Predicting Valuable NBA Statistics

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WHAT?

Which **physical attributes** are useful for predicting **career win shares** and **salary**?

HOW?

NBA DRAFT COMBINE Powered by UNDER ARMOUR

NBA

Height

Wingspan

Independent
predictors

Agility

Vertical

Win Share: measure of performance and “credit” for a win

Dependent
to predict

Salary: total dollars earned during given season

(Attempt at) Linear Regression

```
Career Win Share = 15.0 + (-11.9)Height + (-15.8)Wingspan + (31.5)Standing reach + (-7.61)Vertical + (28.5)Weight + (-11.6)Body fat + (-11.9)Agility + (-15.2)Sprint
R^2 is 0.0443
```

Min-Max Scaled Linear Regression

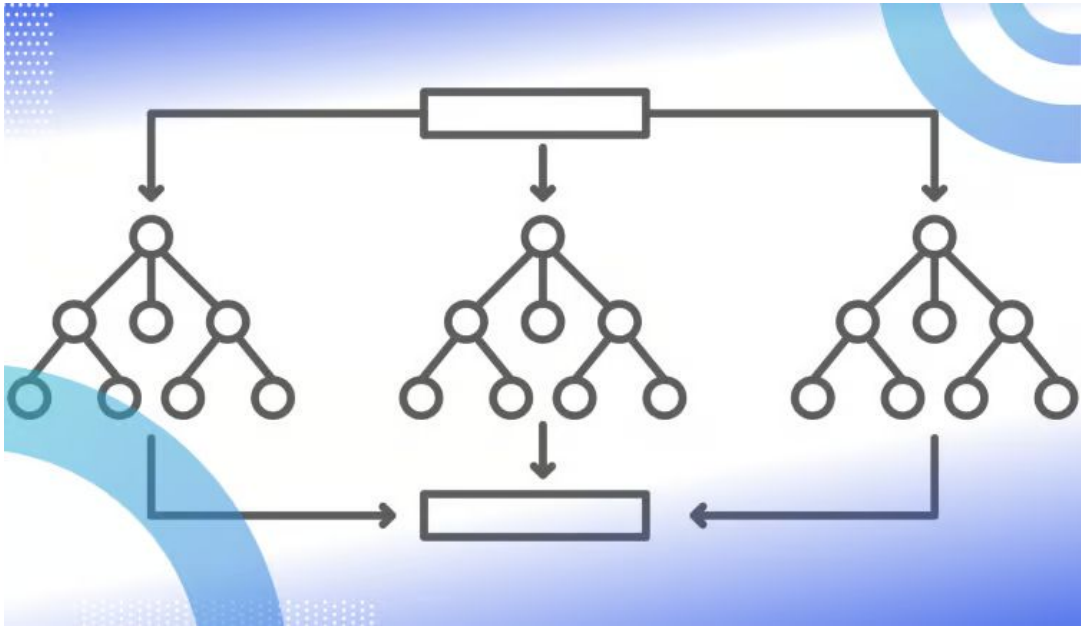

```
Career Win Share = 13.0 + (0.0)Height + (0.0)Wingspan + (0.0)Standing reach + (0.0)Vertical + (0.0)Weight + (-0.0)Body fat + (-0.0)Agility + (-0.0)Sprint
R^2 is 0.0
```

Min-Max Scaled Lasso Regression

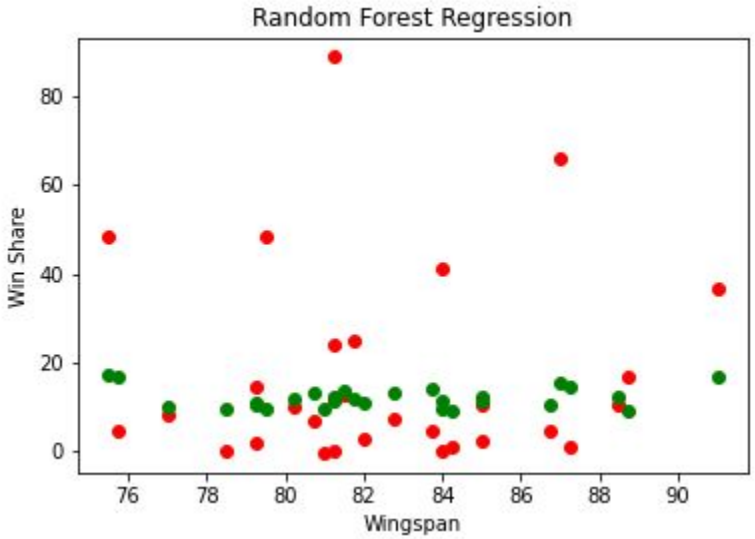
Also tried - ridge regression, decision tree regression, variety of hyperparameters, permutation feature importance, and more

