Effectiveness of Self Reporting in Rugby Sevens

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Background

- Important to accurately gauge player readiness before competition
- Self reported data is subjective
- Many Rugby coaches say speed is the most important factor when it comes to Rugby Sevens
- To evaluate self reported data, we cross reference their report with their same day game speed performance
- Only interested in a player’s speed whenever they are running

Hypothetical Question:

As a rugby coach, how much should pre-match player feedback influence who should play in the game?

Data Overview

- The Self-Reported features we are interested in are Fatigue, Soreness, Desire, Irritability, SleepQuality, TrainingReadiness, and RPE
- Performance metric: change of running speed of a player during game
- We rate a player's self reporting by the sum of the correlation between their speed and RPE, and speed and fatigue

$$\Omega_{Self\ Reporting} = corr(Speed, RPE) + corr(Speed, Fatigue)$$

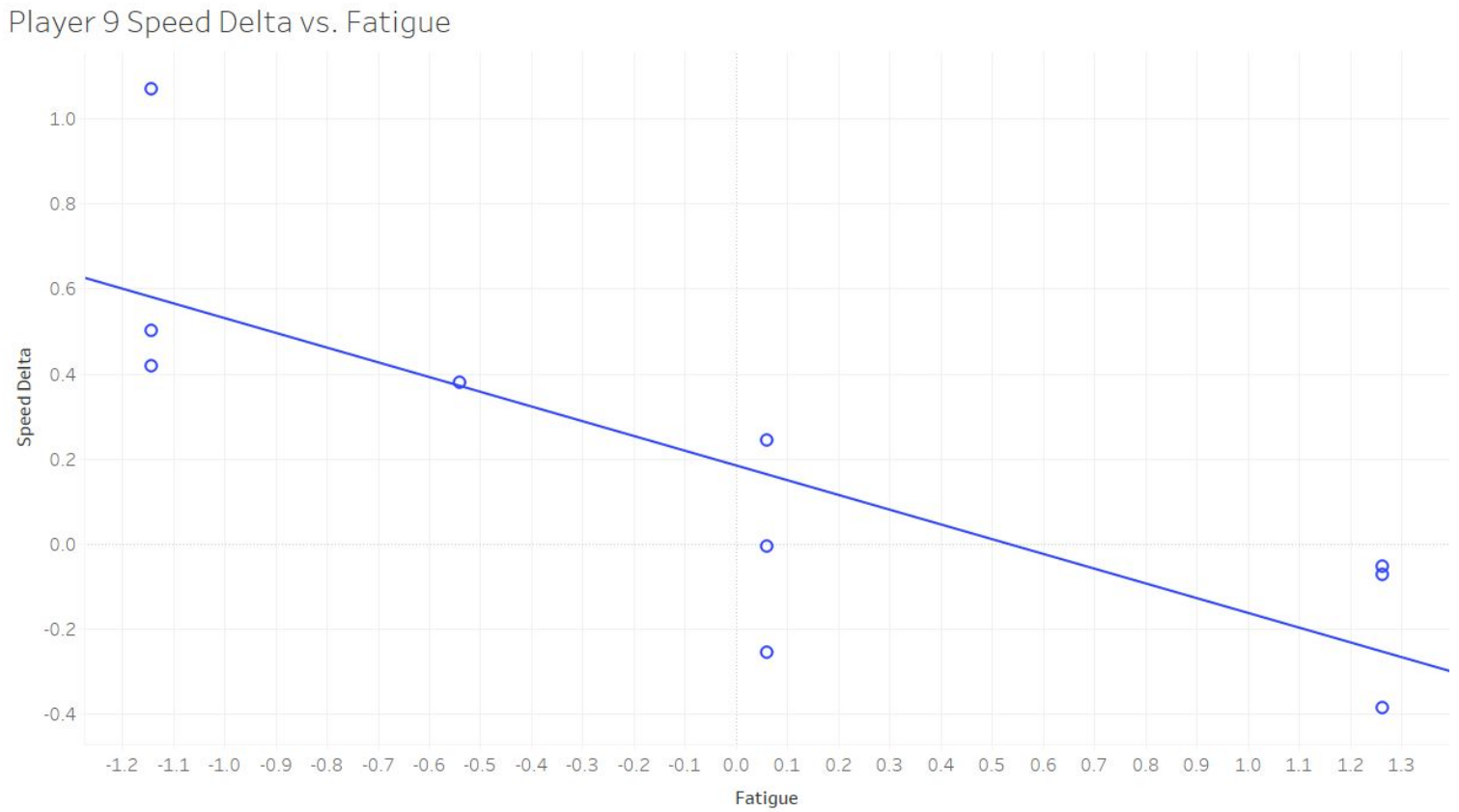
Data Preprocessing

- Only interested in speed when running, not when at rest or walking
  - Only look at the top 60% of speeds measured per player
  - Use this to compute a baseline speed average
  - Compare to speed averages per game

$$\Delta_{speed} = \mu_{Game} - \mu_{Overall}$$

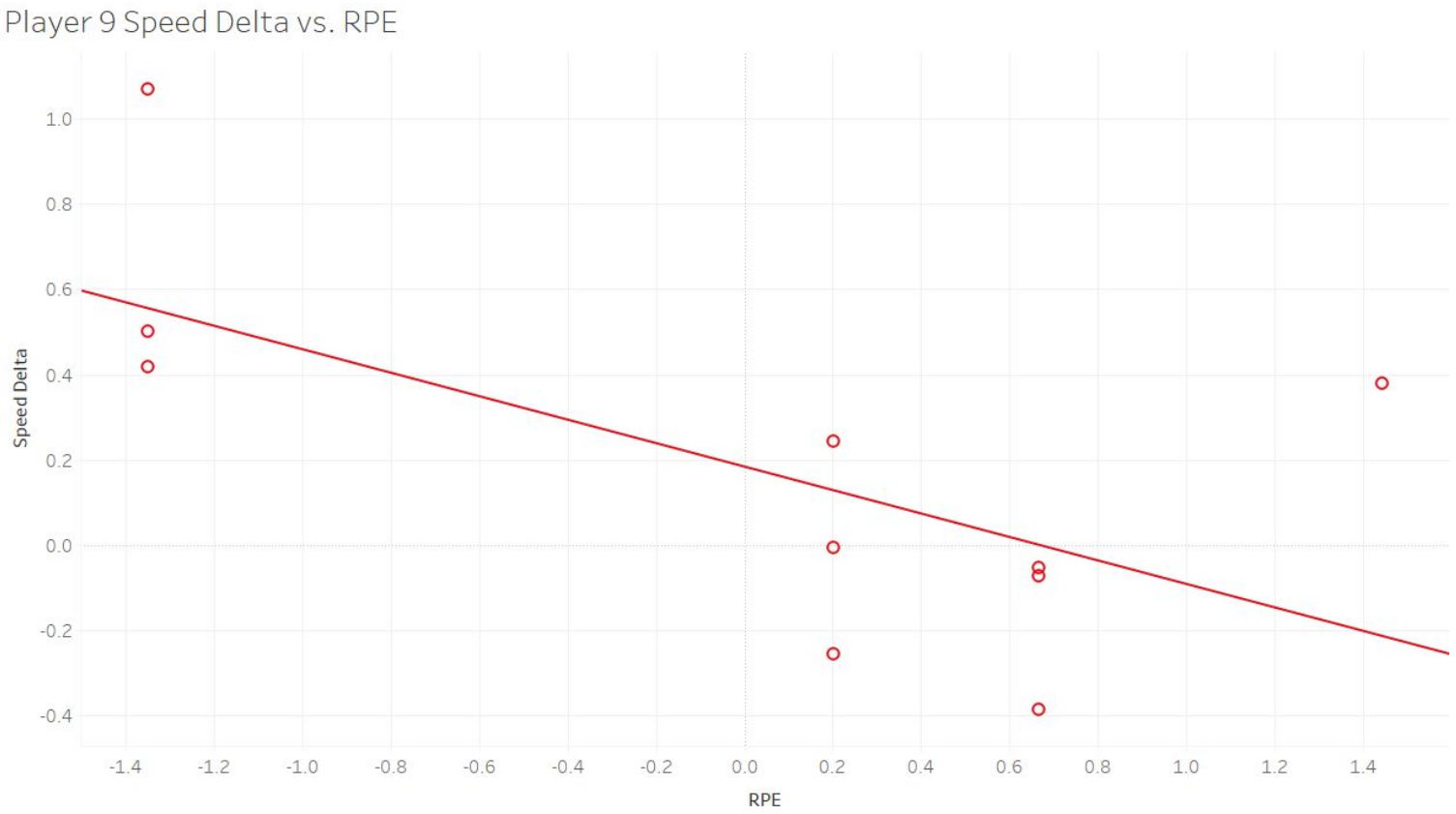
- We standardized the wellness features to keep them consistent
- Ignore players who gave the same rating every time

