3. Lineup Construction
3.1. Understanding Expectation and Variance

By Maurile Tremblay

When we project Keenan Allen to score 9.5 points in FanDuel’s scoring system, what does it mean?

It doesn’t mean that we expect him to score precisely 9.5 points. That’s possible, but it’s very unlikely. Even if 9.5 is more likely than any other specific number, that exact outcome occupies an exceedingly small slice of probability space.

What it means in theory is that if you take each fantasy point total Allen could conceivably get, multiplied it by the respective probability of getting that score, and add all of those products up, you’d get a sum of 9.5. (Using the same procedure, we’d project the roll of a six-sided die to produce a value of 3.5, because $1 \times \frac{1}{6} + 2 \times \frac{1}{6} + \ldots + 6 \times \frac{1}{6} = 3.5$. Even though the die lacks a side with 3.5 on it, 3.5 is a good projection in the sense that it would be the fair over/under at even odds.)

I say “in theory” because nobody actually does projections that way. If you consult the section on projections, you won’t see anyone estimating the probability that Keenan Allen will score 0.0 points, and then doing the same for 0.1 points, 0.2 points, and so on all the way up to 60+ points before doing some multiplication and addition to get a projection of 9.5 points.

Rather, 9.5 points represents a decent estimate of his points if the game goes the way we expect—if Allen catches an expected number of passes for an expected number of yards and touchdowns, based on all the factors outlined in Section 4.5 on projections.

But we can reverse engineer that 9.5-point projection to tell us something about the implied distribution curve comprising all those other possibilities. If you know what a normal distribution is—sometimes called a “bell curve”—the distribution of probabilities implied by a player’s projection will share a number of factors with that. (A player’s distribution of point probabilities is not actually a normal curve. A normal curve is bilaterally symmetrical, but a player’s fantasy-point distribution will be a bit skewed because it extends further to the right than to the left, where it reaches a fairly hard wall at zero. If you want to nerd out, a player’s fantasy-point probability distribution is more like a gamma distribution than a normal distribution.)

For one thing, a player’s fantasy-point probability distribution will generally be unimodal, which is a fancy way of saying that it generally has just one peak. And that peak will generally be roughly equal to the projection itself. So that means that while it is unlikely that Keenan Allen will score exactly 9.5 points, he is more likely to score 9.5 points than 10 or 11 or 12 points, or than 8 or 7 or 6 points. The further away the projection gets from 9.5, the less likely that particular point total will be to occur.
Different players, however, will have differently shaped distributions even if they have the same projected point total.

In a given week, Keenan Allen and Anquan Boldin may both be projected to score 9.5 points. But Anquan Boldin’s distribution curve might be relatively tall and skinny while Keenan Allen’s is relatively short and fat. What that would mean is that while both players should score around 9.5 points on average, Boldin is likely to score between 7 and 12 points, while Allen is likely to score between 4 and 15 points. While both players’ projected point totals have the same expectation, Allen’s projection has a greater variance.

Just as any individual player’s projected point total will have an expectation and variance, so will any group of players. In fact, the group’s projected total will just be the sum of the individuals’ totals. As long as none of the players are playing in the same games, the same is true for variance. You find the group’s variance by summing the variance of the individuals.

Keep in mind that when multiple players from the same group are playing in the same game, the variance of the group cannot be reached through a simple sum. The group’s variance can be greater than or less than the sum of the individual players’ variance, depending on how the performances of the individuals are correlated with each other.

For example, a quarterback’s performance and his primary receiver’s performance are positively correlated with each other—meaning that when one does well, the other will usually do well; and when one does poorly, the other will usually do poorly. In this situation, the variance of the two players as a group is greater than the sum of their individual variance.

By the same token, a quarterback’s performance is negatively correlated with that of the defense opposing him. To put it another way, when one does well, it’s bad news for the other. When considering a quarterback and the defense opposing him as a group, the group’s variance will be less than the sum of the variance of the component players.

Here’s something that’s true of variance across all of life’s uncertain activities: for the underdog, variance is a friend. It’s the only thing giving the underdog a chance to win. For the favorite, variance is the enemy. It’s what gives his opponents a chance to beat him.

How can we use that bit of wisdom in our DFS exploits? Consider the difference between cash games and tournaments.
In a cash game, let’s say we think we’ll have to score 110 fantasy points in order to finish in the money, and let’s say that we construct a lineup that is expected to score 116 points. That makes us the favorite! If our expectations are calculated correctly, we’ll win more than half the time no matter what. And in fact, if it weren’t for variance, we’d win every time. With zero variance and a correctly calculated expectation of 116 points, we’d score 116 points with 100% certainty—never more, never less—and automatically beat our goal of 110. Zero variance is impossible in fantasy football (unless you start only players who are inactive, which we don’t recommend), but as long as your expectation is above the projected cutoff to finish in the money, less variance is better than more variance.

In tournaments, on the other hand, your expectation will nearly always be out of the money. Let’s say we think we’ll have to score 140 points to cash in a particular tournament, for example, but our best lineup is expected to score only 116 points. With zero variance in this case, we’d be toast. The only reason we have a chance to finish in the money is because of variance—because of the fact that sometimes we’ll score well above 116 points, and sometimes we’ll score well below 116 points. It’s the “above” part that we care about here. Even if our team scores only 116 points on average, with a high enough variance, we may score more than 140 points as often as 25% of the time. That will make us money if only 20% of the field gets paid.

So we see that, in cash games, we want a high expectation with a low variance; and in tournaments, we want a high expectation with a high variance. That means that in a cash game, we generally want to fill our roster with low-variance players, while in tournaments, we’re happy to include more high-variance players.

How can you distinguish between low-variance players and high-variance players? There isn’t a magic statistic that gives it away. The simplest rule of thumb, if you are a generally well informed NFL fan, is to ask yourself how well you think you can predict a player’s performance in the upcoming game. If you think you’re pretty sure you can pin down his likely production into a fairly narrow range, he’s a low-variance player. If you have only a wild guess rather than a well-grounded estimate, he’s a high-variance player.

