 15 points compared to 49. That's pretty good evidence that young running backs are probably safer bets than older ones. Whereas it can be tempting to hang your hat on an old, "reliable" back like Steven Jackson, it's the running backs ages 23 to 26 who are really the safe picks. In the early portions of the draft when your goal should be risk-minimization, you might be able to find value—and safety—in young running backs.

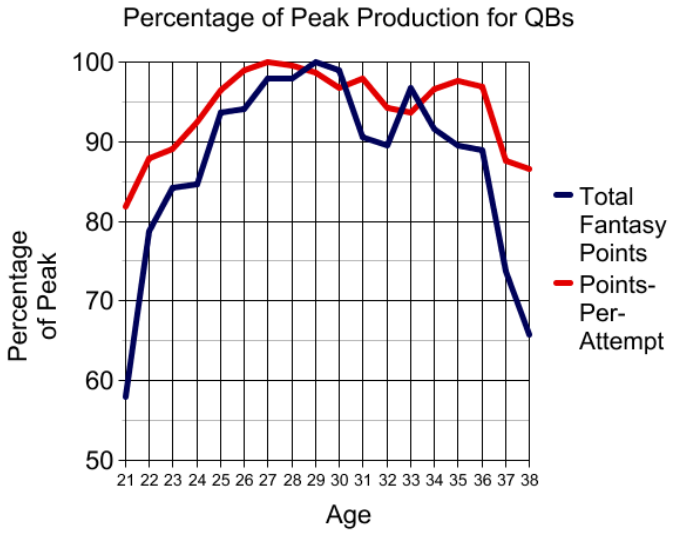
It's important to note that the graph is hardly a comprehensive draft tool; there are tons of factors that go into each player's stock, so it shouldn't be used in isolation. However, it's still useful to know that running backs typically peak far earlier than most people believe, and you can utilize that information to your advantage.

And when other owners are jumping on the prototypical steady 28-year old running back because he's still on "the right side of 30," you can acquire value on the young guns who aren't on the wrong side of 26.

- **Quarterbacks**

Heading into the 2013 season, there are a handful of big-name quarterbacks nearing the tail end of their careers; Drew Brees (34), Tom Brady (36), and Peyton Manning (37) are still playing at a high level, but how long can they maintain it? Maybe longer than you think.

While running backs are an "anti-wine"—getting worse with age—quarterbacks are much different. Below, I charted the production for starting quarterbacks over the past two decades.



Unlike running backs, quarterbacks typically increase their overall production and efficiency at a gradual pace. Quarterback efficiency peaks at age 27 and overall fantasy production peaks two years later. Remarkably, quarterbacks have maintained their high levels of efficiency until their mid-30s. Meanwhile, overall production has dipped at two points—around age 31 and again at age 37.

Interestingly, there's a small jump in both efficiency and production for quarterbacks in their mid- to late-30s. That's likely due to a "survivor bias"—the fact that the best quarterbacks remain in the league and continue to play at a high level while the lesser passers have been forced out. That explains the jump in total fantasy points per quarterback at age 33; quarterbacks don't really get better at that age, but rather the elite ones—Brett Favre, Tom Brady, and so on—remain in the league and boost the numbers.

- **Using the Chart in 2013 and Beyond**

Understanding historic trends in quarterback decline can be useful in both redraft and keeper leagues. While other owners are perhaps downgrading Brady this year in favor of a player like Cam Newton, you can rest easy knowing that Brady's overall production is likely to resemble that from 2012.

In keeper leagues, you can and should take advantage of the value of middle-aged quarterbacks. In terms of overall production, quarterbacks typically post around 90 percent of

their peak (or greater) from ages 25 to 36. That's a huge window, meaning jumping on a 31-year old quarterback coming off of a lackluster season might not be such a bad idea.

In studying quarterbacks, it was evident that they age in a much different manner than running backs. The ages of decline are obviously different, but so are the rates. Running backs typically see a gradual decline; the production for a 32-year old running back is often slightly worse than it was the prior year, which was slightly worse than it was before that, and so on.

On the other hand, quarterbacks generally "lose it" all at once. Instead of seeing Brees, Brady, & Co. progressively produce worse numbers, we'll probably see a more distinct drop before they eventually leave the league. That can make it more difficult to project quarterbacks because it's really an "all-or-nothing" situation.

Thus, instead of projecting a player like Peyton Manning with, say, 90 percent of his 2012 fantasy points, it's really more of a game of percentages. Since quarterback production typically falls off of a cliff, we're better off saying that Manning has a good chance to repeat his 2012 production, but there's a relatively small chance that 2013 is the year he tanks. As he continues to age, the probability increases. That means aging quarterbacks can potentially offer value if you're willing to take on that risk in favor of their upside. Manning in particular is perhaps a risk because of his age and health, but there's still a really good chance that he finishes 2013 as a top five quarterback.

- **The "Real" Quarterback Prime Years**

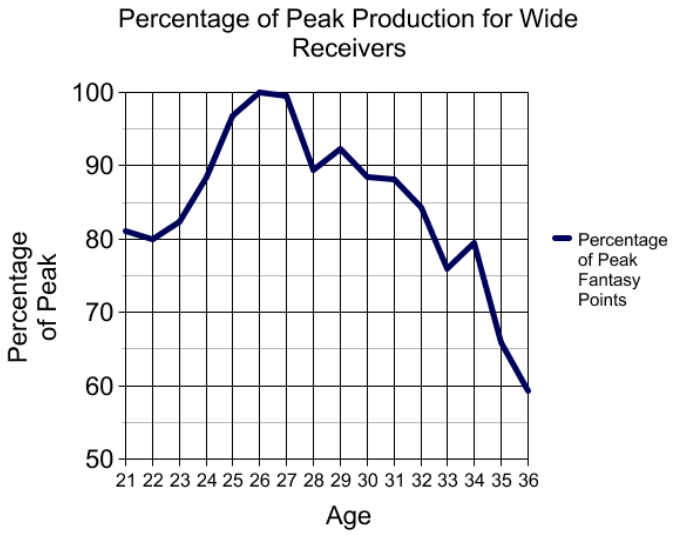
The chart displays historic data for quarterbacks, but there might be some reason to believe that the range of peak years for current quarterbacks has been extended. First, as I showed earlier, rookie quarterbacks have produced at unbelievable rates over the past few seasons. They might be outliers, but quarterbacks are coming into the league more prepared than ever before. Plus, with NFL teams finally altering their offenses to fit the skill sets of their rookie passers (see Cam Newton and RGIII), first and second-year quarterbacks can really produce.

On the other end of the spectrum, aging quarterbacks have been able to produce at unprecedented levels. With advances in conditioning and injury prevention, there's good reason to think that "40 is the new 37" when it comes to quarterbacks. If that's the case, you can add Manning (37) to the list of "over-the-hill" quarterbacks worthy of consideration in 2013 redraft leagues.

- **Wide Receivers**

After a 2011 season in which he participated in only seven games and tied his career-low for touchdowns, Texans wide receiver Andre Johnson exploded for 112 receptions and 1,598 yards in 2012. The breakout wasn't really too surprising for one of the game's elite receivers; Johnson had three prior 100-catch seasons and two years with at least 1,500 yards. We know that Johnson won't be able to continue his dominance forever, but when will his decline strike?

Running backs are on one end of the NFL career spectrum, typically seeing a gradual drop in efficiency almost immediately after they enter the league. On the other end are quarterbacks, who can accomplish great things late in their careers. The outlook for wide receivers probably falls somewhere between the two.