Player 9, A Bad Estimator



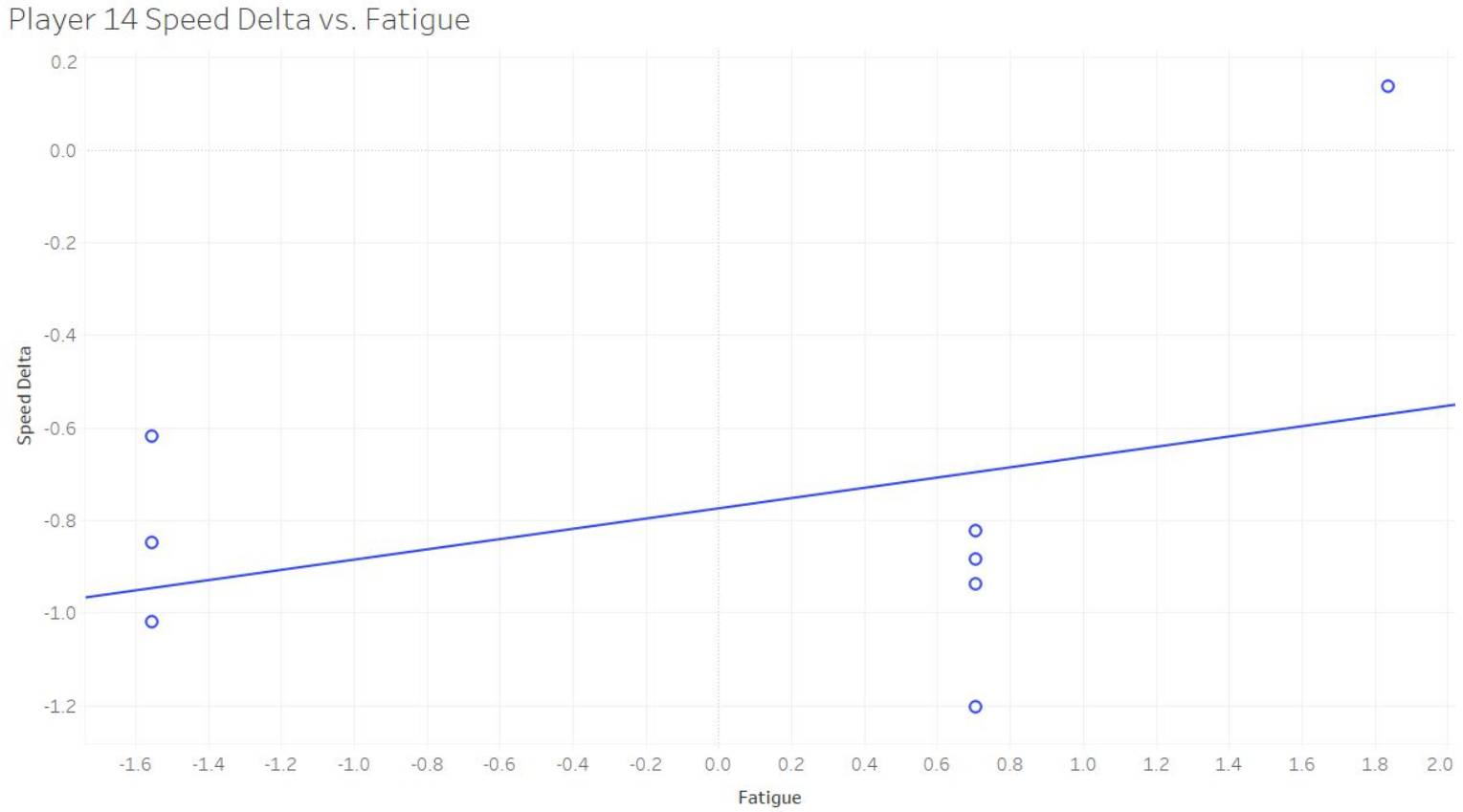
Fatigue vs. 0-[Speed Delta]. Details are shown for Measure Names. The data is filtered on Player ID, which keeps 9.

