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Update: Evaluating Talent Acquisition Via the NFL Draft

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1 Introduction

In [1] we applied data analytics to the National Football League Draft enabling us to pose and seek answers to a number of interesting questions regarding the success of drafting players over the period 2000 through the 2012 draft and league season. The analysis was based on measuring the cost of acquiring players through the draft and the success of these players once acquired. We employed two primary metrics for measuring the cost of drafted players. The first simply uses the round in which a player is taken while the second uses a table of draft pick values initially developed within the NFL in the early 1990s [3]. We also employed two metrics for measuring the success of drafted players where the first assigns a value to each player's performance for a season. The second was developed as part of this work and is based on a weighted score for games played, games started and recognition as a top player.

Using these metrics we examined the draft performance of different teams over this time period, the performance of drafting players at different positions and player success by age. We also used these cost and success metrics to examine the value of draft picks. Through examination of recent draft-pick-only trades within the same draft year, we found that teams continue to make use of the draft pick value table [3] for determining the trade value of each pick. However our results showed that this table does not accurately reflect the success of a player drafted in a given round. Rather the table overvalues first-round picks relative to all other rounds with the average success of second- and third-round players much higher than predicted by the table. The average success for picks in subsequent rounds drops off more gradually and continues to be much higher than predicted by the draft pick value table. The recently introduced rookie pay scale resulted in average salaries for each round that better match the historical average success of draftees in the round, but discrepancies still point to excellent value in the second round where draftees provide 70% of the production of first-round draftees at just over 40% of the salary. Our results also showed the importance of undrafted free agents to teams in the NFL as the total success of these undrafted players exceeded the total for all draft rounds except the first.

Given this study and the impending 2014 NFL draft, this report updates results from our previous work where we focus on the value of draft picks. We seek to test whether or not the per-draft-round results obtained in last year's study still hold while examining the implications of these results on team's strategy in "trading up" and "trading down" for picks in the draft.

2 Approach

We began this updated work by obtaining our two metrics of player success for each player in the 2013 NFL season. The first, Approximate Value (AV), is a metric developed by Doug Drinen at Protocol Football Reference called Approximate Value, which assigns a seasonal value to each player in the NFL [2]. The second success metric is a new measure of a player's value, which we call Appearance Score (AS), based on a player's games played, games started, and Pro-Bowl and All-Pro team selections, a seasonal score is given to a player.

3 2013 Rookie and Top Player Performance Results

If we only focus on rookies taken in the 2013 Draft then the top five players in the 2013 season based on Approximate Value score (along with position, team and round picked) are: Kyle Long (RG, Chicago Bears, 1st), Keenan Allen (WR, San Diego Chargers, 3rd), Eddie Lacy (RB, Green Bay Packers, 2nd), Kiko Alonso (MLB, Buffalo Bills, 2nd) and D.J. Fluker (RT, San Diego Chargers, 1st). Lacy and Reid also are among the top four using the Appearance Score metric along with Eric Reid (FS, San Francisco 49ers, 1st) and Cordarrelle Patterson (wr, Minnesota Vikings, 1st).

These results show two second-round and a third-round pick amongst the NFL rookies with the top performance this past season. Table 1 shows the merged results for top-32 players (on the order of one per team) using each of the AV and AS metrics for performance. Including ties there are a total of 67 players.

Table 1: Draft Round for Top-Performing 2013 Rookies Based on Approximate Value and Appearance Score

Round	Count (Pct)
1	33 (49%)
2	13 (19%)
3	9 (13%)
4	4 (6%)
5	4 (6%)
6	2 (3%)
7	0 (0%)
undrafted	2 (3%)

These results show approximately half of the top-performing 2013 rookies were drafted in the first round with another third of rookies drafted in the second and third rounds. There is a sharper drop-off after the third round. No seventh-round picks, but two undrafted free agents (Joplo Bartu (OLB) and Paul Worrilow (MLB) each playing for the Atlanta Falcons) were amongst the best performing rookies.

As a comparison we also examined the top 100 (plus ties) performing players for the 2013 season using each of the AV and AS metrics. Peyton Manning (QB, drafted by the Indianapolis Colts, 1st) and Drew Brees (QB, drafted by the San Diego Chargers, 2nd) were the top two-rated players based on the AV metric. 30 different players accumulated the maximum AS score of 84. Table 2 shows the number and percentage of these top players by round drafted. The percentages for the top players in Table 2 are comparable to the percentages for 2013 rookies in Table 1 with the biggest difference being the percentage of undrafted players among all top players.

4 Player Performance and Value Per Round

We next computed the average Approximate Value and Appearance Score for players taken within a particular round of the draft. For this analysis, we examined the 2013 season performance for all first- and second-year players. We choose this group to analyze as most of these players are still

Table 2: Draft Round for Top-Performing Players in 2013 Season Based on Approximate Value and Appearance Score

Round	Count (Pct)
1	110 (49%)
2	36 (16%)
3	32 (14%)
4	11 (5%)
5	8 (4%)
6	8 (4%)
7	1 (0%)
undrafted	15 (7%)

in the league and with their original team. These results are shown in Table 3 where we assign a percentage of 100 to the first-round values with the relative percentage then computed for each round and metric.