In more concrete terms, high-variance players are likely to fit into one of the following categories:

(1) **His role in the offense is uncertain due to a teammate’s injury.** An example would be Cincinnati’s Giovani Bernard if Jeremy Hill is banged up and may not play his usual role. (Incidentally, Hill himself would be high-variance in that situation as well, but since FanDuel generally does not significantly discount a player’s salary if he is banged up but expected to play, injured players generally don’t provide great value, and should usually be avoided even if they offer high variance.)
(2) His role in the offense varies significantly based on game script. Maybe the Giants’ Shane Vereen will get a lot of touches if his team gets behind early, but few touches if his team is protecting a lead. The prospect of the Giants getting behind early may be a worthwhile gamble.

(3) He is a goal-line specialist who isn’t a big part of the offense between the twenties. This fits the boom-or-bust paradigm because the player could score multiple touchdowns, but if he fails to find the end zone he’ll be nearly worthless.

(4) He is a complimentary player in an offense that is expected to score a lot of points. If a game becomes a shootout, even a team’s No. 3 wide receiver could have a big day. Look for games with high over/unders.
3.2. Cash Games

By John Lee

Failing to appreciate the differences between a cash-game roster and a tournament roster can be an expensive lesson for the beginner. To be clear, it is folly to construct DFS lineups for cash games in the same manner as tournament lineups.

To help you circumvent that lengthy (and costly) learning curve, the next few paragraphs will describe the factors and strategies that should guide a player’s thinking process when building each type of lineup. There is an art to constructing DFS lineups.

In daily fantasy circles, the idea of value is perhaps the most frequently discussed topic. A beginner will put together a roster that he thinks will score a lot of points; a veteran knows approximately how many points he needs to win and uses value as a means to determine exactly whom to select for his lineup. But what exactly is value and why is it important?

To underscore the importance of value, let’s first discuss its presence in our everyday lives. With our incomes, we seek out value in the material things and services that we purchase. If there are two gas stations next to one another, do you compare prices and give your business to the cheaper of the two? When considering cable options, do you price compare and try to negotiate a better deal between competitors? When purchasing a car, do you try to haggle the asking price to a lower level before agreeing to a sale?

The common denominator in all of these situations is that you, the buyer, are attempting to maximize the value of your dollar...much like an investor tries to do on Wall Street by buying low and selling high. The value that one achieves in these examples is known as return on investment, or ROI. The ROI in daily fantasy is measured in points per dollar and is the primary basis for decision-making during roster construction.

The term “value” is therefore a measure used to describe the number of expected points per dollar that a player can potentially return in any given week. There are two components to value: first, site-specific salary, and second, projected points in the site-specific scoring system.

The first component of that formula (salary) will become available on FanDuel on Sunday evening. Deriving the second component (projected points) will be discussed in detail in Section 4. If you are not inclined to generate your own projections, Footballguys provides all subscribers detailed projections by Wednesday of every week during the season, which dramatically lessens the workload for an otherwise busy player.
With these two pieces of information, one simply has to divide the player’s projected points by his salary to determine that player’s points per dollar. Many successful players build an Excel spreadsheet to sort all players by their values each week.

Once value is determined on a point-per-dollar basis, it becomes fairly simple to sort this column from lowest to highest. Viewing this list, even the most inexperienced DFS players can identify the best values for the upcoming week. If you have never opened an Excel spreadsheet, if your personal and professional life cannot permit such activities, or if you just cannot be bothered to spend the time to put together such a tool . . . the Interactive Value Charts on Footballguys.com accomplish this very task by Tuesday of every week, thereby eliminating the need to perform this weekly activity on your own!

With value determined on a point-per-dollar basis, it is now possible to begin working backwards to construct a solid cash-game roster. **At FanDuel, you should aim for 120 points to win your cash games.** A retrospective analysis of FanDuel cash games over the past several years has demonstrated that a score of 120 or above will win cash games approximately 90% of the time. With a $60K salary cap on FanDuel, it becomes a simple math exercise to recognize that a winning DFS player must achieve 2 points for every $1,000 spent on player salary.

Thus, when selecting potential players for a cash-game roster, the process should include dividing that player’s salary by 1,000 and subsequently multiplying by 2 to determine the number of fantasy points he needs to score to reach value. For example, if Drew Brees’ salary is $9,800, he would need to score 19.6 fantasy points in order to justify his salary for cash games.

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\frac{9,800}{1,000} = 9.8 \times 2 = 19.6
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Now that the scoring goal has been set, strategic player selection becomes the next objective. **There are two main considerations for optimal cash-game player selection: (1) a history of low variance, and (2) a high floor.** A history of low variance can be more succinctly defined as consistency. For cash games, we require a consistent, reliable performance from week to week. Starting a player who is consistent will ensure that your roster will not suffer from a one-catch, six-yard performance from your wide receiver or a nine-carry, 18-yard performance from your running back. Cash games are all-or-nothing propositions with tightly clustered scores in the middle of the final standings. Suffering a poor game at any position is often the difference between winning and losing.

It is therefore imperative to roster players who are heavily involved in their offensive schemes to ensure consistency of scoring. Logically, for wide receivers and tight ends, attention should be given to highly targeted receivers (for example, Antonio Brown in 2016). For running backs, consider players who routinely touch the ball 20 or more times out of the backfield (bonus
points for pass-catching backs like Devonta Freeman). For quarterbacks, use those guys who will throw the ball often, regardless of the game plan (for example, Drew Brees and Aaron Rodgers in 2016).

The second component of selecting solid cash-game players is to choose those individuals with a high floor. A player’s floor is defined as the minimum number of fantasy points realistically projected to be scored in the upcoming game, barring unforeseen events (namely an injury). Not surprisingly, this parameter is closely related to the first rule, which stated that a cash-game player should exhibit low variance from week to week. A player who is heavily involved in his team’s offense should score fantasy points through sheer volume of opportunity.

When touchdowns are so heavily weighted in the scoring system, yet also unpredictable, it is essential to roster players whose receptions and yardage can be loosely predicted based on their usage and importance to their team’s overall offensive scheme. As a general rule, it is advisable to assume that a player will not score a touchdown. This will yield an absolute basement number for that player’s floor that week. Once the floor has been determined for each player at a given position, particularly in the context of value, the number of viable options for cash games becomes quite limited.

Before moving onto other considerations for cash games, it is important to stress that you must exercise simple common sense when employing the aforementioned strategies. For example, if a WR2 has been heavily targeted for several consecutive games while the WR1 for that same team has been injured, do not expect that trend to continue when the WR1 returns from injury. Similarly, if a top-tier quarterback goes down to injury and is replaced by a rookie quarterback, everybody in the offense should be significantly downgraded to reflect the loss of leadership, experience, and overall ability on the field.

