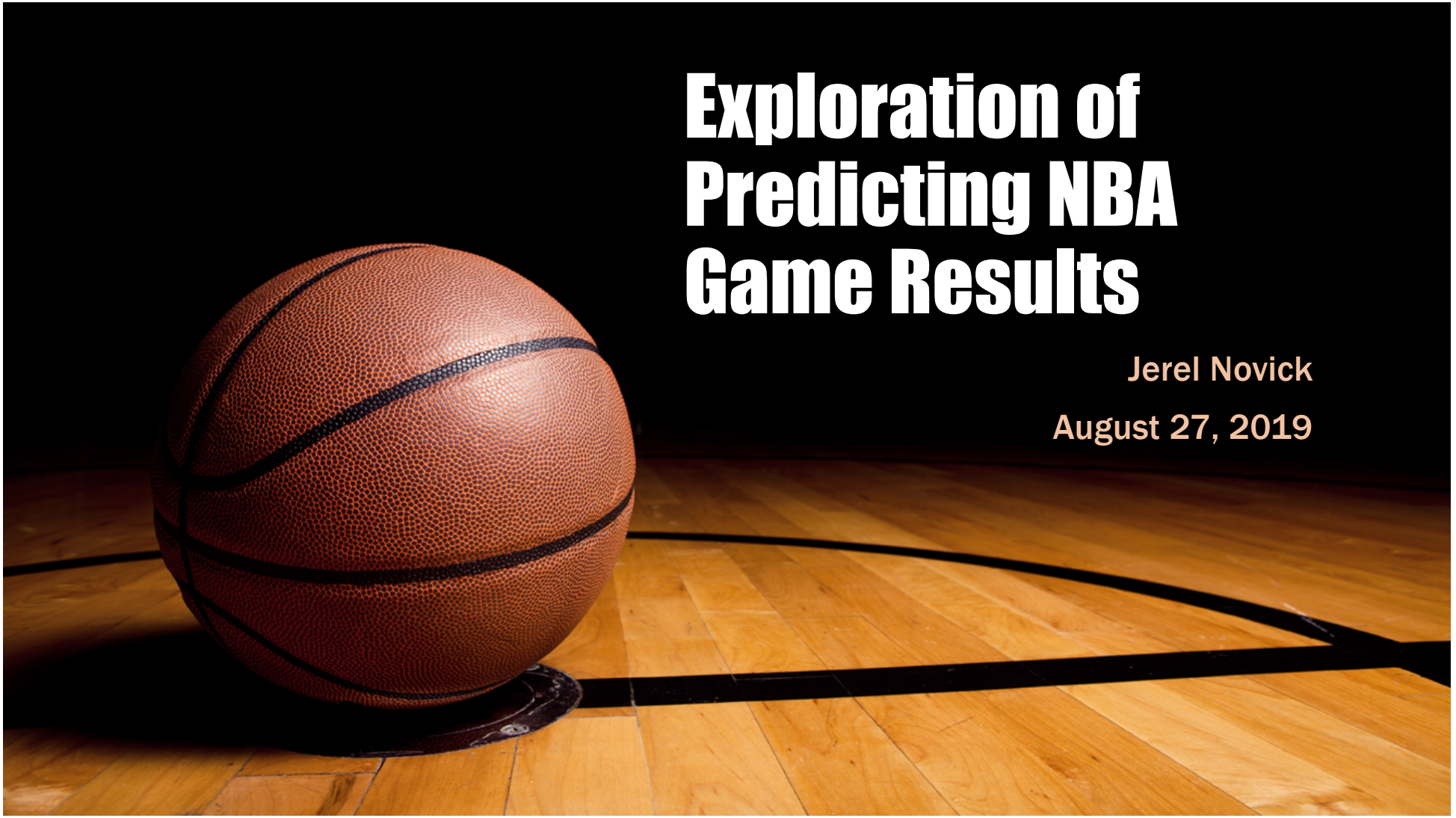


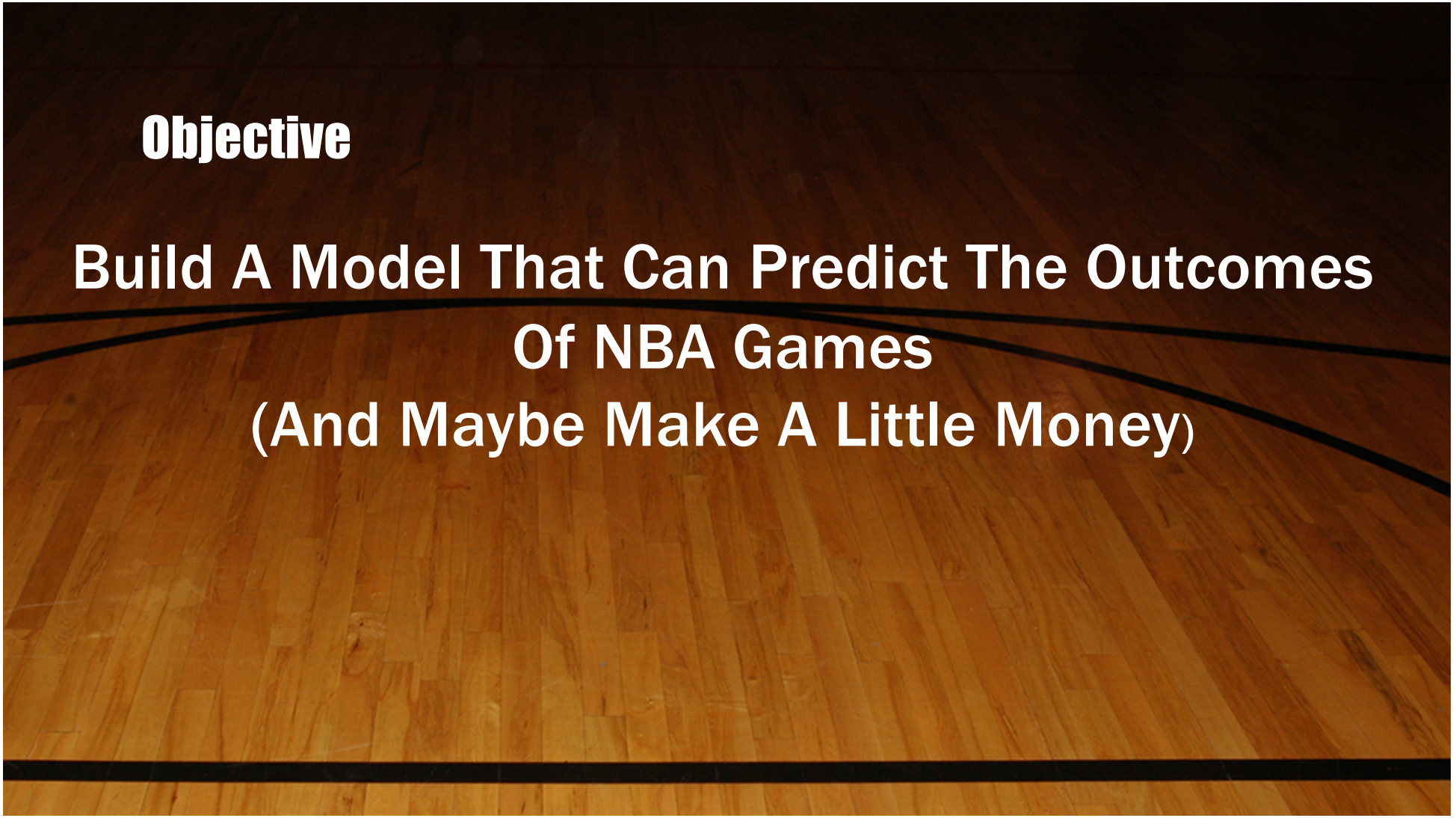
Exploration of Predicting NBA Game Results

Jerel Novick

August 27, 2019

Agenda

- Objective
- Data
- Methodology
- Models & Results
- Conclusions
- Further Development
- Questions and Answers


Objective
Build A Model That Can Predict The Outcomes
Of NBA Games
(And Maybe Make A Little Money)

Data

- Sourced From Kaggle
  - Basketball Reference
- Regular Season Games For The 2012 to 2017 Seasons
  - 14,760 Games
  - 7,380 “Match Ups”
- Perfectly Balanced

Methodology

- Four Factor Model
  - Shooting (Field Goals)
  - Turnovers
  - Rebounding
  - Free Throws
- Personal Fouls
- Game Location
- Time Off