Table 3: Relative Performance of First- and Second-Year Players in 2013 Based on Draft Round

Round	Count	Ave. AV	Pct. AV	Ave. AS	Pct AS
1	64	6.0	100	37.5	100
2	59	4.2	70	28.0	75
3	58	3.8	64	25.3	68
4	62	1.7	28	16.3	44
5	53	1.8	30	14.9	40
6	48	1.9	31	17.0	45
7	58	1.1	19	12.3	33
undrafted	271	1.2	20	12.7	34

The results show good consistency using either the AV or AS performance metric. If the relative performance of a player picked in the first-round is 100 then the relative performance of a second-round pick is 70-75%. The relative performance of a third-round pick is not far behind at 60-64%. These relative percentages for the second and third rounds are even higher than those presented in Figure 6 of [1] where the second-round picks had a relative performance of 67-70% and the third-round picks a relative performance of 42-49% in comparison to first-round picks. These results suggest that third-round picks are relatively more valuable than found in our earlier work and are close in value to second-round picks.

The results in Table 3 show remarkable similarity in relative performance for fourth-, fifth- and sixth-round picks indicating comparable productivity for players taken across these three rounds. Results show in Figure 6 of [1] showed a similar “flattening” of performance, although not as pronounced as these results. Finally, the relative performance of seventh-round picks and undrafted free agents is lower that previous rounds. Note these results do not show performance for players that were released and did not play in the 2013 season.

In order to understand the relative cost metrics for each round in comparison to the relative performance, we augmented the relative performance metrics in Table 3 with two cost metrics—the relative cost in terms of the average draft pick value (referred to as Draft Points) [3] per round as well as the average Rookie Wage Scale per round. These cost metrics are shown in Table 4.

Table 4: Relative Success vs. Cost of First- and Second-Year Players in 2013 Based on Draft Round

Round	Pct. AV	Pct AS	Draft Points	Rookie Salary
1	100	100	100	100
2	70	75	36	44
3	64	68	16	28
4	28	44	6	26
5	30	40	3	23
6	31	45	2	23
7	19	33	0	22
undrafted	20	34	0	0

The relative success vs. cost values show a big discrepancy in the second round, which is consistent with what we reported in [1]. However, these results show an even bigger discrepancy between relative success and cost for the third round. Both the relative performance and rookie wage scale flatten out in rounds 4-6, although the relative Draft Points metric continues drops over these rounds. These results provide an even stronger indicator than what we found in [1] that the second and third rounds are a "sweet spot" in providing the best average performance relative to cost.

5 Draft Strategy

In looking ahead to the 2014 NFL Draft, these results suggest a number of strategies in terms of how teams employ their draft picks, especially in terms of how they handle trades of draft picks with other teams. These strategies are particularly relevant as results found in [1] show "a strong indication that the table of draft pick values is still in use." If teams continue to utilize this table for making trades then these strategies are even more relevant.

Results from this work and our prior work suggest a four-part draft strategy:

1. Teams should look to "trade-down" from the first round for multiple picks in the second and third rounds as cumulative performance for these acquired picks is expected to be better.

2. Teams should look to "trade-up" by combining multiple picks in rounds 4-7 for picks in rounds two and three to accumulate more expected performance.

3. Teams should look "trade-down" from the fourth round for multiple picks in the fifth and sixth rounds as expected performance through these rounds is relatively flat.

4. Teams should be willing to use seventh-round picks to facilitate trades as teams can find comparable players from the group of undrafted free agents.

Overall these strategies should be effective if teams continue to use the traditional table for value of draft picks. However results such as ours may actually lead to fewer trades during the draft as teams have more trouble agreeing on the relative value of the draft picks they are looking to trade. For example, a team seeking to trade-down a first-round pick may look to obtain compensation consistent with the draft pick value table while a potential trading partner may be unwilling to pay that "price" based upon results such as obtained in our work.

An interesting question to examine in the upcoming draft is whether the relative value of traded draft picks continues to match the draft pick value table or whether a different compensation model emerges. Another interesting question is whether results such as we have found lead to fewer draft deal days as teams have a harder time agreeing on the relative value of picks.

6 Summary

This work follows up previous work on the value of draft picks to teams in the National Football League. Performance results from the 2013 NFL season are generally consistent from our previous study, although the relative performance of third-round picks is stronger than we previously found. These performance results and results for how draft picks are traditionally valued leads to draft strategies centered around the second and third rounds as sweet spots for the best expected value. These results may also lead to changes in terms of how teams value their own draft picks as they consider draft-day deals with other teams.

References

[1] C. Barney, A. Caravella, M. Cullen, G. Jackson, and C. E. Wills. Evaluating talent acquisition via the NFL draft. Technical Report WPI-CS-TR-13-01, Computer Science Department, Worcester Polytechnic Institute, March 2013. http://web.cs.wpi.edu/~cew/papers/nfldraft13.pdf.

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[3] NFL draft-pick value chart. Retrieved May 1, 2014 from http://sports.espn.go.com/nfl/draft06/news/story?id=2410670.