On the opposite end of the spectrum, do not be afraid to roster an inexpensive backup player at a given position if the primary player at that position is announced as inactive; the caveat is that you must have confidence that the replacement player will still see significant action in the new role. There are many potential mistakes that novice DFS players can make, but consulting with a reliable set of projections can often help avoid poor decisions.

One of the intriguing aspects of playing NFL DFS is that there are always a significant number of injuries from week to week that affect value at each position. For this reason, it is essential that a player first capitalizes on mispriced players due to injury or site-specific pricing mistakes (it happens from time to time). After those extreme value players find their way onto your roster, you should be looking to incorporate further value with consistent players who project to have high floors for that weekend.
All things being equal, the position that consistently demonstrates the least amount of variance is the quarterback position. Why? Because they are the only player who throws the ball in the passing game, whereas running backs tend to share rushing duties with other running backs and receivers are subject to similar restrictions (matchups, sharing targets, etc.). Thus, it often makes a lot of sense to spend a substantial amount of your salary (after first earmarking extreme value as described above) on the QB position because it is the position where the expected ROI is most likely to occur on a consistent basis. That said, it is completely inadvisable to spend so much at the QB position that you leave too little salary to strategically fill the remaining roster slots; one should therefore exercise caution to ensure that the selection of any single player is not too expensive such that it prohibits rostering other likely productive players.

Of all the required positions for DFS football, the kicker and defense positions remain the least predictable from week to week. In Section 4.3, we describe a retrospective-based system to help reasonably project fantasy output at those positions, but those projections are still limited by the highly variant scoring nature of those roster positions. In other words, it is advisable to construct your cash-game rosters with skill positions first and add the kicker and defense as ancillary components to your primary roster thereafter.

An often-overlooked strategic parameter of cash-game roster construction is the avoidance of negatively correlated players. A negatively correlated player is one whose on-field production reduces the fantasy output of another player on the same team. For example, if Aaron Rodgers has an excellent day throwing the ball for Green Bay, it is highly unlikely that the NFL defense he is facing will also have a strong performance. In cash games, where consistency and guaranteed points (floor) are valued, it rarely is logical to roster a QB and a team defense from opposing teams because those positions are often negatively correlated.

Positively correlated plays (e.g., a QB-WR combination) are generally used in tournament rosters (see the following section), but there is a positive correlation play or two that can be employed for cash games, the first of which is pairing a running back and team defense. It is common practice in the NFL for teams to build an early lead and lean on their workhorse running back in the second half to “run the clock” so as to force the trailing team into desperation mode late in the game. When losing teams are forced into becoming one-dimensional, they often make mistakes that lead to sacks, turnovers, and defensive touchdowns, all of which benefit the fantasy prospects of the opposing defense. For these reasons, if you feel strongly about a running back playing for a heavy favorite, stacking a running back and team defense is a solid positive-correlation play for cash games and tournaments alike.
Another correlated play that can be employed for cash games is to roster a running back and a kicker from the same team. This works best when Vegas predicts the pair’s team to score a lot of points on their way to victory. Initially, this strategy might appear to be a negatively correlated play, but it mitigates risk without sacrificing much upside. The duo is likely to be playing with the lead, which will increase the running back’s carries, especially in the red zone. With a conservative game plan late in the game, the team is also more likely to kick a field goal—something a trailing team might forgo to make up ground. If the running back doesn’t score, then your kicker gets points for the field goal. If the running back does reach paydirt, your team also gets to tack on an extra point. When the game script plays out as expected, it’s a win-win scenario for cash games.
3.3. Tournaments

By Jeff Pasquino

3.3.1. Forget cash-game mentality

For DFS players who are used to playing cash games, where the goal is to just get a winning score, tournaments can pose a big challenge. Players have to forget all about trying to put together a lineup that has valuable and safe players who will definitely produce a respectable score in order to cash. The key difference one must realize is that, in a tournament, first place has extreme value. The biggest upside a cash-game player has is doubling his entry fee. Tournament prizes can be hundreds or even thousands of times the entry fee.

So what changes does a cash-game player have to make? First, do not just put a cash-game lineup in a tournament. While there is a chance that the lineup could earn a prize in any given tournament, a properly constructed cash-game lineup is particularly unlikely to take first place. A cash-game lineup, filled with steady, high-floor players, will be up against tournament lineups with more upside. Winning tournament lineups do not play it safe: they embrace volatile lineups, knowing that if the right combination hits, the payoff is huge.

In summary, the philosophy of a cash game is to win one of the prizes, as they are all the same value. The first-place winner is the same as the last team to win a prize, so there is no incentive to welcome risk. Safe, solid lineups win more often than not, and that is the lineup style of choice in a cash game.

Tournament philosophy is completely different, as the goal is to finish as high in the contest standings as possible to earn those big prizes given out to the best scores. Taking on risk here is not only suggested but required. An appetite for risk, however, should not be confused with reckless abandon. Selecting a lineup constructed with some players who can hit it big in a given week can result in a Top 1% finish and a big prize. Without taking on some level of risk, achieving a first-place score is almost impossible.

3.3.2. Value, upside, and the right combination of both

There are many ways to build a lineup for a given contest. By studying the most successful strategies that have resulted in top finishes in GPP tournaments, several themes can be extracted. Combining the right groups of players who meet certain criteria is not necessarily a guarantee for success, but by considering how to build a lineup for a tournament, we can increase our chances of winning it big and taking home a top prize.
**Value plays do matter, but upside matters more**

When finding the right players to put in your tournament lineup, many will target value plays first. That’s a good starting point, as these can be the foundation of a solid score that leads to a Top 1% finish. Most weeks, if value plays can be found for cash games, but a key question has to be asked first—what does it mean to be a value play for a tournament contest?

Back in the discussion of cash games, we defined a value player as “2x player,” which means that the player is expected to score at least twice as many fantasy points as his salary divided by $1,000. That means a $7,000 wide receiver has to be expected to score 14 or more fantasy points to reach value for a cash game. For tournaments, the bar needs to be raised. As one learns by studying successful tournament lineups at FanDuel, lineup scores in the range of 180 total points are required for a Top 10 finish, so that translates to a tournament value player to be a “3x player” or better. That severely reduces the population of value players each week. This guideline can help a player narrow the list of players who can be considered for their weekly lineup.

