

# NBA Home Court Advantage x Attendance & Ticket Price

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A dark blue diagonal gradient bar that starts from the bottom left and extends towards the top right, covering the lower half of the slide.

# Project Overview:

## Does ticket price impact a team's home court advantage

- Many factors that lead to home court advantage
  - Attendance
  - Weather
  - Altitude
  - Distance
  - Fan income?
- Clippers vs Lakers in Staple Center
- Warriors in Oracle vs Chase

Data



Statista - Individual team gate receipts

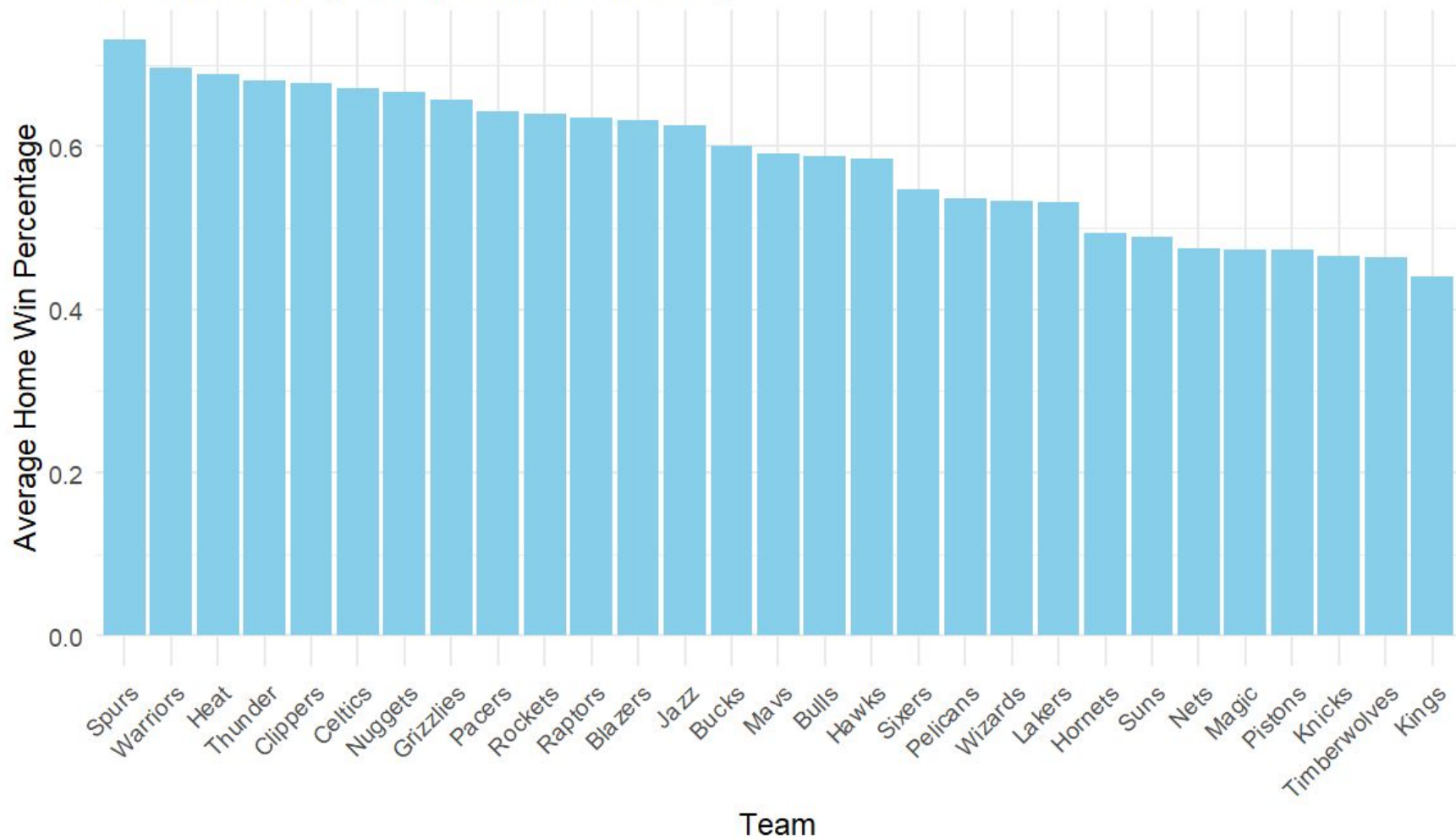
ESPN - yearly league wide results & attendance statistics