Like quarterbacks, wide receivers take some time to develop. There have been only six rookie wide receivers since 2000 to finish in the top 24 at their position. That's pretty remarkable, especially when you consider that three of them—A.J. Green, Julio Jones, and Torrey Smith—came in a single year.

Unlike quarterbacks, however, wide receivers can't sustain a high level of play into their mid-30s. They're more like running backs in that they typically see a gradual decline once they hit their peak. That peak has historically come at age 26. Actually, the three-year window from ages 25 to 27 is often the most productive for wide receivers. Over the past decade, receivers in each age of that range—25, 26, and 27—have produced over 97 percent of their peak production, as a whole.

If we loosen the parameters of "peak production," you can see that receivers can be quite productive for a fairly long period of time. Historically, they've been at or near 90 percent of their peak production from ages 24 to 31—a period of time much longer than that for running backs, who are at or near 90 percent of peak production from ages 23 to 28.

So what's the age of decline for wide receivers? As usual, there's no single number after which receivers become ineffective, but they usually see a semi-steep drop in production around age 28, and then another around age 33. Actually, if a 27-year old wide receiver who just hauled in 100 receptions for 1,500 yards and 10 touchdowns followed the typical wide receiver career path exactly, he'd post around 90 grabs for 1,350 yards and nine touchdowns in the following season and, by age 33, those numbers would drop to right around 75 catches for 1,125 yards and seven scores. By age 35, most wide receivers are washed up. The few that remain in the league typically have a difficult time putting up respectable fantasy numbers.

- **Using the Wide Receiver Aging Chart**

Going back to Andre Johnson, we know based on historic data that a drop in production is likely. If you're projecting Johnson to duplicate his 2012 numbers in 2013, you'll probably be disappointed. It's not as if Johnson can't do it or that his stats will follow the typical wide receiver aging pattern to a tee, but rather the likelihood of continued dominance decreases each year, especially as he enters his mid-30s.

While we can certainly use historic decline rates in redraft leagues for players like Johnson, the numbers are far more useful for those in keeper or dynasty leagues. If you're looking at two receivers with similar production, but one is coming off of his age 24 season and the other off of his age 27 season, your choice should be clear.

Let's break it down. Suppose both your 24 and 27-year old targets recently recorded 90 catches for 1,400 yards and 10 touchdowns. If you're in a league that allows you to keep players for three years, you might assume there isn't much difference between the two receivers; the 27-year old should be fine until he's 30, right?

Not so fast. If each receiver's future production resembled that of the average wide receiver, their projected numbers over the next three seasons would be quite different:

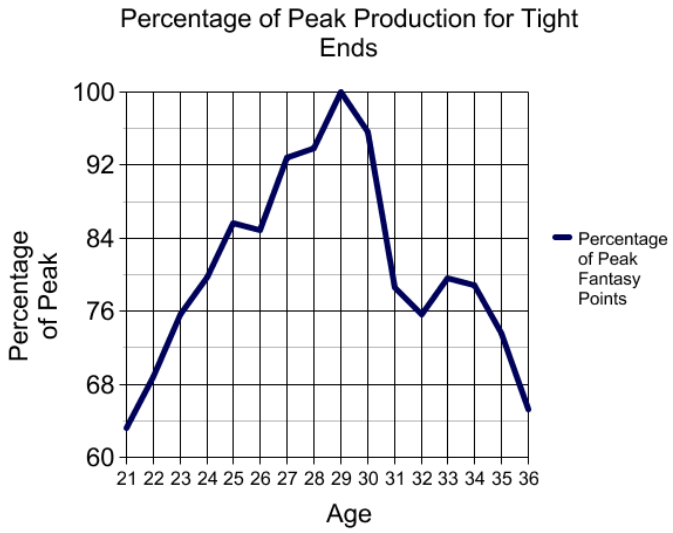
24-Year Old: 296 catches for 4,605 yards and 32 touchdowns (949 PPR points—316 points per season)

27-Year Old: 246 catches for 3,819 yards and 27 touchdowns (790 PPR points—263 points per season)

Pretty remarkable, huh? The "same" players in terms of overall talent and situation, on average, would be separated by 53 points per year based solely on a three-year gap in age. So if you want to know why you should have A.J. Green ranked ahead of Calvin Johnson in dynasty leagues, this is it.

- **Tight Ends**

Let's get right into it. Below, I charted tight end production over the past decade-plus, sorted by age.

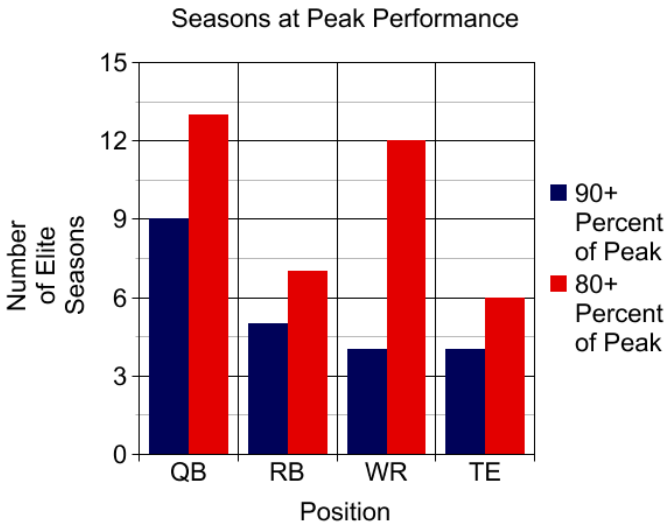


If that graph were a mountain, it would be difficult to climb on both ends. That's because tight ends have historically had a smaller range of peak years than quarterbacks, receivers, and even running backs. Tight ends take a long time to develop—the probability of a rookie tight end posting respectable fantasy numbers is almost zero—and they see a steep decline in their early-30s.

Historically, the typical tight end has produced only four seasons with at least 90 percent of his peak production. In that way, they're very comparable to wide receivers, who also record only a few elite years. The difference is that wide receivers sustain a decent level of play for a much longer time than tight ends.

But why? It's possible that the wear and tear of playing the tight end position takes its toll. By the time tight ends hit their 30s, they're just worn out. That might change with the rise of pure pass-catching tight ends who don't have to deal with the hassle of blocking, but it's unclear right now.

To show you the small window of opportunity for the average tight end, check out this graph.



This gives you a really good idea of the number of quality (80+ percent of peak) and elite (90+ percent of peak) seasons for the average player at each position. Unsurprisingly, quarterbacks have the longest windows with an average of 13 quality seasons. Meanwhile, tight ends have the fewest quality seasons (six) and elite seasons (four).

So what does this mean for you in fantasy leagues? I think it actually both helps and hurts tight end value, depending what league you're in. In dynasty leagues, tight ends have to be downgraded since most of them won't provide you with long-term production. In redraft leagues, however, the lack of tight ends playing at an elite level at any given time could actually inflate their value. Remember, a fundamental concept of sound fantasy football drafting strategy is scarcity; elite tight ends are a scare (and surprisingly consistent) resource, meaning they're valuable.

In both dynasty and redraft leagues, target tight ends entering their mid-20s. It's in that range that most tight ends see a dramatic spike in play. It's unclear why it takes tight ends so long to develop in the NFL, but it tends to happen pretty quickly when it does. By targeting mid-20s tight ends before they break out (and passing on middle-aged tight ends prior to their inevitable decline), you can acquire value.