To find players who can reach tournament value, a player should calculate what it would take for a player to reach a fantasy score in accordance to the needed multiplier of his salary. Going back to our earlier example of a $7,000 wide receiver, he needs to get to 21 points to get full tournament value. One way to see what that would take is to start with a baseline of 100 yards and a touchdown and see what that would work out to be in points. Let’s assume this player needs six catches to get to 100 yards and find the end zone. With FanDuel’s half-point-per-reception scoring, a 6-100-1 stat line yields three points for the six catches, 10 points for 100 yards, and six more for the score—a total of 19 points. That is nearly value right there, so tweaking the numbers a little to 7-115-1 gives 21 points. So the question a player needs to ask about a given $7,000 wide receiver is this: how easily can he attain a statistical performance of 7-115-1 this week? If the answer is that he can do it pretty easily or that there is a strong likelihood of getting 7-10 catches, 100-120 yards and a touchdown, then he passes the test and can be on the short list of options for your tournament lineups.

**Upside**

Another way to find players capable of making points for the week is to consider upside plays. These are players who typically do not cost as much as normal weekly starting fantasy options, but given their lower salaries they can reach value with their matchup for the coming week. A typical example is a backup running back who is expected to see far more action than expected due to an injury to the normal starter. A $5,000 running back who should get 20-25 touches is
not normal, but when it does happen (and it happens far more often than most realize) then he immediately gets on that short list for DFS tournament consideration. Note that this same player is likely to be on cash-game lists as well, and for good reason. Any player with a high probability of getting to tournament value is, by definition, a cash-game option. This goes back to the mentality discussion earlier in this section where you have to remember what your goal is for each and every lineup you create. Some players will pass the criteria for both cash and tournament rosters, but that does not mean that all of the cash players will be worth a tournament lineup spot.

True upside plays often come from opportunities that arise during an NFL week. Injuries, suspensions, benchings, and depth chart changes can turn a minimally priced player at the bottom of the DFS salary list into a player with upside value. It is not hard to imagine a new starting player with a bargain basement salary that has starter snaps and production to have a much higher likelihood to reach tournament value based on that new status. These players have to be at the top of a player’s weekly list for lineup consideration.

**Variance and Volatility**

Because touchdowns are relatively rare, there is substantial, inherent variance in DFS football production. This volatility in production is often considered a negative when it comes to cash games, as a cash-game player wants to have a safe and productive roster. Unlike cash games, tournaments force a player to consider variance a positive factor and to embrace the volatility in scoring (within reason). Rostering a wide receiver that only scores once in a while is a risky play in a cash game, but a tournament player is an eternal optimist, focusing on his team’s potential when the stars align and his players do hit it big.

**Uniqueness**

It goes without saying that if you finish at the top of a tournament, you definitely do not want to split that top prize with anyone else—but that is not the main reason you want to have a unique lineup. If a DFS roster has a player who is not owned by many other teams and that player has a huge game, that team is that much further ahead of the competition.

Immediately after a tournament begins, FanDuel displays the ownership percentage of each player—the percentage of teams in that tournament that the player is on. For example, in a 1,000-entry tournament that has 100 teams using the Seattle defense, the Seahawks’ 10% ownership will be shown.
One way to think about uniqueness is to remember the old saying, “A rising tide lifts all boats.” If a player is on everyone’s roster, his performance helps all teams by the same amount—which is to say that it helps no one. If just a few teams lack that player, those teams will find themselves ahead or behind the great morass of teams that do have him (depending on his performance) and that is a good situation for those few teams. Being one of the top few teams half the time and one of the bottom few teams half the time is better in a tournament than being stuck in the middle all the time. Uncommonly owned players are the ones with the greatest potential to pull you away from the middle and separate you from the crowd. This is where a savvy player can improve his chances by finding players who are likely to be off the beaten path.

A running back who is suddenly active at the last minute (or starting due to a last-minute scratch) could increase your uniqueness, just like owning a player who is coming off of an injury that many will want to avoid. The key is to find players who will be uncommonly owned for reasons other than that they are poor values. Rostering a unique player who performs poorly will uniquely hurt your team, so you’re looking for players with decent value that others are overlooking...not for players with terrible value whom others are rationally avoiding.

Discussions about the value of unique lineups continue in DFS circles, as it is not clear whether a unique lineup is truly necessary to win the top prize in a GPP contest. There is no question that winners of major contests typically have at least one high-performing player who is not widely owned. It is also true that winning rosters do not typically have a great number of such players—usually three at the very most. Even in tournaments, there is such a thing as too much risk.
**Stacks**

Tournament lineups that finish at or near the top of GPP contests often have what are considered “stacks,” which are teammate pairings of quarterback and either a wide receiver or tight end. The theory behind this goes back to embracing upside, as a big game by a receiver or tight end for a given team assures a good game by the quarterback. Lineups that have one of the best wide receiver performances of the week will greatly increase the chances of having a prize-winning roster, but that likelihood significantly increases if the lineup contains that receiver’s quarterback as well.

Another stacking concept that is sometimes used by successful lineups is pairing some combination of an NFL team’s running back, kicker, or defense. A team with a big lead and a strong defensive showing will likely run the ball in the second half of the game, resulting in bigger numbers for the lead rusher.

**Correlations: Positive and Negative**

The reason it makes sense to stack a quarterback with his wide receiver (or a running back with his defense) is that their performances are positively correlated with each other. This means that the performance of one of the pair is tied closely to the other, and that the direction of the performances is the same (a good game by one usually means a good game by the other).

Players’ performances can also be negatively correlated with each other: a good game by one usually means a bad game by the other. For example, taking two running backs from the same NFL game (usually opposing starting running backs) can give a negative correlation. While it is quite possible that one of the two backs will have a big game, it is rare for two backs in the same game to both put up big numbers.

In tournaments, positive correlations are sought after, while negative correlations are to be avoided.
One of the best (and easiest to avoid) examples of negative correlation is a team defense opposite your starting quarterback. If the quarterback has a big game—exactly what you want—then the defense is not going to have a good performance. Similarly, when the defense has a great game, the quarterback probably won’t. In general, you should avoid rostering a team defense that faces any of your offensive players.