Methodology

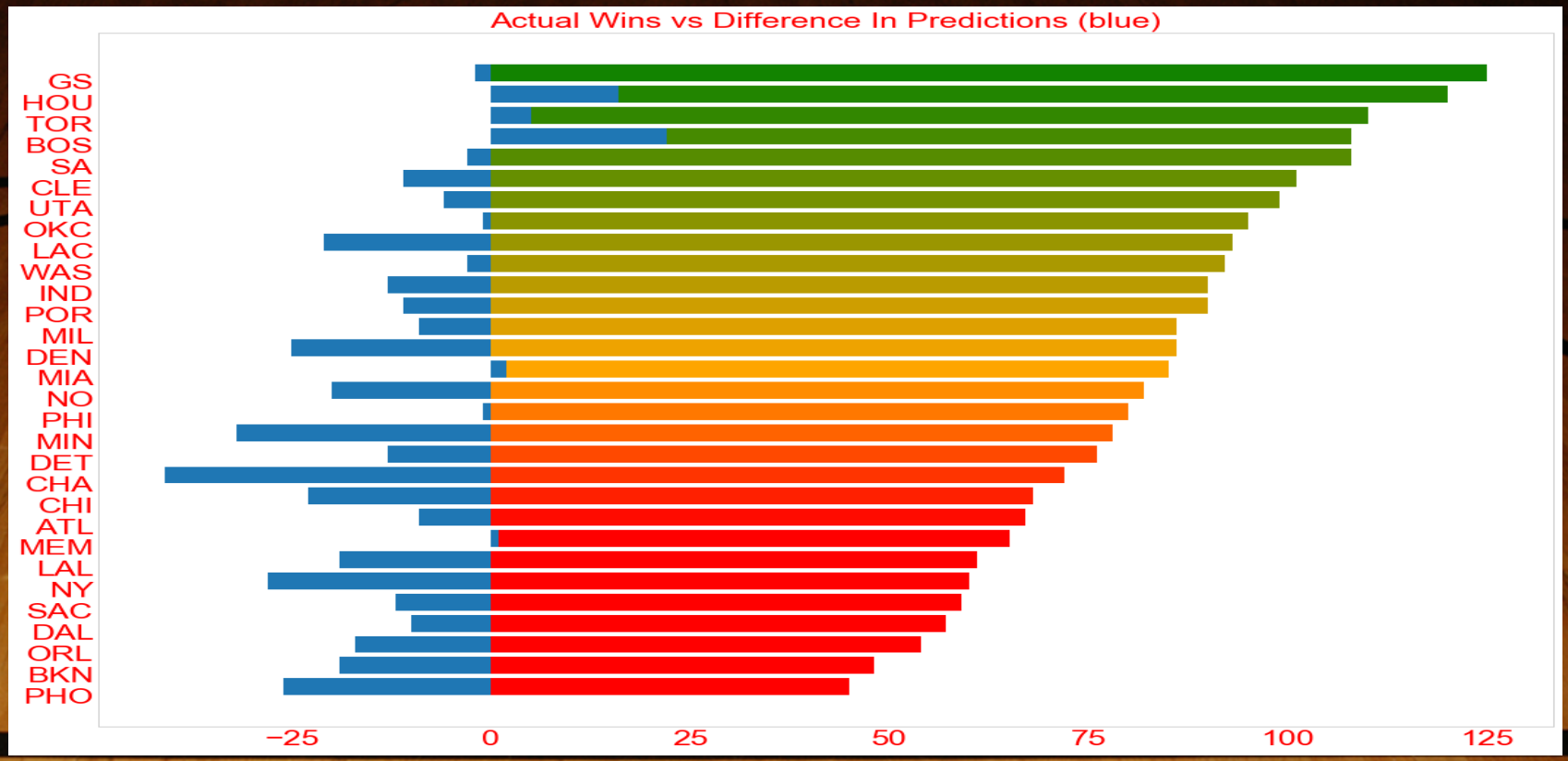
- Training Data – 2012 to 2015 – 9,840 Games
- Test Data – 2016 – 2017 – 4,920 Games

First Model – Version One

- 80.77% Training Accuracy
- 79.13% Test Accuracy
- Coefficients

FGA	FGM	TO	ORB	DRB	FTA	FTM	Location	Days Off	PF
-0.25	0.41	-0.20	0.21	0.26	-0.09	0.18	0.44	-0.17	-0.08