2011 - 2024

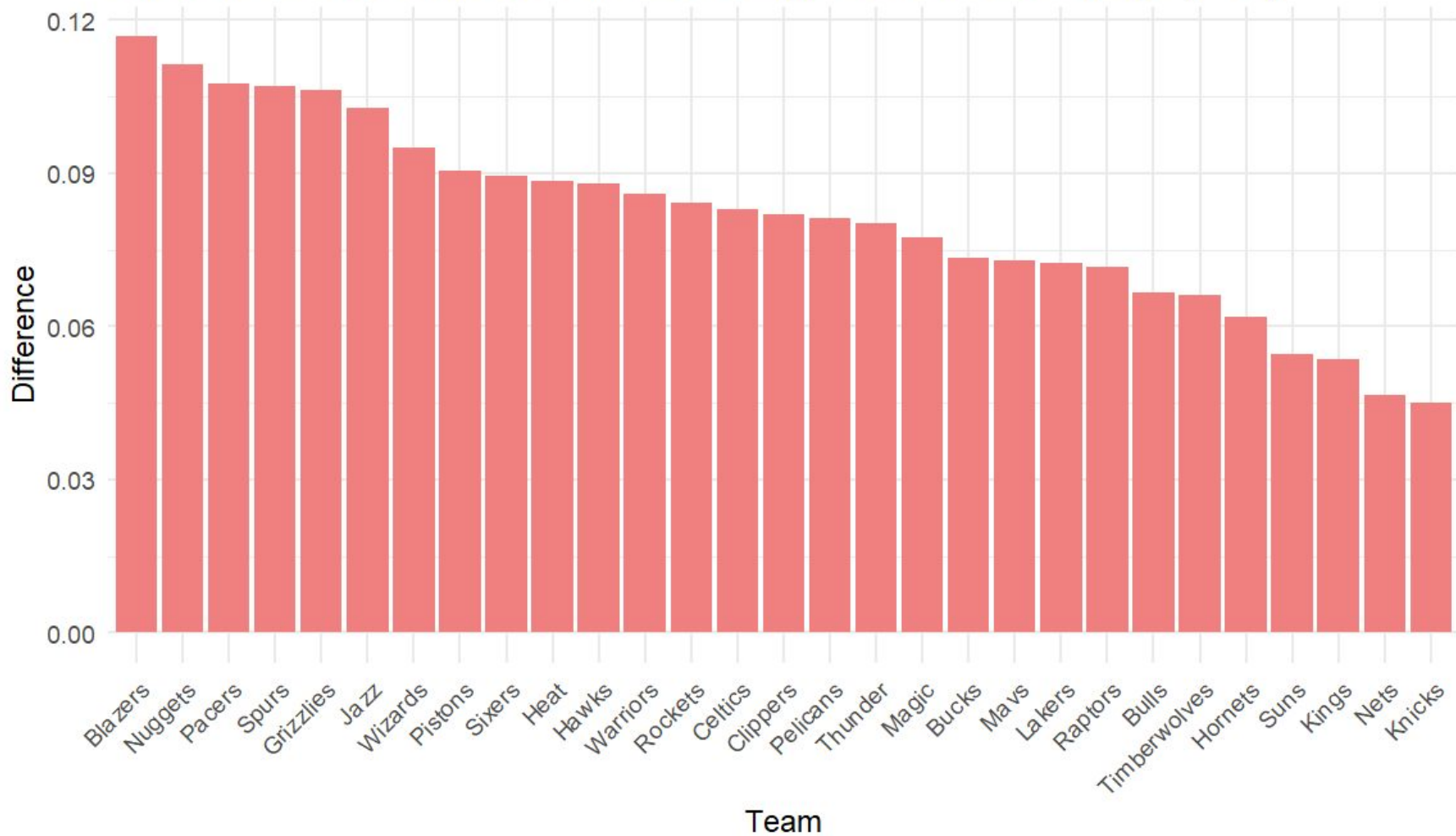
# Best Home Court: Who has it?

- Best teams?
- Biggest markets?
- Most stars?
- Nicest arena?
- Coolest uniforms?