**Which Games to Target; Vegas Is Your Friend**

Players who score a lot of points can generally be found in high-scoring games, so that’s a good place to look for them. Which games will be high-scoring? We can’t know for sure, but we can get a pretty good clue from the sportsbooks. By looking at the betting lines published on any number of sites, you can find both the expected point total (i.e., over/under) and the point spread for every NFL game in the coming week. By doing some simple math, you can calculate the expected number of points a team is expected to score for each game. Here is an example:

Philadelphia (51)
Dallas (-3)

The 51 represents the total expected points for the Eagles-Cowboys clash. Dallas is favored by three points as shown by the “-3” next to Dallas, so by subtracting that number from the total we have 48 points. Divide that evenly to the Eagles (24) and Dallas (24) and adding back the three points that Dallas was given by Las Vegas and we see that the expected points for this game is Cowboys 27, Eagles 24. Now that is not a guarantee by any means of the outcome of that contest, but it is a very good indication of what Las Vegas expects to see as the most likely outcome.

By doing the math for all of the coming contests for the week, we’ll see that several teams are likely to be at or near 30 points or more. Those are the teams that should be targeted for offensive players. Taking players in contests with totals near the higher end (usually 50 points or more) is also a good idea. Building a lineup around players in high-scoring games is a worthwhile tactic.
3.5. Tell a Consistent Story

By Maurile Tremblay

Telling a consistent story means that your lineup's success should not depend on mutually contradictory occurrences. For example, don't pick a high-priced quarterback and also pick the high-priced NFL defense he is going against. For each of those selections to reach value, they'll both have to have great games; but a great game by a quarterback and the defense he faces is contradictory. The quarterback's success comes at the defense's expense and vice versa.

In cash games, the story your roster relies on should be consistent because it should generally be the same story that is told by the Vegas spreads and over/unders.

In tournaments, the story your roster relies on may vary from the story told by the Vegas spreads and over/unders, but it should vary in a consistent way.

Consider a toy game we might play with a six-sided die. You can select any real number you want, and your score is determined by how far off you are from the result of rolling the die. If you pick 5 and the die lands on 2, for example, you were three off, so your score is minus-three.

In a head-to-head contest, choosing 3.5 would be a perfectly good strategy, but picking 6 would be terrible. If you pick 3.5, you'll be off by 1.5, on average, and you'll never be off by more than 2.5. If you pick 6, you'll be off by 2.5, on average, and you'll sometimes be off by 5. Someone who picks 3.5 will beat someone who picks 6 two-thirds of the time.

Now consider a mid-sized winner-take-all tournament instead of a head-to-head contest. Picking 6 becomes a decent strategy while picking 3.5 is horrible. To win, you're pretty much going to have to nail the exact result. That means 6 will win about one-sixth of the time while 3.5 will win never. You may have deduced that the best strategy in this game is to pick the integer between one and six (inclusive) that your competitors are least likely to pick. If you can find a number that is picked by fewer than one-sixth of the field, you will have a positive expectation (ignoring any rake).

Let's translate what that means for DFS games.
The story told by the Vegas spreads and over/unders can be thought of as the most likely scenario. In a cash game, you want to play it safe and construct a roster that is consistent with the most likely scenario.

In a tournament, however, especially those with top-heavy payout structures, you will not want to play it safe. Although the Vegas lines might represent the most likely scenario, the actual results from the NFL games will likely depart from the Vegas lines in a number of ways. The contestants that finish high in DFS tournaments will be the ones whose lineups depart from the Vegas lines in the same way that the actual NFL results do.

To oversimplify things in what is hopefully an instructive way, consider three scenarios:

**Scenario A:** Results from NFL games closely mirror the Vegas lines (and mainstream projections consistent with those lines).

**Scenario B:** Results from NFL games mostly mirror the Vegas lines, except the Packers score far more points against the Bears than expected.

**Scenario C:** Results from NFL games mostly mirror the Vegas lines, except the Packers score far fewer points against the Bears than expected.

Let's give Scenario A a probability of 40%, and let's give Scenarios B and C probabilities of 30% each.

If your opponents' lineups are distributed evenly, such that one-third of them are consistent with each scenario, it is apparent that the bulk of your lineups should buy into Scenario A. Your chance of finishing high in the standings is proportional to the product of (a) the reciprocal of the fraction of the field going with the same scenario you are, and (b) the probability that your scenario is the right one. (The reciprocal of a fraction just reverses the numerator and denominator, so the reciprocal of 1/3 is 3/1, the reciprocal of 2/5 is 5/2, etc.) In this case, Scenario A (3 * 40% = 1.2) gives you a better expected result than Scenario B (3 * 30% = 0.9) or Scenario C (3 * 30% = 0.9).

But in DFS contests, even in tournaments, your opponents' lineups will not be evenly distributed across all scenarios: they will tend to cluster around scenarios most consistent with mainstream projections that are based on the Vegas lines. So let's say that instead of 33/33/33, your opponents' lineups are distributed as follows: 50% are consistent with Scenario A, 30% are consistent with Scenario B, and 20% are consistent with Scenario C.

In this case, your best bet is to submit a lineup consistent with Scenario C. Scenario C (5 * 30% = 1.5) is preferable to Scenario A (2 * 40% = 0.8) or Scenario B (3.33 * 30% = 1.0).

Going with Scenario C here is similar, in the toy-game example above with the die, to picking the number 6 when fewer than one-sixth of the field is doing so. The general rule is that if you
think there is an X% chance that a particular departure from the Vegas line will come to fruition, and you think that Y% of the lineups submitted by your opponents will be consistent with that departure, it makes sense to submit a lineup based on that departure as long as $X > Y$. (Poker players might find an analogy here to the concept of pot odds.)

The key, though, is that any departure or departures from the Vegas lines that one of your rosters is based on must be self-consistent. If you are adopting Scenario C above, that doesn't mean only that you should be less likely to include Aaron Rodgers in your lineup. It also means that you should be less likely to include Jordy Nelson in your lineup, and more likely to include the Bears defense in your lineup. Don't simply add to or subtract from one player's projected points. Players in the same game are interrelated, and if you're adding to one player's projected points, you must add to or subtract from other players' projected points in a way that is consistent with the story you're creating.

(The concept of stacking can be derived from this way of thinking.)
3.6. Fit Lineup to Contest, or Contest to Lineup?

By Maurile Tremblay and Mark Wimer

When it comes to fantasy football of any sort, there’s rarely a single, correct way of doing things. Some DFS lineups are better suited for cash games, and others should be used in tournaments. Ultimately, there can be several methods for generating the same lineup.