And one last point: Tony Gonzalez is a freak of nature and none of this applies to him. Draft him until he's 55 years old.

- **The Bottom Line**

Age-based projections are the way of the future, but they're rarely utilized. I'd go as far as to say that there aren't more than a couple player traits you should consider before looking at age. The reason is that rates of decline aren't utilized by the majority of fantasy owners, so they're not factored into ADP.

Owners in dynasty leagues in particular need to have a keen grasp on age-based projections. It's extremely useful to know that the difference between a 26 and 28-year old running backs is far different than that for tight ends of the same age.

Running backs enter the league at near peak efficiency, and it's a steady decline from there. Their peak total production typically occurs around age 26. Quarterbacks take longer to develop, but they can sustain a high level of play well into their 30s. Wide receivers also take a relatively long time to develop, although their play usually drops off by the time they hit their late-20s. Nonetheless, the average wide receiver produces a remarkable 12 seasons with at least 80 percent of their peak production. That number is only six for tight ends—the position with the smallest window of opportunity.

How can you tell which players are safe and which are risky?

At rotoViz, you can use custom similarity score apps for your projections. You specify the player you want to analyze, and the apps provide 20 comparables—the most similar players in terms of past stats and other criteria, such as age, height, and weight. Frank DuPont, the founder of rotoViz, explains it best:

> *Similarity based projections are probably the most powerful thing that I use to draft my fantasy team that most fantasy owners just don't have at their fingertips. Similarity based projections address shortfalls in other projection systems that might have a tough time accounting for variables that aren't linear (age for instance) or perhaps variables that might interact with each other (like receiver size and touchdown totals). Instead of saying that a receiving yard is worth 0.7 receiving yards when projecting the following season's fantasy results, as a regression formula might tell you, I just look at how a group of similar players performed and make an assumption that my subject player might fit within the range of how similar receivers performed.*
>
> *Similarity scores will do generally a good job of capturing the way that variables might interact. A variable like total carries could have a different impact on a running back depending on that back's age or size. Similarity scores recognize the difficulty of forecasting with a bunch of variables that might not be linear and might interact with each other, making the simple assumption that if you look at a similar group, the results will be similar. If you take the time to backtest this assumption, you'll find that similarity scores do improve on the predictive ability of a simple linear regression.*
>
> *One sort of pre-emptive note is that similarity scores are going to have a very difficult time addressing extreme outliers. Similarity scores use the past to forecast the future, so when a reasonable approximation can't be found in the past, it's going to go to the next closest thing, which might not be that close.*

By using similarity scores and generating comparables for players we want to analyze, we can gain all sorts of unique insights that wouldn't otherwise be available. In the sections below, I've used the similarity apps at rotoViz to project the ceilings and floors (upside and downside) for the elite players at each position. It's obviously vital to hit on the first few picks in your draft—if you find studs in the first four rounds, you can pretty much "bullshit" your way to a championship with sound waiver wire additions.

Anyway, when we're searching for value in the early rounds, it's often advantageous to value safety, i.e. players with high floors. In an area of the draft where the cost is high and every player possesses great upside, owners have the most to gain, ironically, by minimizing their losses. In most cases, the players with the highest floors are those with the greatest projected points within the bottom tier of their similar players. In effect, we're asking "what's the worst this guy could do?"

Below, I'll use the similarity score apps to make a case for one elite player at each position.

- **Quarterbacks**

If you participate in a 12-team fantasy football league in which every owner is evenly matched, you'll have an 8.3 percent chance to win the championship, i.e. you're an underdog from the start. Because of the nature of fantasy football, it's typically best to implement a high-risk draft strategy. By seeking high-risk, high-reward players, you'll maximize your chances of long-term success.

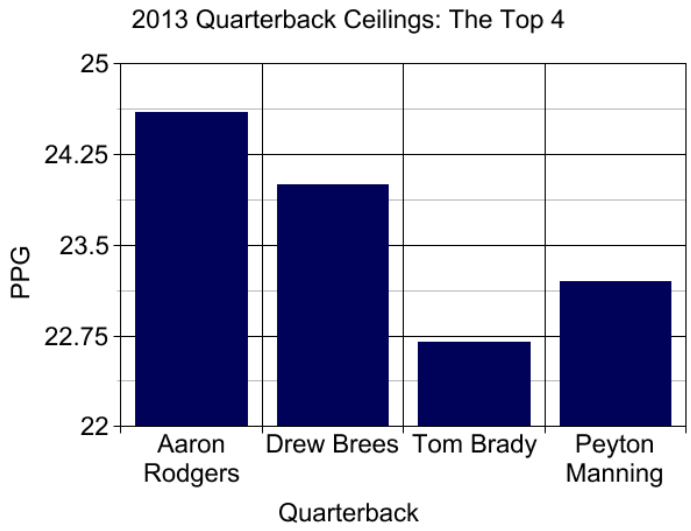
Having said that, I typically advocate utilizing a low-variance strategy early in drafts—the first round or two—emphasizing safety over upside. Every player has a high ceiling in the initial portion of drafts, meaning you have the most to gain by maximizing the floors of your selections. That's the primary impetus behind the popularity of drafting elite quarterbacks; Aaron Rodgers, Drew Brees & Co. have value in being so reliable from season to season.

Of course, you can't seek consistency at all costs. Every draft pick comes with at the price of forgoing other selections, and drafting a quarterback early could leave you bare at other positions. Further, quarterback is a relatively deep position—you can find a Matthew Stafford, Tony Romo, or Matt Ryan in the middle rounds—whereas potentially elite running backs are much scarcer. The cost of obtaining the consistency of a player like Rodgers is passing on the scarcity of a running back like Doug Martin.

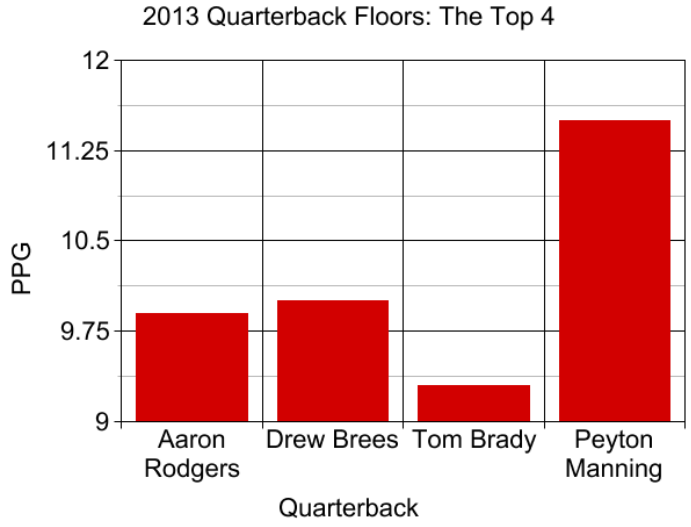
It sure would be nice if there were an elite quarterback who didn't cost a first-round pick. One who has a track record of big-time fantasy success. One with three play-makers at wide receiver and a talented defense to get him the ball. One with both the safety and upside of his more highly-coveted counterparts.

Oh, now wait. There's a quarterback just like that getting drafted in the back of the second round (or even as late as the fourth in some PPR leagues), and his name is Peyton Manning. Surprised? So was I.