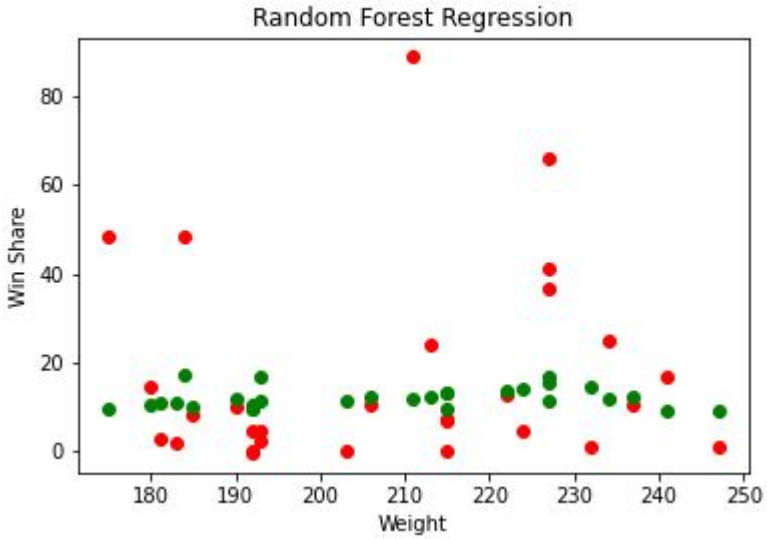
Random Forest

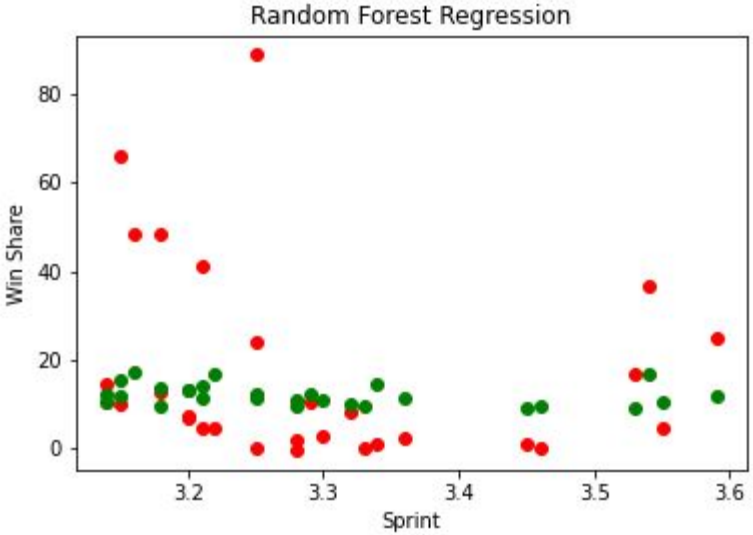
- Used Grid Search to find the best parameters for regression
- MSE = 474.66
- RMSE = 21.79

