# Daily Fantasy Football Optimizer

Guy Dotan
UCLA MAS - Stats 418
June 2019

# Background

- Multi-million dollar industry where every week (or day) bettors compete against a pool of opponents to create the best fantasy lineup.
- Differs from regular season-long fantasy sports in which you draft a team at the beginning of the season and keep that roster for the entire season.
- Been the subject of court cases* over whether it is “gambling” vs. “game of skill”
- DraftKings, FanDuel, ESPN, Yahoo! - major players in the space with some prize pots for NFL competitions at over $1M




* Source: Wikipedia

# The Dataset

**nfscrapeR**

- R package built on the NFL API play-by-play data
- Aggregated player stats from 2018 season
- Converted NFL stats to DraftKings fantasy points

RotoGuru
EXPLORING FANTASY SPORTS STRATEGY

**RotoGuru**

- Archive of daily fantasy salaries and points from variety of DFS sites
- Scraped using R's **rvest** package
- Joined with NFL stats dataset to get full 2018 fantasy season stats

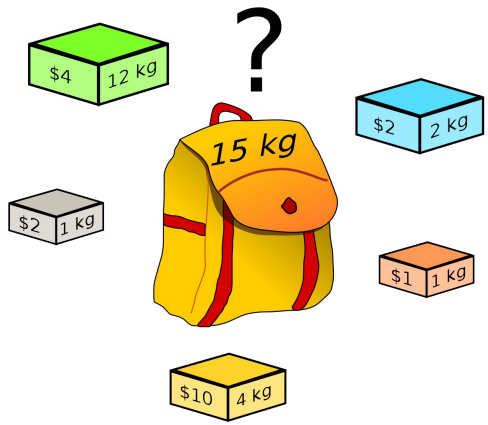
# The Optimizer

**DraftKings Rules:**

- 9 player lineups (1 QB, 3 WRs, 2 RBs, 1 TE, 1 Flex*, 1 DEF)
- $50,000 maximum salary

**Linear Optimization**

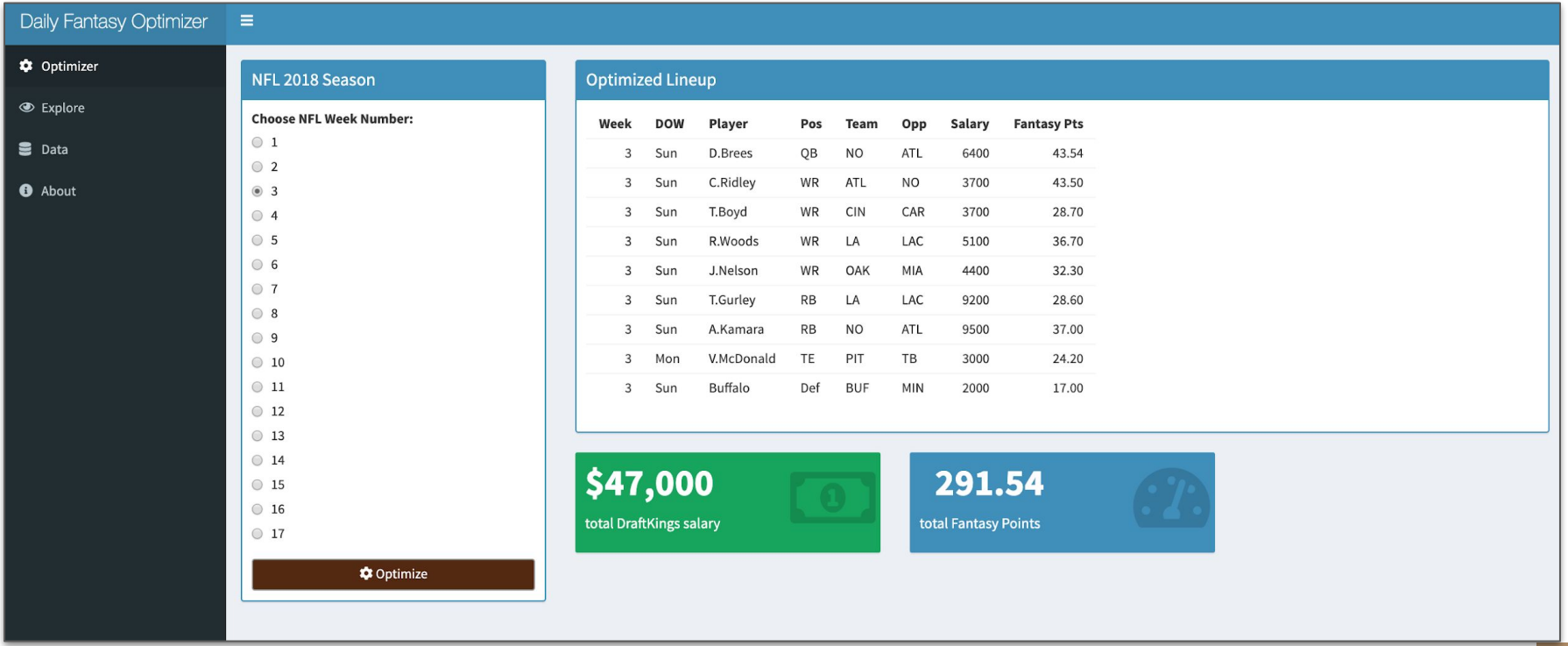
- Using R's **`lpSolve`** package
- Essentially an iteration of the Knapsack Problem
- Outputs optimal lineup based on most fantasy points within salary budget constraint




* WR / RB / TE

# The App

[Link to the Shiny Dashboard]



# Next Steps

***Utilize Projections***

Aggregate fantasy projection sites (ESPN, CBS, FantasyPros, etc.)

***Supplemental Data***

Scrape weekly salaries, injury updates, weather forecasts

***Multiple Lineups***

Generate multiple iterations of top lineups for hedging

***Build Own Model***

Using publicly available projections limits differenatiation from competitors