Using the custom QB Similarity Scores App, I calculated the upside and downside for the draft's top four quarterbacks—Rodgers, Brees, Brady, and Manning—by charting the fantasy points scored by their top four and bottom four comparables, respectively, in each statistical category (minimum of six games played).



In terms of upside, the quarterbacks are all grouped together pretty tightly. Rodgers has the advantage because of his rushing ability and age, while Brees is right behind him since he could very well become the first quarterback to throw 6,000 passes in one season. For the most part, though, there's not a massive difference here. Now let's take a look at the players' floors. . .



Manning's bottom four comparables in each category have generated a floor that's nearly two fantasy points per game higher than the comparables for Rodgers, Brees, and Brady. You could argue that Manning has the best offensive weapons of the bunch, and he posted 4,659 yards and 37 touchdowns in his first year in Denver. There's even more upside to be had as Manning's comfort level with his teammates and new town grows.

Now let's talk about the obvious perils. It's not like one season of solid play completely erases all risks that Manning assumed entering the 2012 season. He's still pretty fresh off of four

neck surgeries, and at 37 years old, Manning is right on the edge of the historic quarterback production cliff.

As it is with any player, the question is if the risks outweigh the rewards. As I mentioned earlier, the risk is a late-second round pick—significantly better than the mid-first to early-second you'd have to spend on Rodgers, Brees, or Brady. Actually, Manning's current ADP is at least eight spots behind each of the other three passers. Nonetheless, I'd argue Manning is nearly as safe as the trio.

To get a decent sense of the risk/reward surrounding each player, I added the ceiling and floor production—the average points per game for the top four comparables plus the average for the bottom four comparables in each statistical category.

1. **Peyton Manning: 34.7**
2. **Aaron Rodgers: 34.5**
3. **Drew Brees: 34.0**
4. **Tom Brady: 32.0**

Pretty good for a player getting selected just a few spots ahead of Robert Griffin III. It's also worth noting that Manning was the only quarterback of the four that had all of his comparables play in the majority of games. While the average games played for the comparables of Rodgers, Brees, and Brady was between 13.7 and 13.9, Manning's comparables participated in 15.2 games per season.

Ultimately, I think the QB Similarity Scores App paints a pretty picture for the veteran quarterback. There are of course concerns, but even considering Manning's age and potential neck problems, his floor is at least similar to "The Big Three" first-round quarterbacks. If that's the case, he's quality value at his 20th overall ADP.

Further, if you can draft Manning in the back of the second round, you won't have to worry as much about missing out on running back scarcity. With an elite runner in the first round and another top back in the third, you could legitimately be looking at a core of Arian Foster/Doug Martin, Peyton Manning, and Stevan Ridley/Matt Forte.

If Manning is able to make it through another 16-game season in 2013, you could potentially have your consistency cake and it eat it too.

- **Running Backs**

A lot of fantasy football articles are written for shock value; they often have attention-grabbing titles and make outrageous claims for the sole purpose of getting clicks.

This isn't one of them.

Tampa Bay Bucs running back Doug Martin truly deserves consideration as the top overall player on your board in 2013. Here's why.

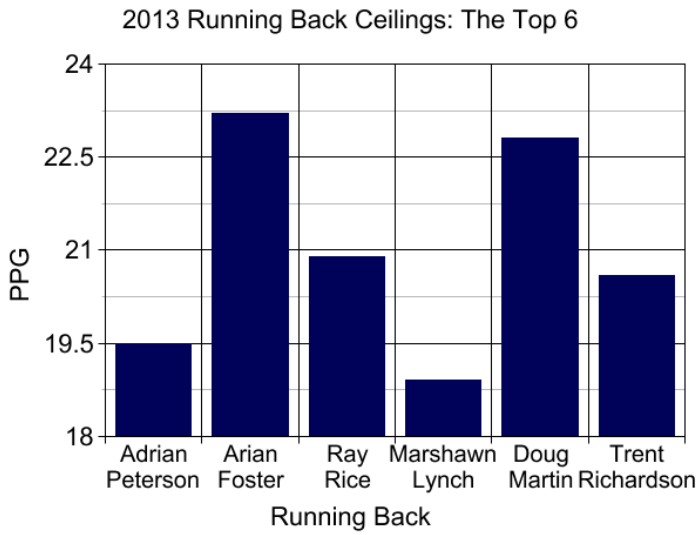
In 2012, Martin finished second among all running backs in fantasy points in both standard and PPR leagues. The rookie burst onto the scene with over 1,900 total yards, 49 receptions, and 12 total touchdowns.

As it stands right now, Martin is getting selected as the fifth running back off of the board in early drafts; his No. 5 overall ADP puts him behind Adrian Peterson, Arian Foster, Ray Rice, and Marshawn Lynch, in that order.

Since you'll need to use an early first-round pick on Martin to acquire his services, your focus should be on how safe he is, i.e. how likely he is to be a bust in 2013. To determine the ceilings and floors for the draft's elite running backs, I used the RB Similarity Score app. Since the similarity apps provide a range of potential outcomes for the upcoming season, they can address the uncertainty built into forecasting any given player.

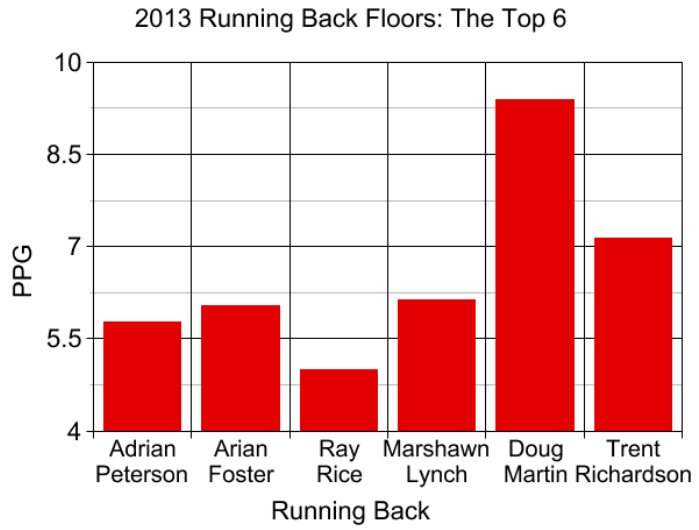
It's true that the similarity apps could have trouble projecting players coming off of outlying seasons; since there aren't too many seasons like Peterson's 2012 year, for example, the regression we see in his comps might be slightly overblown. Having said that, I think there's still a lot of value in assessing the extremes of the comps—the top and bottom 20 percent. The majority of evenly-priced players will have very similar projected points. In analyzing the extremes, though, we can get a sense of the deviation for historical comps, i.e. what's the upside and the downside for any particular player?

I charted the ceilings for the top six backs in terms of current ADP—the five listed above and Trent Richardson.



Note that the chart ranges from 18 to 24 PPG, so the expected production for the top six backs is similar. Again, Peterson's ceiling is likely higher than what's listed here, but it's still interesting to see how the backs' upside coincides with age. I don't think it's any coincidence that Lynch, coming off of a season with very similar numbers to Martin, possesses the lowest ceiling of the bunch heading into his age 27 season. In terms of upside alone, you have to wonder why Lynch is getting drafted ahead of Martin or Richardson.

That question intensifies when we examine the floors for the backs.