Player 9, A Bad Estimator



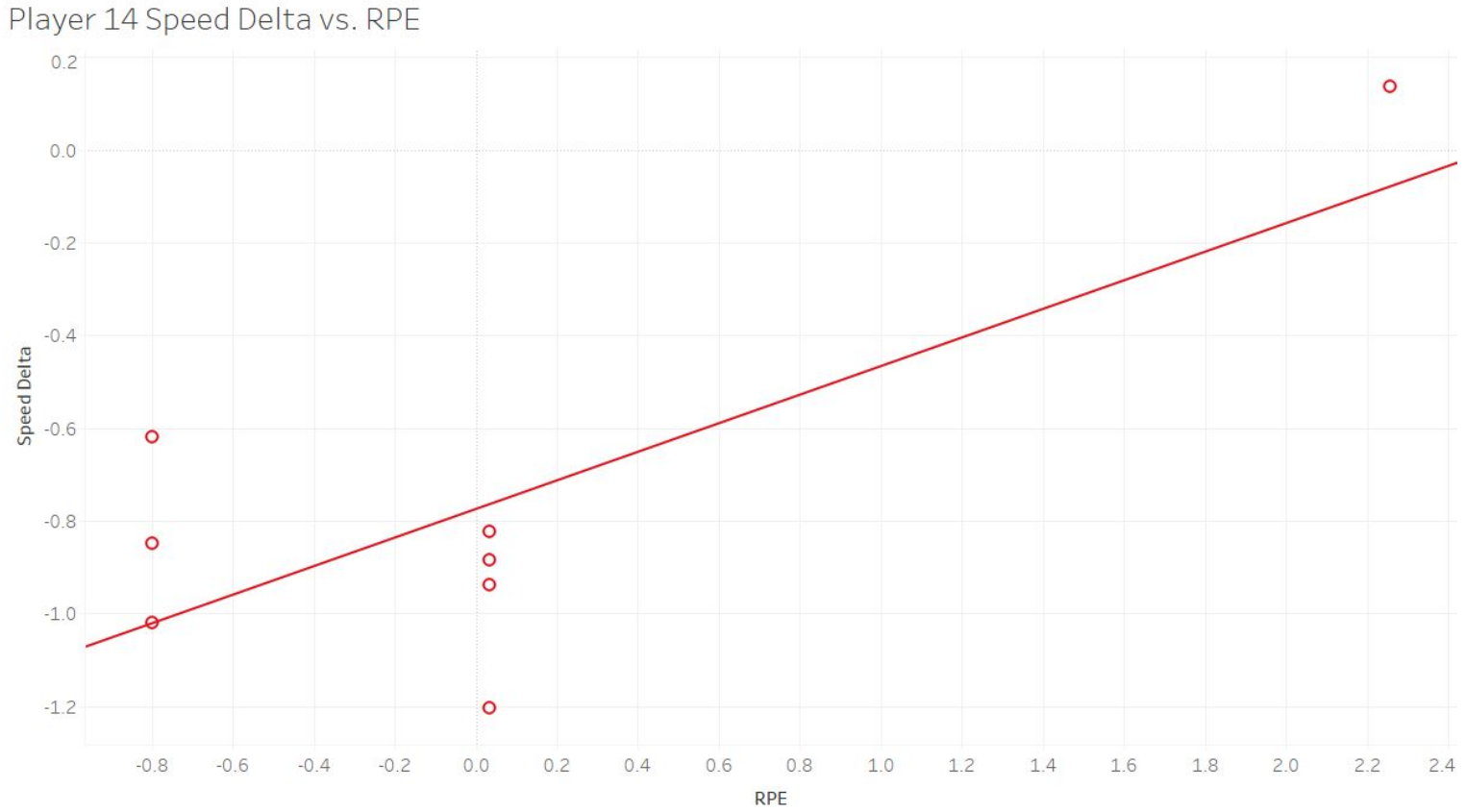
RPE vs. 0-[Speed Delta]. Details are shown for Measure Names. The data is filtered on Player ID, which keeps 9.