# Teams' Average Home Win Percentage

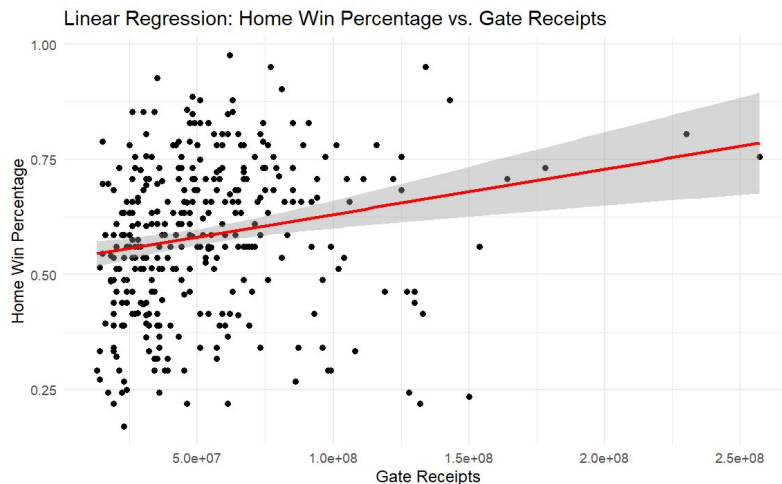
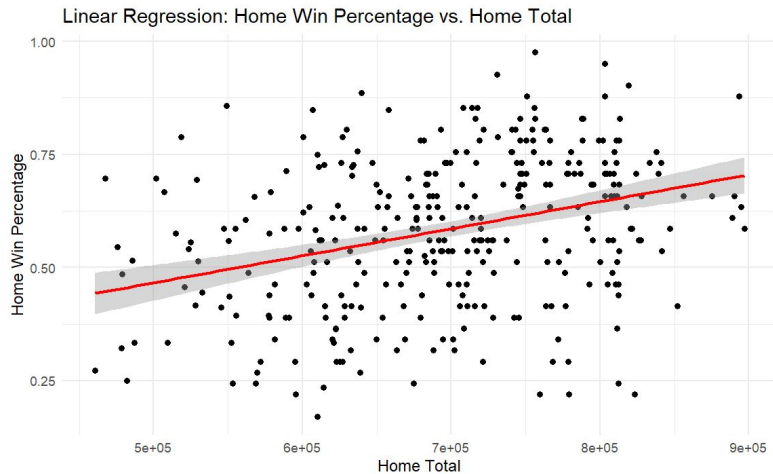


Difference Between Home Win Percentage and Win Percentage (PCT)



# Linear Regression

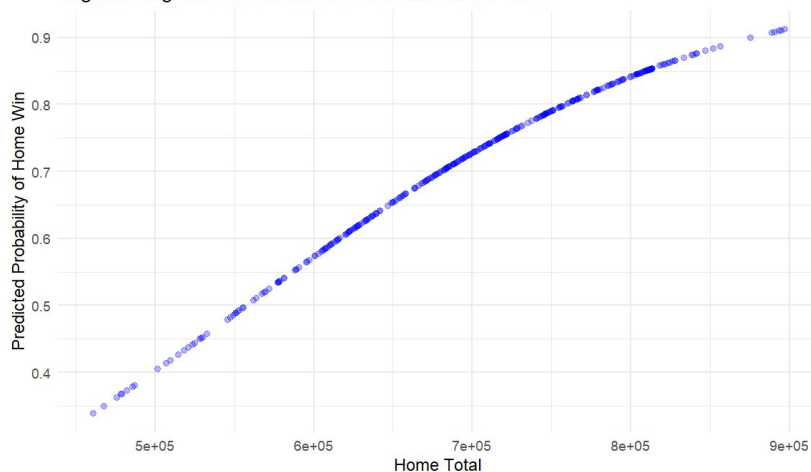
- Home\_Win\_Percentage ~ Home\_Total
  - 0.00000005982 @ <.001
  - $R^2 = .1101$
- Home\_Win\_Percentage ~ Gate\_Receipts
  - 0.0000000005321 @ <.001
  - $R^2 = .0381$
- Home\_Win\_Percentage ~ Home\_Total + Gate\_Receipts
  - 0.00000005643 @ <.001
  - 0.0000000001886 @ >.1
  - $R^2 = .1112$