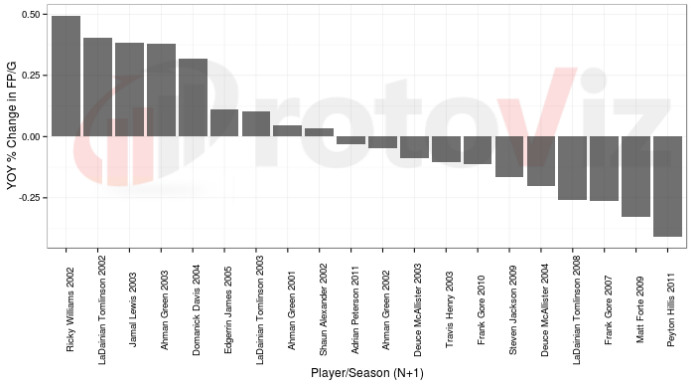


Here, the value of the young backs shines. Despite rushing for only 950 yards at 3.56 YPC in his rookie season, Richardson joins Martin as having the "safest" historical comps. That's not surprising when you consider that running backs typically peak in efficiency right when they come into the league, and it's a gradual decline from there. When you have young backs at the peak of their games and you put them in high-volume situations without much

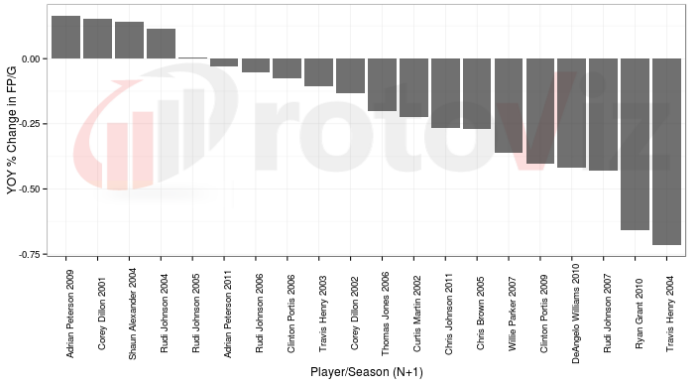
competition—as is the case with both Martin and Richardson—you have the makings of low-risk/high-reward players.

That idea is confirmed when we look at the plots for year-to-year change in fantasy points for the comparables of Martin and Lynch (contained within the similarity apps).

Doug Martin Plot



Marshawn Lynch Plot



The novelty of rotoViz is allowing for superior data visualization. There's no better way to visualize the possible 2013 seasons for Martin and Lynch than the plots above. Could Lynch outperform Martin in 2013? Sure, but it's not likely.

Think about this. Martin has five comps who posted a +25% change in fantasy points per game. Lynch has zero. Lynch has eight comps who recorded a -25% change in PPG and two that cut their PPG in half. Martin has four and zero, respectively. If that's not evidence that Martin has a dramatically higher ceiling *and* floor than Lynch, I don't know what is.

- **Games Played**

While the number of games played by the backs' comps is susceptible to randomness, it's still interesting to see that the projected health for Rice, Martin, and Richardson—the three youngest backs examined here—is remarkably better than that for Foster, Peterson, and

Lynch (particularly the latter two). Take a look at the average games played for the runners' four worst comps:

- **Peterson: 4.8**
- **Foster: 8.8**
- **Rice: 10.3**
- **Lynch: 5.8**
- **Martin: 11.8**
- **Richardson: 10.0**

The numbers are representative of each player's probability of staying on the field in 2013. As you'd imagine, younger is better.

Martin is a young back at the peak of his game. Likely to see 350-plus touches in 2013, Martin is a good bet to again beat out fellow second-year back Richardson in terms of YPC. Martin's ceiling is the second-highest of the top six backs—behind only Foster—and his floor is the greatest by a wide margin. The floor for Martin's comps is actually nearly double that for those of Rice.

In terms of the top overall pick, Martin's name should be in there with Peterson and Foster. The Texans running back will be 27 when the 2013 season begins. It's difficult to uncover seasons similar to Peterson's 2012, but he's about to turn 28. Although AP caught 40 passes last year, he's not the same threat as Martin out of the backfield, and pass-catching backs have historically proven to be safer options at the position.

Martin is by no means the surefire top player on the board, but to dismiss him out of hand would be a mistake.

- **Wide Receivers**

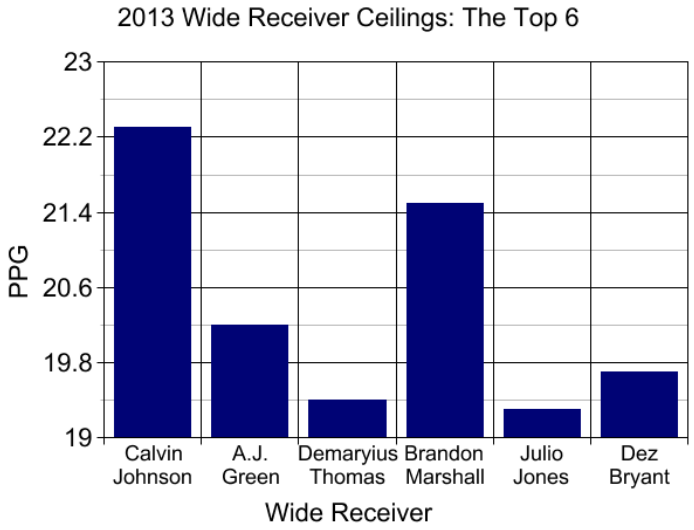
The distinguishing feature of the **similarity score apps**—the trait that gives them an advantage over traditional projections—is that they provide a range of potential outcomes for any given player. There's a certain level of uncertainty in any prediction, and the apps account for that.

When implementing uncertainty into projections, the hurdle many fail to overcome is establishing a definitive prediction at all. It can be tempting to examine a player's spectrum of potential outcomes and say, "Well, this guy could score 22 points per game, or he could score 11, but he'll probably be somewhere in between. And this player might score 20 points per game, or he could score 9 points per game, but he'll also probably be somewhere in between. So what the hell do I do?"

The most obvious solution is to generate an average for each player based on their comparables. That certainly has its advantages; taking the mean production of 20 very similar players will generally give you a quality projection.

However, doing that ignores a feature of the similarity scores that really makes them so useful—the magnitude of their range of outcomes. A player whose floor is 10 points and whose ceiling is 20 points could very well have the same mean projection as a player with a 13-point floor and 17-point ceiling. But there's a difference between the two, and it needs to be captured.

I charted the ceilings for the top half-dozen wide receivers in terms of current ADP—the only six who are getting selected in the first two rounds. These are the ceiling projections for each player based on their top four comparables in each statistical category for PPR leagues—receptions, yards, and touchdowns. I threw out any comps who didn't participate in at least six games.

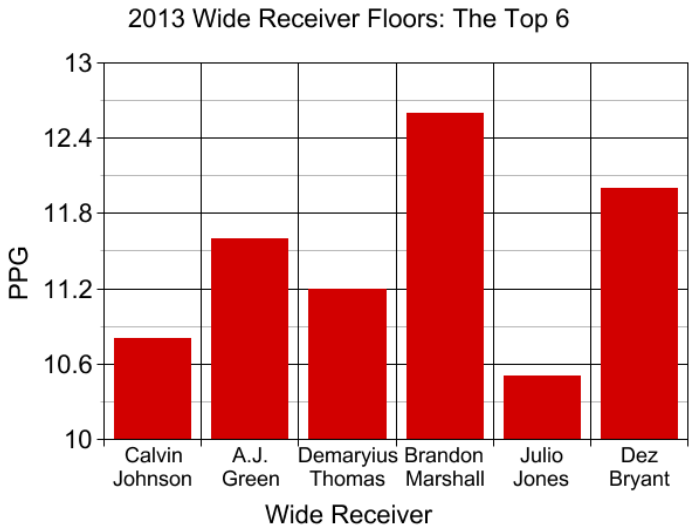


It's not too surprising to see Calvin Johnson with the highest projected ceiling. In reality, his ceiling is probably even higher than listed because it's difficult to find comps for a player coming off of a 122/1,964/5 season.