Consider a player who only enters cash games. He could make a list of 20 solid lineups without optimizing them for cash games—he’s just trying to maximize expected points. After he has 20 lineups, he can select the ones that are better suited for cash games and enter them into his contests.

That strategy will probably work just fine, but that seems like a lot of unnecessary work. Why not optimize those lineups for cash games in the first place? He could avoid QB-WR stacks and choose Steady Eddies over boom-or-bust players from the start. Why construct five times as many lineups just to throw 80% of them out?

On the other hand, consider someone who is planning to enter both cash games and tournaments. Now either strategy becomes sensible. He could construct a lineup designed to maximize projected points and decide later which type of tournament to enter based on the characteristics of the lineup. Alternatively, he could construct one lineup that he knows is destined for a cash game and then build another lineup specifically for a tournament.

It’s simply a matter of preference, and readers are encouraged to try it both ways to see which suits them better.
3.7. Other Considerations

3.7.1. Thursday vs. Sunday contests

By Phil Alexander

Thursday night contests use the same rules and scoring systems as Sunday-Monday contests but allow you to build rosters with players from every game on the weekly slate.

Though they add only one game and a few players to your preparation, there are important reasons why Thursday contests require a different approach from Sunday-Monday contests:

**Thursday contests mean Thursday night roster locks.** Your roster cannot be changed once the Thursday night game kicks off. Breaking developments impact player values between Thursday night and game time on Sunday every week, presenting you with an obvious dilemma: Should you chance using a player if you’re uncertain about his playing status?

**Thursday contests test your discipline.** Once football season is in full swing, three days without an NFL game can feel like an eternity. By the time Thursday rolls around, it’s natural to be craving a little action—and what better way to scratch the itch than watching your fantasy players in the Thursday night game? Here’s where you have to be careful with Thursday tournaments. If you allow the urge to get some skin in the game to cloud your judgment, you’ll make poor roster decisions and sink your lineups.

**Thursday Night Football can be ugly football.** Whether it’s because the schedule makers just have a knack for showcasing lousy or mismatched teams, the teams don’t have enough time to prepare, or the players don’t have long enough to recover from the previous game, Thursday Night Football can be dreadful. Enough data exists to suggest Thursday games are detrimental to fantasy performance, with those involved in the passing game at highest risk.

Fortunately, there are several strategies you can employ to avoid the traps of Thursday contests, capitalize on the mistakes of others, and consistently turn a profit.
**The Thursday Night Fade**

If you take only one lesson from this section, make it this one: In large-field tournaments, it will almost always be correct to avoid players from the Thursday night game.

Novice and casual DFS users cannot resist watching their fantasy players on national TV. Their thirst for action (and disregard for good process) will typically inflate the ownership percentages of Thursday players, regardless of whether or not the circumstances actually warrant it.

As you read in the earlier section on tournament play, there’s value in owning at least a few unique players. For this reason alone, fading the Thursday night game will generally be the correct play in tournaments.

Perhaps more importantly, recent trends show fantasy scoring to be worse on Thursday night. This is particularly true for passing production. Unless the Thursday night game includes at least one elite passing offense, it makes sense to fade these players.

Since 2012, when the NFL expanded its Thursday night package from 8 to 13 games, fantasy production in the passing game is down about 4.5% on Thursday nights compared to other games.

**A Positive Note on Thursday Running Backs**

If you can’t resist the urge to use a player from the Thursday game in your lineup, choose a running back. Over the last four years, fantasy production in the running game is about 8% higher in Thursday games than in Sunday games. Rushing touchdowns have been especially more frequent on Thursday nights. Across the four-year sample, there were 1.74 rushing touchdowns per game scored on Thursday versus 1.42 per game on Sunday -- a 20% increase in rushing touchdowns per game.

**Avoid Questionable Players...Most of the Time**

Since you cannot make any changes to your lineup after the Thursday game kicks off, you are forced into an early decision on players whose injury statuses are still unknown. You must decide on Thursday whether an injured player is worth risking in your lineup. You’re also forced to decide whether to take a chance on the players who stand to benefit most if the injured player is inactive or ineffective.

It’s difficult enough to set a winning lineup when you have all the information you need readily available. When you’re essentially flying blind regarding a player’s Sunday availability, the correct play is to fade both the injured player and his teammates, especially in cash games. If you include an injured player in your lineup and he ends up sitting out, your roster will be dealt a crippling blow.
A zero in your lineup all but guarantees you’ll have no shot at a deep run in a GPP, and makes it very likely you’ll fall below the cash line as well. Likewise, if the injured player suits up on Sunday and you rostered his backup (or a teammate who was in line for a bigger role), your team’s ceiling has been lowered appreciably.

This isn’t to say that taking a chance on players with injury concerns or questionable workloads in a Thursday GPP can’t pay off in a big way. Most DFS players will take the conservative approach and avoid using players with unclear Sunday outlooks. If you’re one of the few who takes a big swing, and the Sunday morning news works out in your favor, you’ll be rewarded with a lesser-owned player with huge upside. Which strategy you decide to use should depend on your risk tolerance and percentage of bankroll devoted to the contest.

**Gaining Intel for Sunday Tournaments**

When you enter a large-field Thursday tournament on FanDuel, you’re getting more for your entry fee than just a chance to win a share of the guaranteed prize pool. You’re also gaining an invaluable research tool to help you make educated guesses at player ownership percentages in Sunday tournaments.

After the Thursday night game kicks off, you’ll be able to see the ownership percentages of all players on your roster. While Thursday ownership percentages will not exactly match the ownership percentages of Sunday contests, they provide a reliable guide to how the crowd values particular players in any given week.

A winning GPP lineup usually includes at least one or two lesser-owned players, and you’ll now have an easier time identifying which players are the ones flying under your opponents’ collective radar. You’ll only be able to see ownership percentages for players on your own roster. To collect ownership data for lots of players, you’ll need to enter multiple lineups that include all the players you’re curious about.

If this sounds too expensive, remember that FanDuel offers multi-entry tournaments that begin on Thursday night for as little as a dollar. If you construct your lineups carefully, there’s a strong chance these “exploratory” lineups will cash (or at least break even).

If you’d rather not invest a percentage of your bankroll in Thursday tournaments to gauge ownership rates (or lack the time to organize the data), you’ll have access to this valuable information with a Footballguys subscription. Our team collects and analyzes Thursday ownership data and explains how to best use it in clear and concise articles every week.