Player 14, A Good Reporter



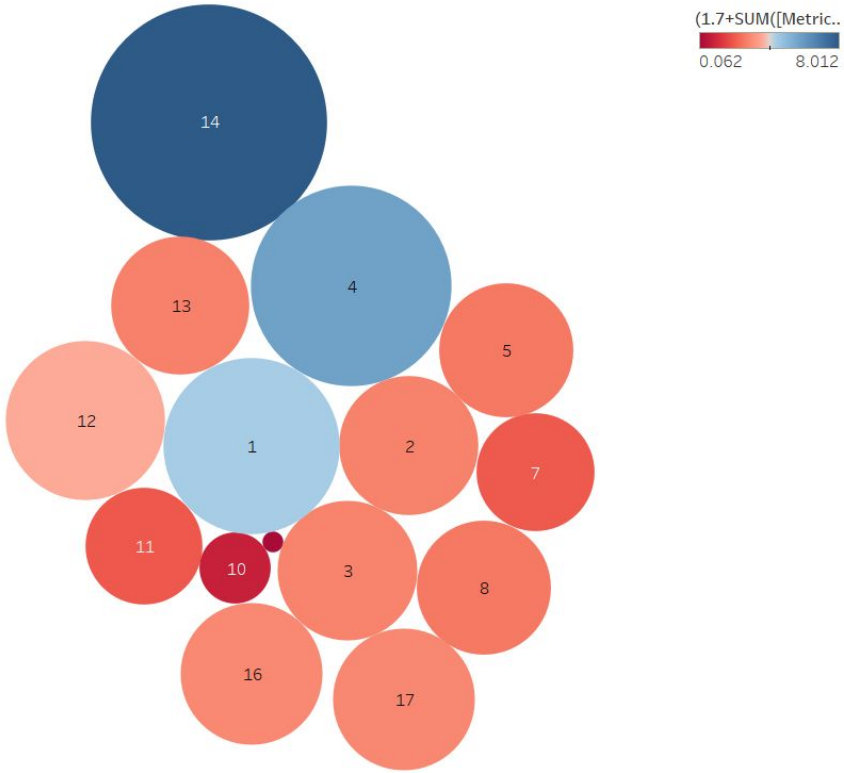
Fatigue vs. 0-[Speed Delta]. Details are shown for Measure Names. The data is filtered on Player ID, which keeps 14.

Player 14, A Good Reporter



RPE vs. 0-[Speed Delta]. Details are shown for Measure Names. The data is filtered on Player ID, which keeps 14.

Correlation Heatmap



Player ID. Color shows (1.7+SUM([Metric1]))^2. Size shows (1.7+SUM([Metric1]))^2. The marks are labeled by Player ID.