While A.J. Green, Demaryius Thomas, Julio Jones, and Dez Bryant all possess similar upside, it's interesting to see Brandon Marshall towering above them with a ceiling of 21.5 points per game. Marshall's 118 receptions in 2012 don't hurt, but he'd still be the clear No. 2 if his peak receptions per game—currently at 6.69—were closer to the average of the group (which is barely less at 6.57).

Marshall's ceiling as a highly-targeted No. 1 option with Jay Cutler at quarterback is probably higher than that for Thomas and Jones, at least, simply because they have to share looks with other talented receivers. Jones in particular probably doesn't have the sort of upside everyone who is drafting him in the middle of the second round is expecting. Unless the Falcons completely shift their game plan to emphasize Jones over Roddy White *and* defenses tailor their schemes to allow Jones to see more single-coverage, he might not have top three potential.

Since all of these receivers are currently getting selected in the first two rounds, it might be more valuable to examine their floors. The easiest way to acquire value in the first few rounds is to minimize risk; everyone has awesome upside, so it's just as easy to hit a home run by simply trying to make contact as it is by swinging for the fences.



Quite surprisingly, Marshall has a higher floor than each of the other top-rated receivers. Again, Johnson's numbers are deflated due to a lack of truly similar comps. You could say he'll see increased defensive attention coming off of one of the premiere seasons in NFL history, but how much more coverage could he really see?

To get a decent sense of the risk/reward surrounding each player, I added the ceiling and floor production—the average points per game for the top four comparables plus the average for the bottom four comparables in each statistical category.

1. Brandon Marshall: 34.1
2. Calvin Johnson: 33.1
3. A.J. Green: 31.8
4. Dez Bryant: 31.7
5. Demaryius Thomas: 30.6
6. Julio Jones: 29.8

There seems to be a bigger difference between Marshall and Jones than their respective ADPs (2.02 for Marshall and 2.05 for Jones) suggest. Although Jones is entering the sought-after third year of his career, wide receivers at his age have still historically produced slightly worse numbers than those at Marshall's. Plus, their ages are already factored into their comps. I wouldn't specifically target Marshall in a dynasty league, but for 2013 alone, there's probably only one receiver in fantasy football who should be rated higher.

- **Tight Ends**

Aaron Hernandez is a short (6-1) tight end who has never played 16 games in a year, doesn't have a 1,000-yard season to his name, and plays as the No. 2 tight end on his own team. But

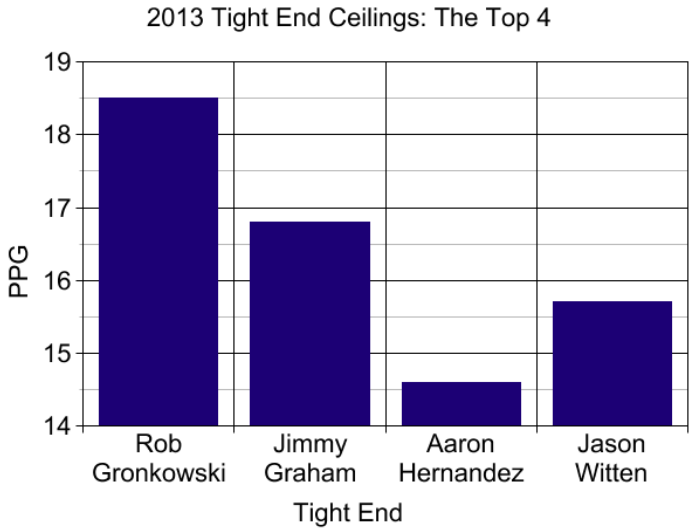
he's still getting selected in the third round of fantasy drafts as the third tight end off of the board. Why?

In my opinion, Hernandez has a limited ceiling, even in the Patriots' potent offense. Although fellow tight end Rob Gronkowski obviously doesn't *completely* prevent Hernandez from lighting it up, having a Pro Bowl tight end as the first option over the middle of the field is still a drain on Hernandez's fantasy upside. Unless Gronkowski gets hurt, I don't think Hernandez can *really* break out.

But who really cares about my opinion? You should really just concern yourself with what the numbers say regarding Hernandez in 2013. In regards to his ceiling and floor, the **Tight End Similarity Score app** has a lot to say.

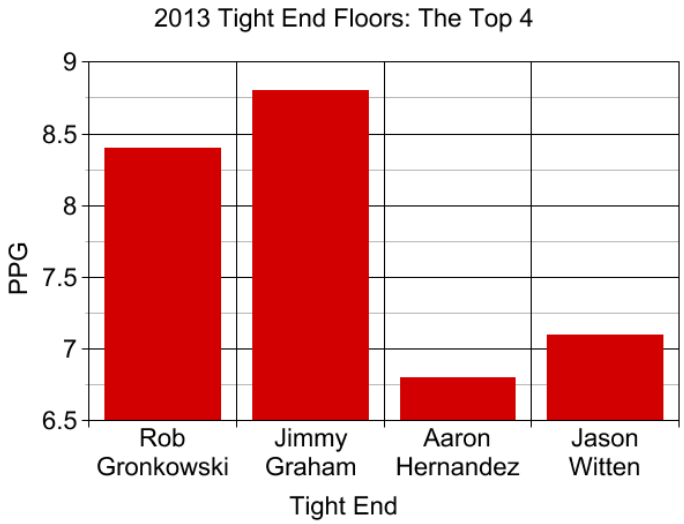
At the tight end position, two players—Gronkowski and Jimmy Graham—stand out above the rest with current ADPs of 1.11 and 2.03, respectively. A tier below, Hernandez checks in at third at 3.08, and Jason Witten is getting drafted fourth at 4.02.

I graphed the potential upside for those top four tight ends based on their top comps. I used PPR scoring.



Not surprisingly, Gronkowski and Graham lead the pack. Gronkowski's upside in particular is outstanding, as his peak season is 1.7 points per game higher than Graham's. More important, the numbers seem to confirm my suspicion that Hernandez isn't necessarily a high-upside player. His top comps have posted 1.1 points per game lower than Witten—a soon-to-be 31-year old.

Worse, Hernandez doesn't possess a very high floor, either, i.e. he's not really a safe pick.



Again, Hernandez checks in below Witten. The production of his bottom four comps is just 77 percent of that for Graham's comps. Adding the ceiling and floor production numbers together, we can get a good idea of the risk/reward surrounding each tight end.

1. Rob Gronkowski: 26.9
2. Jimmy Graham: 25.6
3. Jason Witten: 22.8
4. Aaron Hernandez: 21.4

No matter how you slice it, Hernandez simply isn't worth his current third-round ADP. He has just a miniscule probability of going for 1,200/10, and there's good evidence that he shouldn't even get drafted ahead of Witten in PPR leagues.

- ## The Bottom Line

When it comes to drafting, it's really important to understand risk and reward. You generally want to minimize downside early in the draft by selecting safe players and maximize upside later with high-ceiling options. But how do you calculate true risk and reward?

