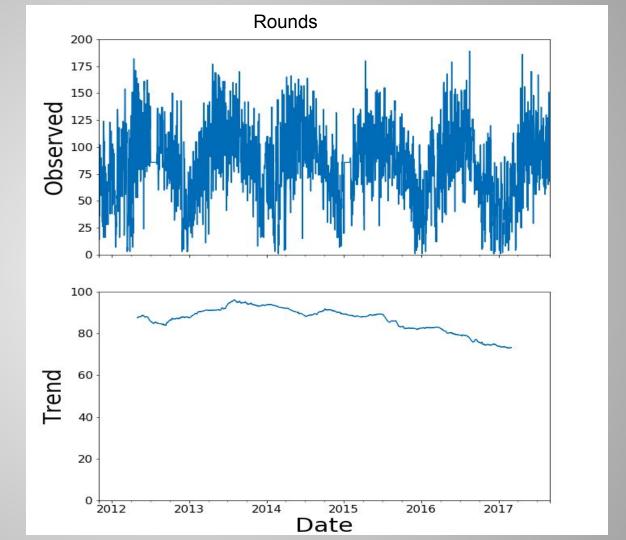


Goals:
-Predict crowd level

-Quantify golfability

Motivation:
-Course attendance declining



Methodology

Scraped Historical Weather Data

Diablo CC data (Excel)

Data Cleaning and Feature Engineering

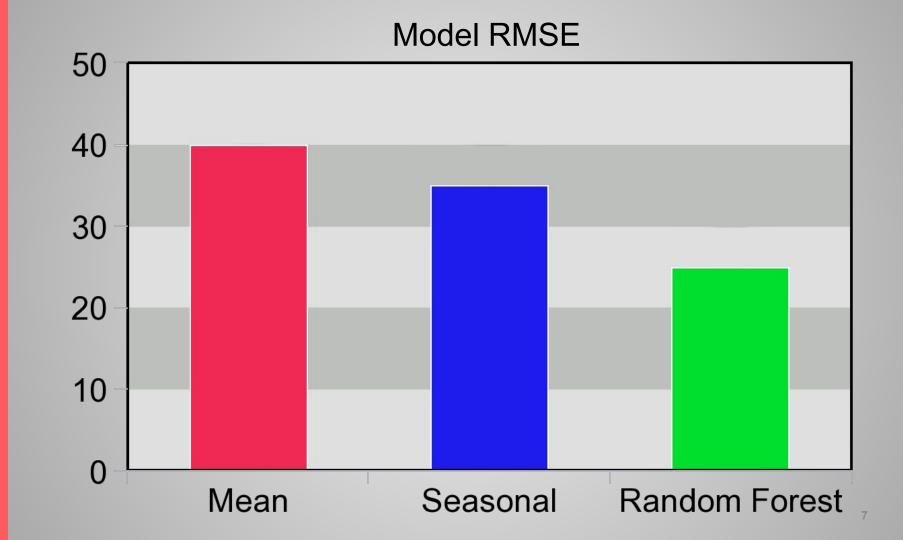
Random Forest Regressor

Feature Engineering

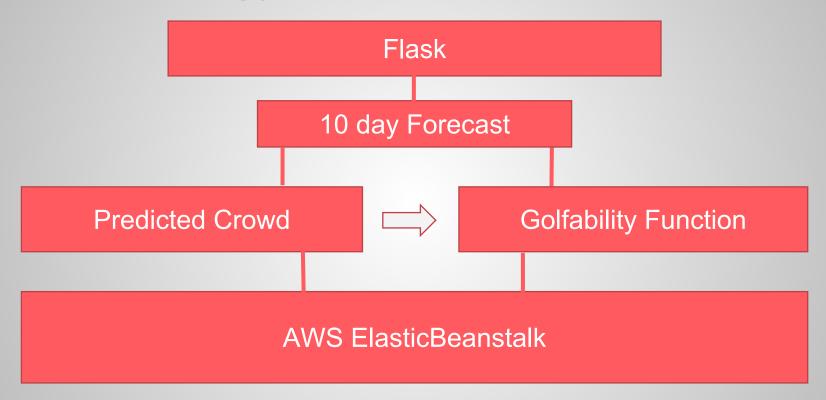
- Cumulative precipitation from day before
- Month
- Year
- Day of Year
- Day of Week

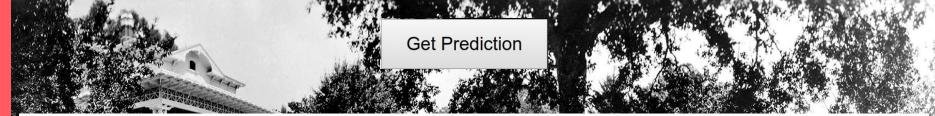
Random Forest Feature Importance

- Day of Week
- Temperature
- Precipitation
- Month



Methodology





Date	Temp High (F)	Temp Low (F)	Wind Speed (mph)	Precipitation (in)	Predicted Rounds	Golfability
11-02 Thu	66	51	9	0.03	32	Great Day
11-03 Fri	62	49	12	0.42	18	Bad Day
11-04 Sat	57	41	8	0.0	42	Great Day
11-05 Sun	59	44	9	0.08	33	Great Day
11-07 Tue	61	44	5	0.0	44	Perfect Day!
11-08 Wed	63	45	10	0.0	44	Great Day
11-09 Thu	66	45	6	0.0	42	Perfect Day!
11-10 Fri	67	46	6	0.0	43	Perfect Day!
11-11 Sat	66	46	6	0.0	43	Perfect Day!

Golfability

- Difference of weather with ideal conditions lowers golfability
 - 71 F, 6 mph wind, 58.5% humidity, 10 mi visibility
- Precipitation lowers golfability exponentially
- Crowd lowers golfability



Golfability Function

$$80*10^{-\alpha\Delta PerfectWeather}*(1+Precipitation)^{-\beta}*Crowd^{-\delta}$$

Golfability Formula

$$golfablility = 80 * \frac{10^{-0.2\Delta PerfectWeather}}{(1 + Precipitation)^{1.4} \sqrt{Crowd}}$$

Future Work

- Integrate with online tee-time making page
- A/B testing golfability functional forms

Baseline Model

- Mean prediction RMSE 40
- Seasonal prediction RMSE 35

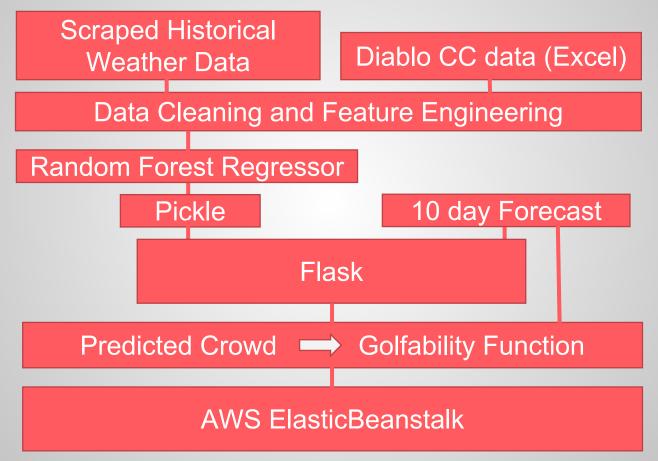
Random Forest

10-fold train RMSE - 22

Test RMSE =



Methodology



Performance

