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Assignment 8

1. My approach consists of two parts. First, I tried to predict the point total for each player in the league for the 2018 season. After that, I used the points totals and information about the league to assign each player a dollar value.

In order to get the points values, I used Steamers Projections (gotten from FanGraphs) for batters and pitchers in the 2018 season. This included most of the counting stats needed to calculate the expected fantasy point totals.

However, it did not include any of the defensive stats that may be used (errors in the case of this league), so I needed to estimate those myself. In order to do this, I ran a query against Lahman's database that calculated the putouts per game, assists per game, and errors per game for each position. I then multiplied the expected number of games for each player (from Steamers Projections), and then multiplied that result by each players 'Fielding' grade plus five (elite is 10+, most players fall between -2 and 2) divided by 10. This is an attempt to estimate the players contribution in points from their fielding, where defensive stars really shine and guys who really suck are actually negatively affected by their grade.

I also needed to estimate some of the pitching stats included in this leagues scoring that aren't included in Steamers projections. These were quality starts and holds, as complete games, balks, pickoffs, and shutouts are rare enough that they don't affect the points totals by that much. To predict quality starts, I used the following formula:

$$Quality\ Starts = \left(\frac{GS}{ER \times \left[\frac{GS}{GP}\right]}\right) \times \left(IP \times \left[\frac{GS}{GP}\right]\right) \times \left(\frac{GS+GP}{4 \times GP}\right)^2$$

Which seems to fit fairly nicely with last year's data and what we could expect from top tier pitchers. This equation was found at http://fantasybaseballcalculator.webs.com/quality-starts-predictor.

In order to predict holds, I used the following formula:

$$Holds = \left(\frac{GP}{ERA}\right) + 5$$

I only applied this formula to pitchers with less than 6 saves and less than 4 starts, predicted, in order to eliminate closers and starters.

This gives me an estimated point total for the upcoming season for every single player. In order to give each player a dollar value, I used the following formula:

$$\$ Value = \frac{Player\ Points\ Above\ Replacement \times Budget}{Total\ Points\ Above\ Replacement - ((Roster\ Size \times Teams) \times Replacement\ Player\ Points}$$

Where the replacement level player is determined by multiplying the roster size by the number of teams (e.g. 10 teams, 20 players per team, the replacement player would be the 201st ranked player).

This gives us an estimated value that coincides with how many more points are we getting from a player than we could get from some guy off of waivers adjusted for the total dollar amount. With a $260 budget, 12 team, 17 player per team league, the highest ranked players are worth about $60.

This leaves us with a great starting spot, but unfortunately actually doing the draft is a much more complicated process.

My only real strategy going into the draft is to make sure that I get a few high end guys, and then after that it's kind of a crapshoot. I have particular players that I like and would probably overpay some for (Dee Gordon, for example), but strategy can change multiple times throughout a draft as player values tend to cement and inflation rates also tend to cement.

2. Steamers Projections and some data from Lahmans Database for defensive matrics

3. Calculate expected point totals

4. Anything that goes into the points, as well as 'Fielding' which is a defensive metric, and then by position A/G, PO/G, E/G.

5. The biggest limitation is that the data isn't really hand combed and doesn't have any kind of account for injury (such as the fact that Justin Turner is now out for a couple months). A lot of things go into analyzing a player from a non-numerical points of view (how old is he, what's his injury history, is he a consistent or streaky player) that is very hard to quantify. In the end, we can use these numbers and values all we want, but our picks include a lot of bias from numerous different sources.

a. Injury
b. Prospects/starters for such a short fantasy season
c. Bias in picks

6. I would say that this is a more in depth look than I am used to for fantasy baseball, but I have done similar things for fantasy football.

7. My top 5 players are:

| Player | Expected Points | Value |
|---|---|---|
| Chris Sale | 339 | $48 |
| Corey Kluber | 338 | $48 |
| Clayton Kershaw | 337 | $47 |
| Max Scherzer | 336 | $47 |
| Mike Trout | 327 | $45 |

8.
Mike Trout: Trout is the best position player in baseball, and the number one in expected points total. If we look at the expected expected stats that contribute to the points totals for the upcoming season, we get:

| 1B | 2B | 3B | HR | BB | RBI | SB | K | HBP | CS | PTS |
|---|---|---|---|---|---|---|---|---|---|---|
| 84 | 32 | 3 | 38 | 108 | 106 | 20 | 124 | 9 | 9 | 327 |

This puts Trout a head and shoulder above the next best expected position player (Stanton at 306 points), and Trout player a far safer game (Stanton relies heavily on HRs for his value, while Trout can do just about everything besides receiving a -2.3 FLD stat).

Assuming Trout doesn't get hurt again like last year, he's the safest top player you can select, but that costs you a heavy $45 expected dollars. If we look at some of his expected advanced stats, we can see why that is worth it:

| AVG | OBP | SLG | wRC+ | WAR |
|---|---|---|---|---|
| .308 | .434 | .608 | 176 | 8.4 |
| 14th | 3rd | 4th | 1st | 1st |

Trout can do just about everything you could ask a guy to do (the third row is where he would've ranked last year). This justifies such a high price, as if any of his skills diminish, he still has plenty of others to take its place to produce at an extremely high level.

9. The biggest difficulty that I expect with implementing this strategy in the draft is roster balance as well as adjusting for the fact that the season is only 1 month long.

In order to win, you need to have a good balance of top tier players and guys to fill out the rest of the roster. Prospects aren't really an option since they won't produce by the time the year is over, and injury prone players are worth more than their indicated value since they probably won't get injured by the time the season is over.

Ideally, I would like a total of 3 high tier players with at least 1 pitcher or position player, followed by filling out my roster with guys that I think I can get good value out of.

Some of my target players in the draft are as follows:

Mike Trout, Kershaw, Kluber, Scherzer, Sale: Duh

Severino: Posted top tier stats last year but doesn't cost as much as the elites.

Paxton: Posted top tier stats until he inevitably got injured, but with a short season that shouldn't matter.

Beltre: a second or third tier 3B when healthy, but struggles throughout the season.