One way is to generate "comparables" for each player using similarity scores. By looking at how players with similar traits performed in similar situations in the past, you can gain a really solid understanding of the range of potential outcomes for a given player. In doing that, it becomes easier to make ceiling and floor projections in order to identify true risk and reward.

Comparables are useful because the uncertainty that is inherent to any projection is built into the system. By incorporating that uncertainty into your rankings, you can make more accurate predictions. I gave you examples of how to use similarity scores for the elite players at each position, and you can check out the comparables for any player at rotoViz.

How to Dominate Your Draft

Identifying Value: Regression, Randomness, and Running Backs

Back in 2008, I had running back Thomas Jones ranked well ahead of most owners. Jones was playing for the Jets and coming off a season in which he ran for 1,119 yards, but averaged just 3.6 yards-per-rush and scored only two total touchdowns. Those two scores represented just 0.59 percent of Jones' 338 touches in 2007.

ESPN had Jones ranked 21st among all running backs. I had him 10th. Why would I possibly rank a then 30-year old running back coming off a season in which he tallied 3.6 yards-per-carry and two total touchdowns in my top 10? Regression toward the mean.

Regression toward the mean **is a phenomenon wherein "extreme" results tend to end up closer to the average on subsequent measurements**. That is, a running back who garners 338 touches and scores only twice is far more likely to improve upon that performance than one who scored 25 touchdowns.

0-16 Detroit Lions: A Coach's Dream?

Regression toward the mean is the reason the NFL coaches who take over the worst teams are in a far superior position to those who take over quality squads. If I were an NFL coach, there is no team I would prefer to take over more than the 2008 Detroit Lions. Coming off an 0-16 season, the Lions were almost assured improvement in 2009 simply because everything went wrong the previous season. Even though Detroit was a bad team, any coach who took over in 2009 was basically guaranteed to oversee improvement in following years.

The same sort of logic is the reason that there are so many first-round "busts" in fantasy football. Players almost always get selected in the first round because they had monster years in the prior season. **In effect, most first-rounders are the "outliers" from the prior season's data, and their play is more likely to regress than improve in the current year.** It isn't that those players are poor picks, but rather that the combination of quality play, health, and other random factors that led to their prior success is unlikely to work out so fortunately again.

Players Aren't "Due"

Walk into any casino in America and you will see lines of hopeful grandmothers lining up behind slot machines that haven't paid recently. Since the machines pay a specific average of money over the course of their lives and those numbers always even out over the long run, surely an underperforming slot machine must be due to pay out soon, right?

This is one of the biggest misconceptions regarding statistics and regression, and it is the cause of millions of lost dollars each year. **In a set of random data, previous occurrences have absolutely no effect on future events.** If you flip a coin right now and it lands on heads, the probability that it lands on heads again on your next flip is still 50 percent.

Similarly, if the overall payout rate of a slot machine is 40 percent, the most likely outcome of placing $1,000 into it is walking away with $400. You could walk away big or you (theoretically) could lose every penny, but the most probable single dollar amount you could "win" is $400. So when the previous 100 pulls of the lever are fruitless, the payout "improvement" that is likely to take place over the next 100 pulls isn't because the machine is "due," but rather it is simply working as normal. That is regression toward the mean.

But football isn't random.

Football isn't totally random, but it's more random than you think. Actually, some statisticians have estimated the "luck factor" to be as high as .924 in the NFL. That means on any given week, the "true" winning percentage of teams that win is really around .538. In a league in which only 16 games make up a season, the talent gap between teams is lessening, and turnovers play a huge role in wins, the amount of luck involved in the game is more so than any other professional sport.

Even disregarding the potential randomness of NFL outcomes, the identification of underperforming players can be of incredible value to fantasy owners. As it relates to Thomas Jones, it doesn't really matter how much randomness was involved in his two-touchdown season. Heading into the 2008 season as the workhorse back on a team with a strong offensive line and no real reason to think he was a fundamentally poor short-yardage runner, projecting Jones to score more than a handful of times was easy. I projected him at 10 touchdowns. He scored 15.

So when other owners are jumping all over the players who had "extreme" seasons the prior year, look for talented players who actually underperformed. As long as they get similar opportunities to make plays, their numbers will probably improve. For fantasy owners, that represents value.

Of course that doesn't mean you should select weaker players simply because they had poor years. In the first few rounds, you are almost certain to draft outliers who played better than normal the season before. **Your job is to recognize which players' value is *primarily* the result of random factors, and thus likely to regress to the average, and which is based largely on talent, and thus likely to repeat itself.**

How To Determine an "Average" Season

Of course, not every player has the same "average" season. If we were to simulate 1,000 NFL seasons, Ray Rice's per-season totals would obviously eclipse those of, say, Beanie Wells. So recognizing how players' stats will regress involves identifying (or at least intelligently estimating) their "average" season. In a typical season, how many more yards, touchdowns, and receptions will Rice score as compared to Wells? Until we establish mean seasons for each player, we have no base from which we can determine to where their numbers from the previous season will regress. That is, the totals for Rice and Wells aren't likely to regress to the mean for all backs, but rather they will regress to their specific averages.

Determining that value can be tricky. One of the easiest ways is to determine how many "lucky" plays a player benefited from in a specific year. We have already seen that stats like

interceptions are inherently fluky, and thus very likely to regress to the mean in subsequent seasons. Aaron Rodgers is a heck of a player, but he's very unlikely to ever again match his 45:6 TD-to-INT ratio from 2011.

Other statistics, such as touchdowns and long-yardage plays, are not necessarily extremely random, but they can still have a major impact on fantasy scores. In Chris Johnson's 2009 season in which he broke the record for total yards from scrimmage, he totaled seven touchdowns of 50-plus yards. That number is the ninth best of all-time. . .for a career!

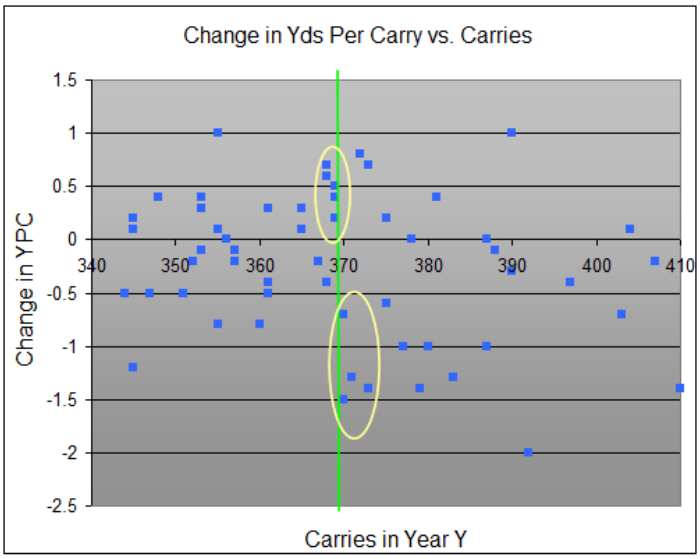
Despite possessing game-breaking speed, it would have been foolish to believe Johnson would repeat his 2009 campaign. Our job as fantasy owners was to determine what an "average" Johnson season would look like, taking the extent of Johnson's 2009 "luck" into account.

Still, the task of predicting average seasons on an individual basis is a difficult one. There is no single method to do it, but understanding the inherent instability of interceptions, fumbles, long touchdowns, field goals, etc. is a start.