**3.7.2. Early-Year pitfalls**
The NFL offseason brings nine months of dramatic reshuffling around the league. Coaching changes, scheme adjustments, free-agent movement, player releases, draft picks, ongoing recoveries from last season’s injuries, depth chart reversals, new injuries, suspensions, and other changes ensure that the NFL landscape in September will look much different than it did the previous December.

The identity of each NFL team starts to form during organized team activities in May and June, and continues to evolve through training camp and preseason games in July and August. Astute DFS players can learn from news blurbs and preseason games, but there will be misleading distractions along the way.

Offensive veterans have their practice time managed during OTAs and camp practices, and they rarely see meaningful playing time in preseason games. Limits on practice time may strain offensive chemistry, especially for teams installing new offenses. We often read reports during the preseason that some player or another is in line for a bigger role in the offense this season, but such reports often prove overly optimistic.

Defenses are also still working out kinks late in the preseason. Coordinators platoon along the defensive line and in the secondary more often than ever. Every year, defenses projected to be good fall flat while defenses projected to be poor overachieve.

All of this leads to more uncertainty about player performance in the first month of the season than in later months. Player projections built on this uncertainty are therefore more speculative than later-season projections, which are built on better data and surer trends.

**Navigating the Early Uncertainty**

Uncertainty shouldn’t scare you. In fact, some players exploit and thrive on uncertainty—when they correctly recognize it.

Some DFS players turn a profit in cash games and GPPs in the early weeks. Are they exploiting the uncertainty with a sound strategy we can apply during these early weeks?

Not necessarily.
Unfortunately, the observation that some people win during the early weeks does not mean that there is a winning strategy during the early weeks. It does not mean that anybody was playing with a positive expectation. After all, some people win state lotteries—but there is no such thing as a winning strategy for that, and nobody plays with a positive expectation. Sometimes the winners simply got lucky, which is not a reproducible strategy.

Nonetheless, you can still recognize and plan for the extra uncertainty:

I believe you should limit your exposure in the early weeks. Wait for defensive strengths and weaknesses to show themselves and provide the data needed to exploit matchup-pricing inequalities. In the first four weeks of the season, I suggest betting only about a quarter of the amount you’d typically wager later in the season. Trends will emerge and you will have ample opportunity to leverage more of your bankroll when your edge is greater. —David Dodds

Bankroll management is critical early in the season. Self-restraint can be difficult when you have been waiting eight months for the game you love to get back on the field. But you must avoid digging yourself into a hole or busting your bankroll early. Wait for exploitable trends to emerge before you risk a high percentage of your bankroll. —James Brimacombe

DFS takes skill, even in the early weeks. Some people will have a greater expectation than others. Even if a DFS player does have a positive expectation in the early weeks, however, it’s likely to be less positive than in later weeks. Wagering a lower-than-normal percentage of your bankroll in the early weeks is therefore warranted. —Maurile Tremblay

If you are highly analytical and build your lineups based on projections, it makes sense to go light in the first quarter of the season until you have more reliable data. If you are more observational than analytical in your approach, it may be correct to be more aggressive early. —Dan Hindery

Incomplete information makes projections less accurate from top to bottom in the early weeks. Often that means the total points needed to finish in the top ten of large GPPs is significantly lower during these early weeks. The minimum threshold to cash will also be lower. The best chance to take down a large GPP may be during the first four weeks. —BJ VanderWoude
Uncertainty during the early weeks makes it harder to project player performance accurately. That means a wider range of expectation for all players, regardless of talent and opportunity. A wider range of expectation means higher variance in your lineups.

And variance, usually, is the enemy of your bankroll.

So, it makes sense to strongly consider limiting your exposure during these earlier weeks. But your decision should be based on your personal philosophy of bankroll management and confidence in your lineup in any given week.

If you feel you’re flying blind without multiple weeks of trends to consider, you may choose to sit out the first week (or more) entirely and save your bankroll for weeks with a higher positive expectation.

If you’re confident that you’ve put together a high-floor lineup, you may be comfortable exposing a higher percentage of your bankroll but still keeping it under your usual weekly exposure.

If you’re a high-variance GPP player, you may welcome the uncertainty of the early weeks and not change your approach much, if at all.

Regardless of how aggressive you choose to be, approach these weeks with a level-headed plan in place. Your bankroll will thank you.
3.7.3. Impact of weather

By Alessandro Miglio and Maurile Tremblay

Fantasy and DFS owners generally overestimate the effects of weather on player production. Precipitation, whether rain or snow, doesn’t negatively impact offenses as much as you’d think (though it does adversely affect kickers). A wet environment may make it harder to carry, throw, run routes, catch, or cut with the football. But it may also make it more difficult for defensive backs to cover receivers and for defensive ends to pass-rush.

Warm temperatures can cause cramping and cold temperatures can make it difficult to handle the football. But the rise of domed stadiums, cooling fans, sideline heaters, halftime IVs, and other interventions have largely removed temperature as a limiting factor for offenses.

What does seem to affect player performance, though, is wind. Passing offenses are particularly negatively affected, with the league producing fewer passing and receiving yards and total points in the colder months of the season. Conversely, wind is helpful for fantasy defenses.

Teams pass the ball less as wind speeds increase. At speeds over 20 miles per hour, teams have generally passed on average 10%-15% less than usual. There has been no such decrease with colder temperatures. There has also been a small decrease in yards per pass attempt as wind speed increased.

If you use over/under lines and player props or a set of projections that takes weather into account, wind speed and temperature and precipitation are already priced into player value. One thing to note is that heavy rain in grass turf ultimately plays a larger role than on artificial turf due to the drainage and mud issues that can occur on fields with real grass turf such as Chicago or Pittsburgh.

But a small edge can swing the balance of your DFS contest—cash or GPP. Weather, especially wind speeds, can affect both the floor and ceiling of a player you’re considering. If there’s even a small chance that unexpectedly bad weather may decrease point potential, it’s worth considering a comparably priced and similarly projected option in better weather.
3.7.4. Entering contests early and then adjusting dummy lineups

By James Brimacombe and Steve Buzzard

Finding and exploiting small edges is a key part of a successful cash-game strategy. Improving your chances of winning by just a percentage point or two can turn a losing week (or season) into a winning one. One of the most overlooked ways to improve your return on investment is to begin signing up for contests early in the week.