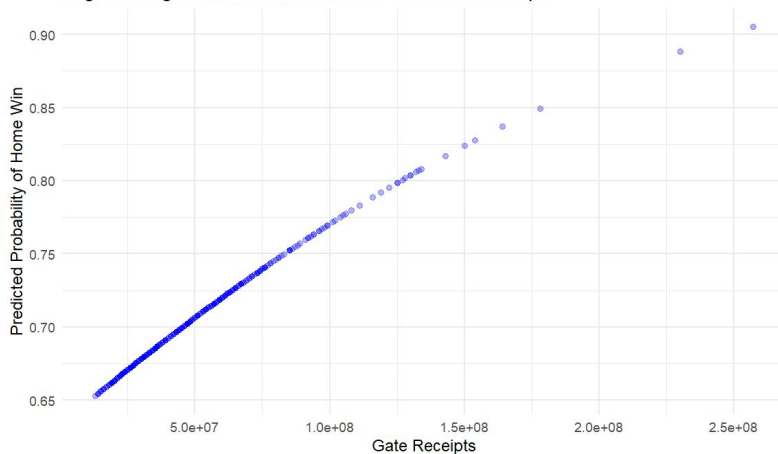
# Log Regression

- $\text{Home\_Win\_Loss} \sim \text{Home\_Total}$ 
  - $.0000006889 < .001$
- $\text{Home\_Win\_Loss} \sim \text{Gate\_Receipts}$ 
  - $.0000000005459 > .1$
- $\text{Home\_Win\_Loss} \sim \text{Home\_Total} + \text{Gate\_Receipts}$ 
  - $.0000007792 < .001$
  - $-.0000000004923 > .1$

Logistic Regression: Home Win Loss vs. Home Total



Logistic Regression: Home Win Loss vs. Gate Receipts

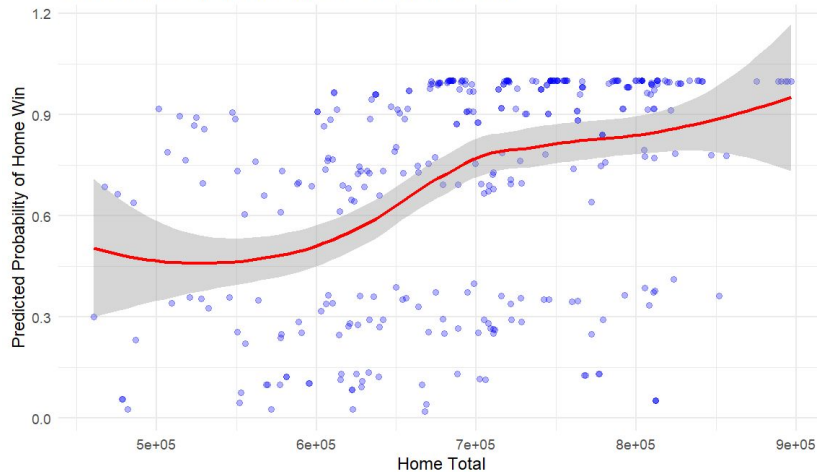




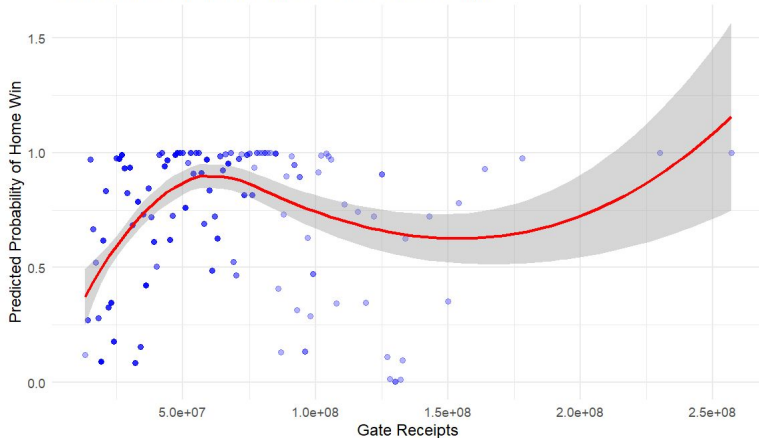
# Random Forest

- Home\_Win\_Loss ~ Home\_Total
  - OOB Error Rate - 37.61
- Home\_Win\_Loss ~ Gate\_Receipts
  - OOB Error Rate - 33.82
- Home\_Win\_Loss ~ Home\_Total + Gate\_Receipts
  - OOB Error Rate - 32.65