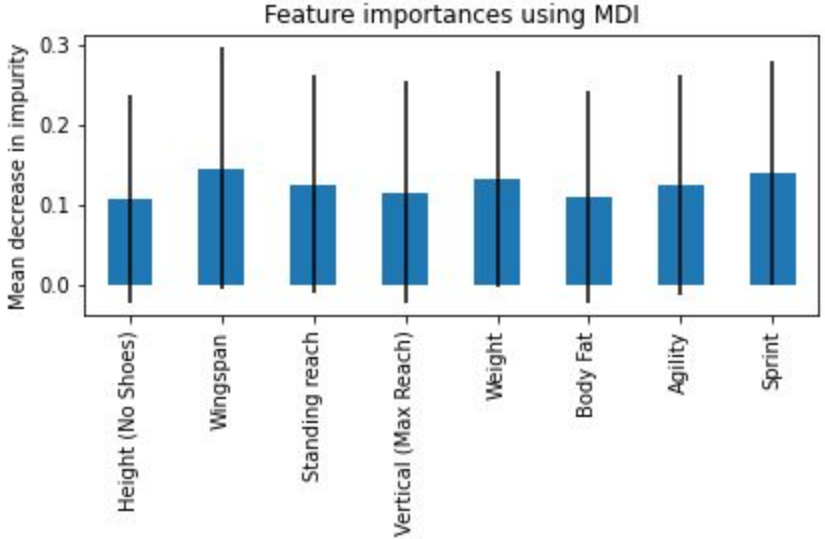


Random Forest

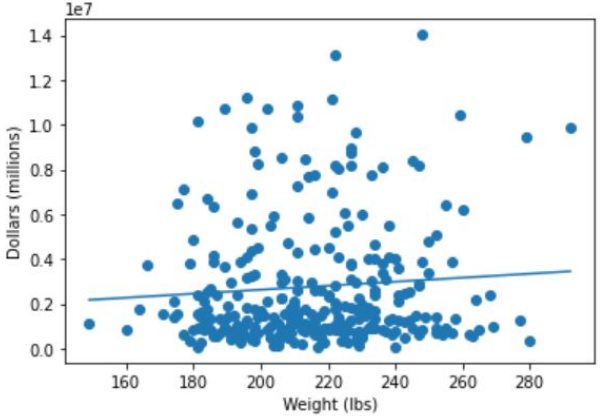


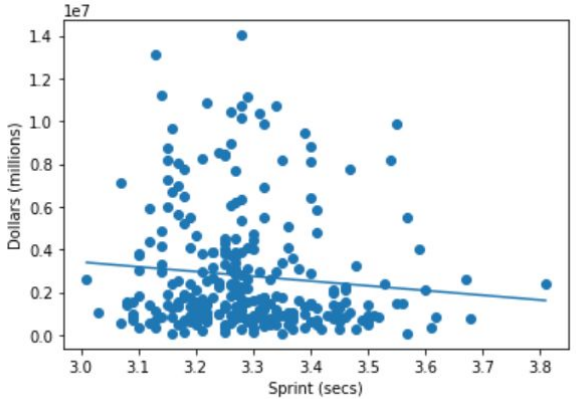


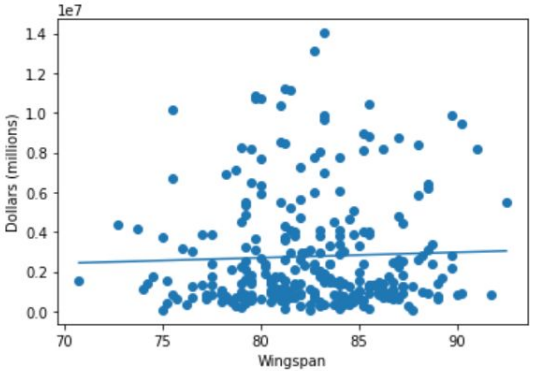

Random Forest Regression
Win Share
Sprint
0
20
40
60
80
3.2
3.3
3.4
3.5
3.6


Feature importances using MDI
Mean decrease in impurity
0.0
0.1
0.2
0.3
Height (No Shoes)
Wingspan
Standing reach
Vertical (Max Reach)
Weight
Body Fat
Agility
Sprint

Conclusion and Next Steps








```
Salary = 2.86e+02 + (1.01e+02)Height + (0.0)Wingspan + (0.0)Standing reach + (-0.0)Vertical + (1.69e+02)Weight + (-59.8)Body fa
t + (-1.78e+02)Agility + (-1.59e+02)Sprint
R^2 is 0.042
```