If you’re a high-volume cash-game player, you’ll need to enter the early week contests by necessity. It’s the only way to ensure you can enter the number of games at the price point you want. But there are also good reasons for small-volume players to consider entering early week games.

Signing up for cash games, especially 50/50s and Double Ups, as soon as they are posted often pits you against players who put in a lineup early in the week but then forget to adjust that lineup for injury news, depth chart updates, and weather changes. Playing against those suboptimal lineups can give you a significant advantage.

Waiting to enter contests until Sunday morning, on the other hand, often matches you up against players confidently entering their most optimal lineups. These are the contests the sharks are entering as often as possible after making their last-minute changes.

Of course, you must submit your own suboptimal lineup when entering these early week contests. Be sure you’ll be available to make improvements to these lineups later in the week. While you can enter your current best lineup, it’s easiest to enter the same placeholder lineup for each contest. A simple way to do this is to choose a roster full of low-salary players you have no interest in using. You can tweak just one of these lineups on Saturday and then export that lineup to your other contests quickly and easily.

Let’s consider a real-life example of this during Week 3 of the 2014 football season.

Leading up to the kickoff of the Thursday night game, two significant inactives were announced. Both, while not shocks, were slightly surprising as it was announced Roddy White and Doug Martin wouldn’t be playing. We also found out that there was now a chance that Jamaal Charles would play on Sunday, where it was previously predicted that he would not be playing. This significantly changed the values of Julio Jones, Harry Douglas, Bobby Rainey, and Knile Davis. Due to these changes, I quickly reshuffled my projections, which in turn changed my value rankings.

Which type of DFS player is going to be in the best position to take advantage of such changes in value? The player who submitted his lineup on Tuesday morning and is now sitting at the bar hanging out with his friends, or the player who is sitting at home signing up for games?
Personally, I want to play against opponents who don't update their rosters shortly before kickoff, which usually means players who signed up on Tuesday morning.

To fully illustrate this specific example, let’s dig a little deeper. I was in some Double Ups that specific week that had opened up early in the week and some that had opened up just hours before game time. Let’s look at the difference in player selection for some of the key players mentioned above.

<table>
<thead>
<tr>
<th>Player</th>
<th>Early Week Ownership</th>
<th>Thursday Ownership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bobby Rainey</td>
<td>5%</td>
<td>45%</td>
</tr>
<tr>
<td>Julio Jones</td>
<td>10%</td>
<td>32%</td>
</tr>
<tr>
<td>Harry Douglas</td>
<td>1%</td>
<td>9%</td>
</tr>
<tr>
<td>Knile Davis</td>
<td>11%</td>
<td>1%</td>
</tr>
</tbody>
</table>

We see exactly what was expected. Many people who built their rosters early in the week didn’t update their lineups when new information presented itself. They missed out on value by falling asleep at the wheel. Lineups set closer to kickoff are more successful because they reflect the latest news and injury updates. By signing up early in the week with placeholder lineups and updating your rosters close to game time, you’ll increase your chances of winning by facing weaker opponents with outdated lineups.

You can also enter these placeholder lineups into GPPs early in the week, especially for those tournaments you know are likely to fill each week. You can improve these placeholder lineups and export them as you would your cash-game lineups.

Using placeholder lineups is a smart way to increase your weekly bankroll exposure in cash games and tournaments. While you will undoubtedly see some high volume and highly successful user names sign up alongside you, the percentage of weaker DFS players (and lineups) will be higher, too. If you are certain you’ll be able to adjust your early week entries, getting into numerous games against opponents with weaker lineups should be a part of your weekly strategy.
3.7.5. Sunday inactive lists

By Maurile Tremblay

All the work we put into formulating our lineups during the week can be rendered moot when a player is unexpectedly declared inactive 90 minutes before game time. If we’ve got DeMarco Murray in 20% of our lineups and we find out on Sunday morning that he’s not playing, we’ve got to adjust—fast!

Exactly how big a problem this is depends on your style of DFS play. If you tend to play on just one site and enter only a few contests each week, you can generally reformulate your lineups from scratch on Sunday morning based on the latest sets of projections. Inactive lists generally come out 90 minutes before game time, and the projections at Footballguys.com are generally updated at least 50 minutes before Sunday’s kickoffs. If you’re only adjusting four or five lineups, you should have time to check these projections and start over if you need to on Sunday morning. If you will not be available to adjust your lineups on Sunday morning, we recommend that you mainly stick to Thursday contests. It is a severe disadvantage to be unable to adjust your lineups on Sunday morning when many of your opponents will be doing so.

But if you are playing hundreds of contests across numerous DFS sites, you will not be able to reformulate each of your lineups from scratch. You’ll need to engage in a bit of triage.

If you lose a running back, as in the DeMarco Murray example, you may be able to find another running back you like nearly as much for the same price. In that case, a simple across-the-board substitution will solve your problem.

But you might choose to switch Murray out for his now-promoted NFL teammate, Derrick Henry, who happens to have a cheaper salary. You now have extra money to spend at other positions. It’s easy to get caught up making multiple changes to your lineup in that scenario, trying different combinations at lots of different positions. The problem, of course, is that kickoff is fast approaching, and you can’t dawdle around making four or five substitutions per affected lineup.
The best way to handle a critical last-minute adjustment is to flag all the lineups affected by a late scratch. Then start with the lineup with the greatest dollar amount riding on it (whether in a single contest or in multiple contests). If you have time, and if you’re well organized, you can keep the characteristics of this lineup that gave it its purpose—maybe it was a Matt Ryan-Julio Jones stack you want to anchor all your tournament lineups, or maybe it was diversifying away from Arian Foster because otherwise he’s in too many of your lineups. If you have time, go ahead and keep Ryan and Jones, or go ahead and exclude Foster, and start building your lineup back up with Derrick Henry.

When you start to run low on time, you may have to give up your meta-lineup considerations, like using the Atlanta stack or diversifying away from Arian Foster. Just clear your lineups with Murray, and import non-Murray lineups in their places. You may end up with more copies of the same imported lineups than you’d like—and with less diversification than is optimal—but that’s better than including a scratched player in your lineup.

These surprise late-scratch situations will happen to even the best DFS players. If the late scratch wasn’t a surprise, you shouldn’t have had that player in your lineup to begin with. You can’t plan for a specific scratch in a specific week, but you can have a general plan to handle these surprises when they occur.

Make sure you’re available to make last-minute adjustments to your lineup when needed.