The Myth of Overworked Running Backs

One of the most frequent mistakes made by fantasy football owners is assuming all correlations are due to a causal effect. Lots of things in life are related, yet have no effect on one another. The old notion that great running teams win football games is an illusion based on a misunderstanding of the correlation/causation distinction, for example. Yes, winning teams average more rushing yards than losing teams, but that's because teams that are *already winning* run the ball late in games. In reality, they usually gain the lead by passing the football effectively.

A prevalent fantasy football "truism" is the idea that overworked running backs struggle in subsequent seasons. There are numerous studies out there detailing how running backs struggle when coming off a season with 350 touches, or 370 touches, or however many touches is necessary for the study to make sense. The exact number is usually chosen ex post facto and is to be regarded as a "magical threshold" that spells doom in the following season if crossed.



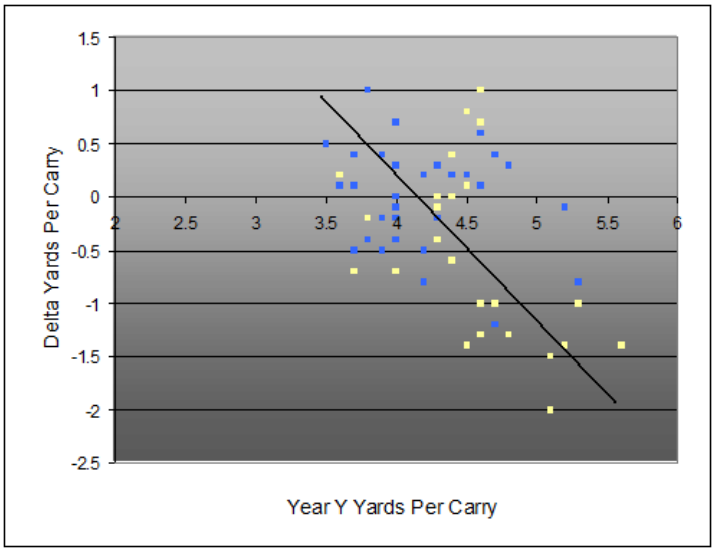
In a study on the effect of 370-plus carries on running backs, the number seems to be chosen after the fact because it makes the numbers more extreme. You can see the abundance of running backs that actually improved their yards-per-carry, yet came just a few carries short of 370. Are we really to believe a running back who carried the ball 365 times in a season is to be trusted in the subsequent season, but those with 370 carries are doomed?

In reality, though, **running backs who garner a large number of touches in a season are generally more likely to see a drop in production and health in the following year, but that information is both insignificant and irrelevant.**

Think about what it takes to acquire nearly 400 touches in a season. For one, a running back needs to be healthy. Really healthy. Secondly, chances are he is running efficiently. Running backs who average 3.5 yards-per-carry over the first half of the season don't generally continue to see the 24 carries a game needed to break the 370 threshold. Thus, our sample size of high-carry backs is skewed by those performing well.

That's where regression toward the mean comes in. By filtering out injured and underperforming backs, selecting those with a high number of carries means we are selecting the outliers in more areas than one. We aren't isolating the numbers based on carries, but rather based on health and efficiency as well. So when we make conclusions concerning health and efficiency, all we're really saying is players who have unusual health and a higher-than-normal YPC are likely to have worse health and a lower YPC the following year. Uh, yeah. . .no shit.

So yeah, **running backs with a lot of carries in year Y usually see a drop in production in year+1, but it's a product of regression, not a heavy workload.**



The efficiency of *all* running backs tends to regress to the mean, not just those coming off seasons with heavy workloads. If a back runs for 6.0 YPC in a year, he will probably see a decline in efficiency whether he had 50 carries or 400.

Thus, **while the production of a running back coming off a season with a heavy workload is likely to decrease, it is not a legitimate reason to avoid that player in fantasy drafts. The (probable) decrease in production is due to the previous season being a statistical outlier (a result that is unusually far from the mean).**

The best way to look at the situation is this: **what is the running back's chance of generating production that is comparable to the previous year? It is actually *the same* as it was prior to the start of the previous season, i.e. the workload has no noticeable effect on his ability to produce.**

For example, if a running back has a 20 percent chance of garnering 2,000 total yards in a season, that percentage remains stable (assuming his skill level and supporting cast do the same) from year to year. Thus, the probability of the player following a 2,000 yard season with another is unlikely, but not due to a heavy workload (a necessity for such productive output), but rather the fact that he only had a 20 percent chance to do so from the start. We wrongly (and ironically) attribute the decrease in production to the player's prior success when, in reality, no such causal relationship exists.

How to Predict Running Backs' Yards-Per-Carry

As I wrote earlier, fantasy owners need to determine which aspects of players' games are repeatable, and which are a matter of luck. Understanding the position consistency I detailed in previous sections is a start, and it gives us a foundation from which we can make projections of specific statistics.

Regression toward the mean is a factor in all projections. Rather than simply arbitrarily guessing projections, there are formulas we can use to make more educated predictions

(albeit still "guesses"). To exemplify the magnitude of regression in projections, let's examine how to go about predicting a running back's yards-per-carry.

It turns out yards-per-carry has a correlational strength of about 0.43 from season to season. That number is similar to the 0.50 correlational strength we saw with year-to-year rushing yards-per-game. It also means a large aspect of predicting running backs' YPC is simply accounting for the "luck" they experienced the season before.

After all is said and done, we can accurately predict YPC with the following formula:

YPC_n+1 = LgAvgYPC -0.04+0.43*(YrNDiff)

In layman's terms, the most accurate YPC projection we can make is taking 3/7 of the previous year's YPC and adding it to 4/7 of the league average (about 4.2), then subtracting 0.04. For a running back who averaged 6.0 yards-per-carry, the projection would be 6.0 (3/7) + 4.2 (4/7) – 0.04 = 4.93 YPC.

Notice the formula will decrease the projected YPC of any back who registered above 4.2, but increase the YPC of anyone below that figure. A back who mustered only 3.8 YPC in year Y is most likely to total 3.8 (3/7) + 4.2 (4/7) – 0.04 = 3.99 YPC in year Y+1.

There will be more information on projecting specific stats for each position in following analysis. A lot of that will be based on regression toward the mean, but there are certainly a lot of other factors at play. It is important to remember these formulas aren't a definitive source for final projections, but rather a solid base from which to work.

The Bottom Line

- Regression to the mean states "extreme" events tend to regress toward the average, and fantasy owners can use it to acquire value. Just as traders buy low and sell high, fantasy owners can pinpoint which players are due for boosts or declines in production based on how much of their previous production was caused by random factors.

- Your job as an owner isn't to select players who had poor seasons, but rather those who are being undervalued due to production that was below their "average season." In effect, you are buying low on players whose value will "regress" upward.

- Regression toward the mean shows us running backs coming off seasons with heavy workloads are likely to see a decline in production, but not because of the workload itself. Instead, those backs are necessarily the outliers from the previous season, and statistically likely to regress. In practical terms, it means there's no reason for owners to purposely avoid running backs who had a lot of touches the prior season.

- One of the easiest and most accurate ways to predict a running back's yards-per-carry is to multiply his YPC from the previous year by 3/7, then add that number to 4/7 of the league average YPC (which works out to 2.4), then subtract 0.04. Other factors are of course relevant, but this is a great foundation from which to work.

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