Random Forest: Home Win Loss vs. Home Total

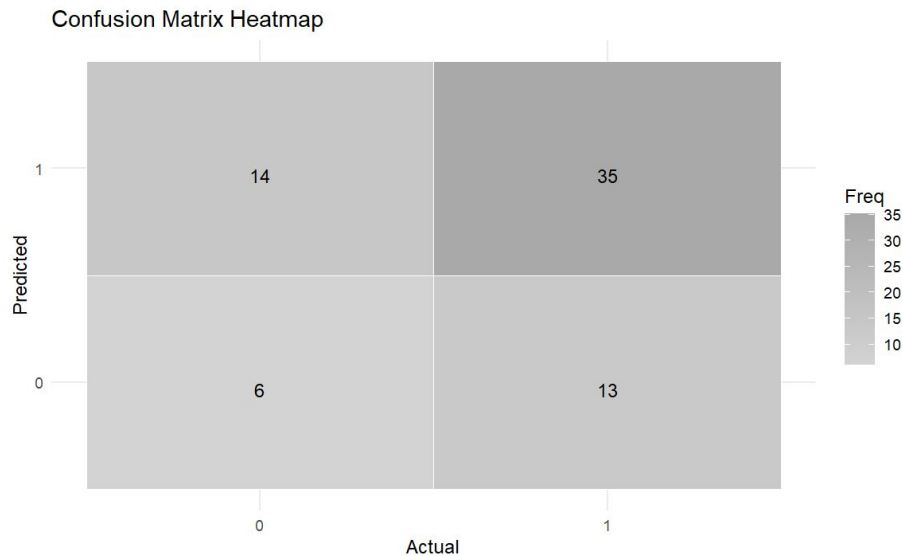


Random Forest: Home Win Loss vs. Gate Receipts



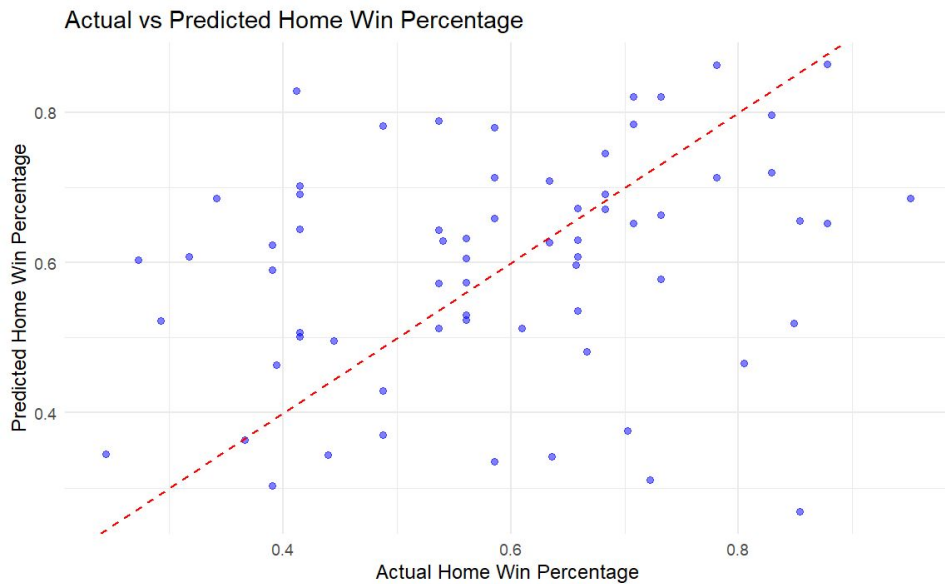
# Random Forest

Accuracy : 0.6029  
Kappa : 0.0296  
Sensitivity : 0.30000  
Specificity : 0.72917



# XGBoost

RMSE: .1917899



# Scope of data

- Yearly averages
  - Eliminates big game bias
    - Marquee visiting team
    - Midweek vs weekend
    - Other outliers ie Christmas game
  - Inaccessible data
- Team Success
  - Better teams have higher ticket demand
    - More fans
    - Higher ticket prices
- More tickets sold equals more revenue
  - High colinearity within season
- Regular Season

# Future Work

- Other statistics
  - Shooting %
  - Forced turnovers
  - Point spread
- Individual game stats
  - Single game ticket price
  - Single game attendance
- Opponent factor
  - Record
  - Stars
- Playoffs

# Conclusion

- Attendance matters!
  - Gate receipts almost negligible
  - Cheaper tickets -> higher attendance?
- Home court advantage very real
  - Still sport
  - Countless variables contribute towards winning and losing