Analysis and Improvement of Fantasy Football Team Management Software

Danielle Beland, Weixin Chen, Brannon Cote-Dumphry
Overview

• Fantasy Football
• Advanced Sports Logic
• The Season Calculator
• Backup Player Valuation
• Playoff Seeding Approaches
• Recommendations
• Conclusion
Fantasy Football

• Estimated over 18 million players
• Varying league types, each with their own set of rules
• Hosted on a variety of sites: NFL.com, Yahoo! Sports, CBSSports, etc.
Advanced Sports Logic

- Small, New Hampshire-based company
- Season Calculator: Simulates entire fantasy football season and generates probability that you will make it to and win the playoffs
Input data from Accuscore, league specific scoring rules, weekly matchups, divisions (if any)

Develop FP distribution for each player for each future week

Develop FP distribution for each starting position for each future week

Develop aggregate team FP distribution for each future week

Develop end-of-season win/loss distribution for each team (using probability trees)

Determine each team's percentage chance of making the playoffs

Develop playoff win/loss distribution for each team (using probability trees)

Output percentage chance of winning the championship
Backup Player Valuation

- ASL’s iterative method vs. our proposed alternative method
ASL’s Playoff Seeding Method

Before Truncation

After Truncation
# Our Playoff Seeding Method

<table>
<thead>
<tr>
<th>Wk 1</th>
<th>Wk 2</th>
<th>Wk 3</th>
<th>Wk 4</th>
<th>Wk 5</th>
<th>Wk 6</th>
<th>Wk 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>AvB</td>
<td>AvC</td>
<td>AvD</td>
<td>AvE</td>
<td>AvF</td>
<td>AvG</td>
<td>AvH</td>
</tr>
<tr>
<td>CvD</td>
<td>BvD</td>
<td>BvC</td>
<td>BvF</td>
<td>BvG</td>
<td>BvH</td>
<td>BvE</td>
</tr>
<tr>
<td>EvF</td>
<td>EvG</td>
<td>EvH</td>
<td>CvG</td>
<td>CvH</td>
<td>CvE</td>
<td>CvF</td>
</tr>
<tr>
<td>GvH</td>
<td>FvH</td>
<td>FvG</td>
<td>DvH</td>
<td>DvE</td>
<td>DvF</td>
<td>DvG</td>
</tr>
<tr>
<td>ABCDEFGH 10101010</td>
<td>ABCDEFGH 11001100</td>
<td>ABCDEFGH 11001100</td>
<td>ABCDEFGH 11110000</td>
<td>ABCDEFGH 11110000</td>
<td>ABCDEFGH 11110000</td>
<td>ABCDEFGH 11110000</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>ABCDEFGH 01010101</td>
<td>ABCDEFGH 00110011</td>
<td>ABCDEFGH 00110011</td>
<td>ABCDEFGH 00001111</td>
<td>ABCDEFGH 00001111</td>
<td>ABCDEFGH 00001111</td>
<td>ABCDEFGH 00001111</td>
</tr>
</tbody>
</table>
Recommendations

• Using Non-Normal Fantasy Point Distributions
• Obtaining Projections from Other Sources
• Treating Wins/Losses as Dependent Events
• Partnerships with Fantasy Football Companies
Conclusion

• Separated the steps of the Season Calculator into phases
• Described each phase in mathematical terms
• Proposed changes to the current methods
• Provided recommendations
• Special thanks to Leonard LaPadula and Professor Jon Abraham
Questions?