$\Omega_{Self\ Reporting}$ For Every Player

Comparing Models for Good and Bad Reporters

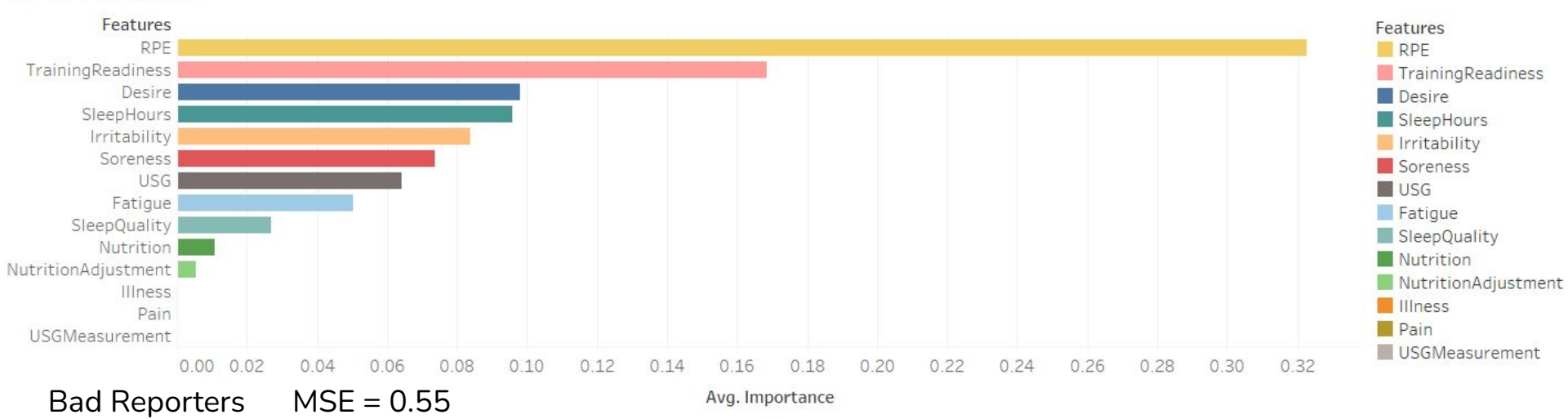
Methodology

- First, we separated players into those who are good at self reporting and those who are not using this metric:

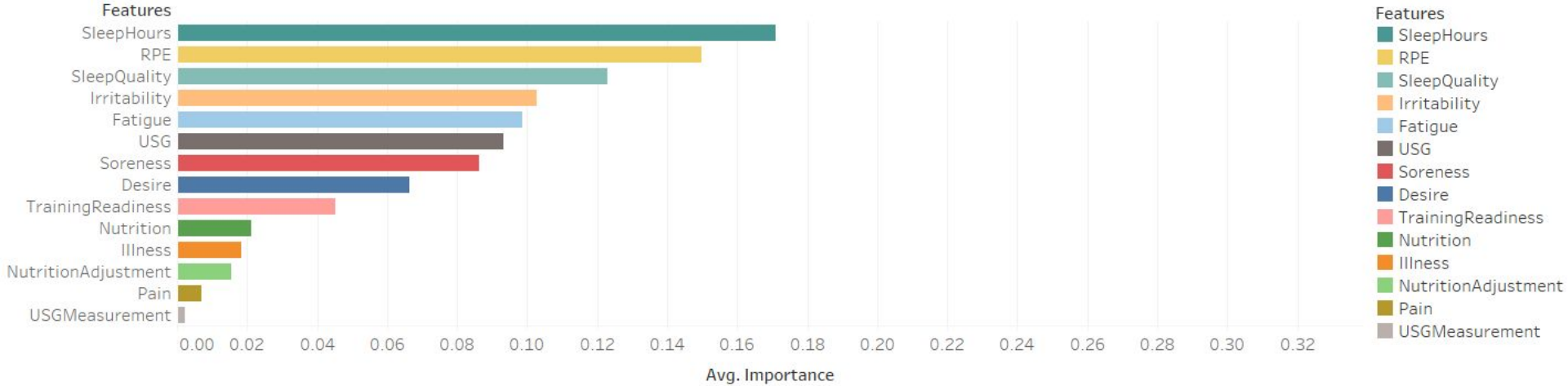
$$\Omega_{Self\ Reporting} = corr(Speed, RPE) + corr(Speed, Fatigue)$$

- Built a Random Forest model for good and bad reporters, analyzing feature importance for subjective vs. objective features.

Good Reporters MSE = 0.34



Bad Reporters MSE = 0.55



Closing Remarks

- Players vary at gauging and self-reporting their physical and mental condition.
- Our analysis can help coaches and staff tune their expectations whenever they ask their players.
- If we had another metric for player performance, we could provide even better results about player expectations.
    - Tackles? Have RPE assigned to games? More seasons of data?

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