First Model – Version One



First Model – Version Two

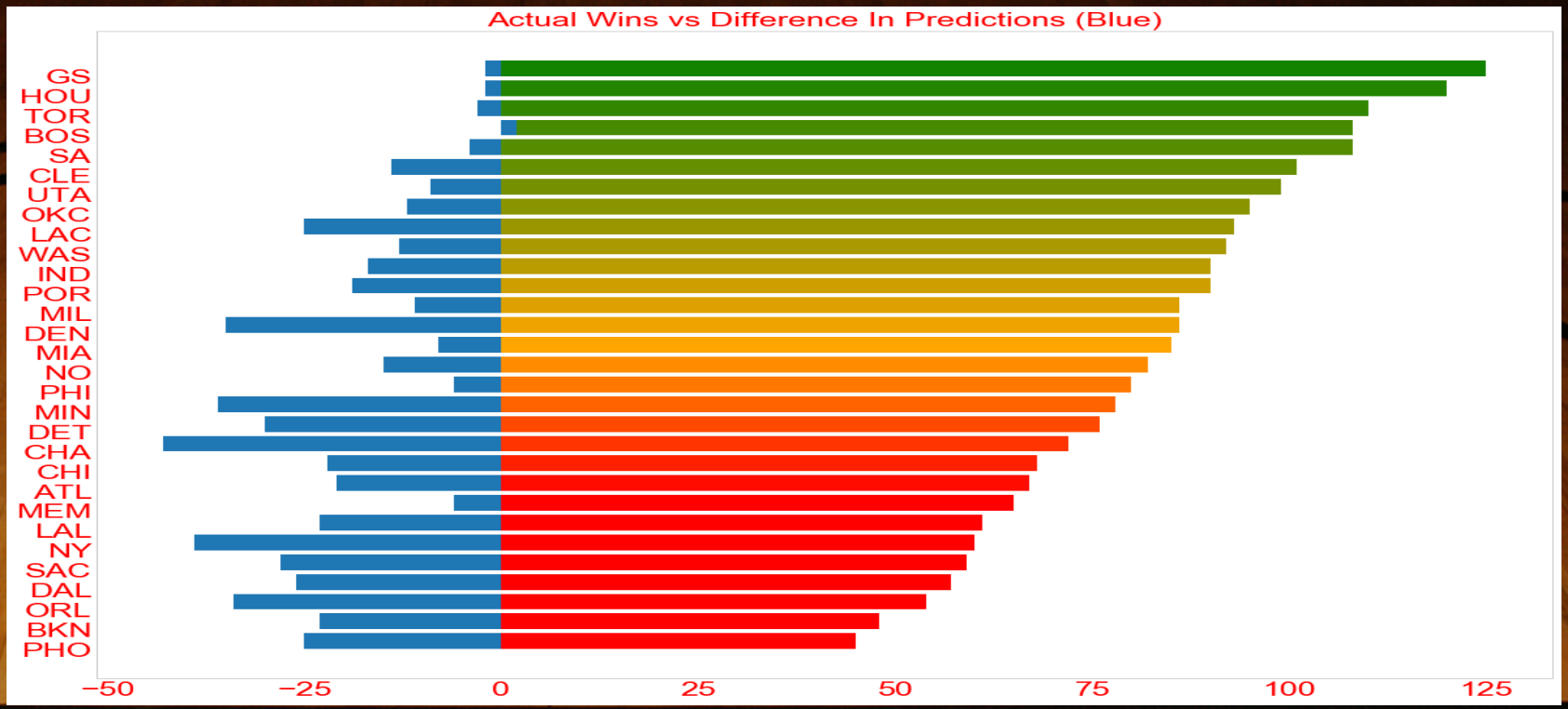
- Effective Field Goal Percentage
- Turnover Percentage
- Total Rebound Percentage
- Free Throw Percentage
- Personal Fouls
- Game Location

First Model – Version Two

- 76.84% Training Accuracy
- 75.26% Test Accuracy
- Coefficients

EFG%	TO%	TREB%	FT%	Location	Days Off	PF
0.20	-0.18	0.16	0.02	0.50	0.004	-0.08

First Model – Version Two



Second Model – Version One

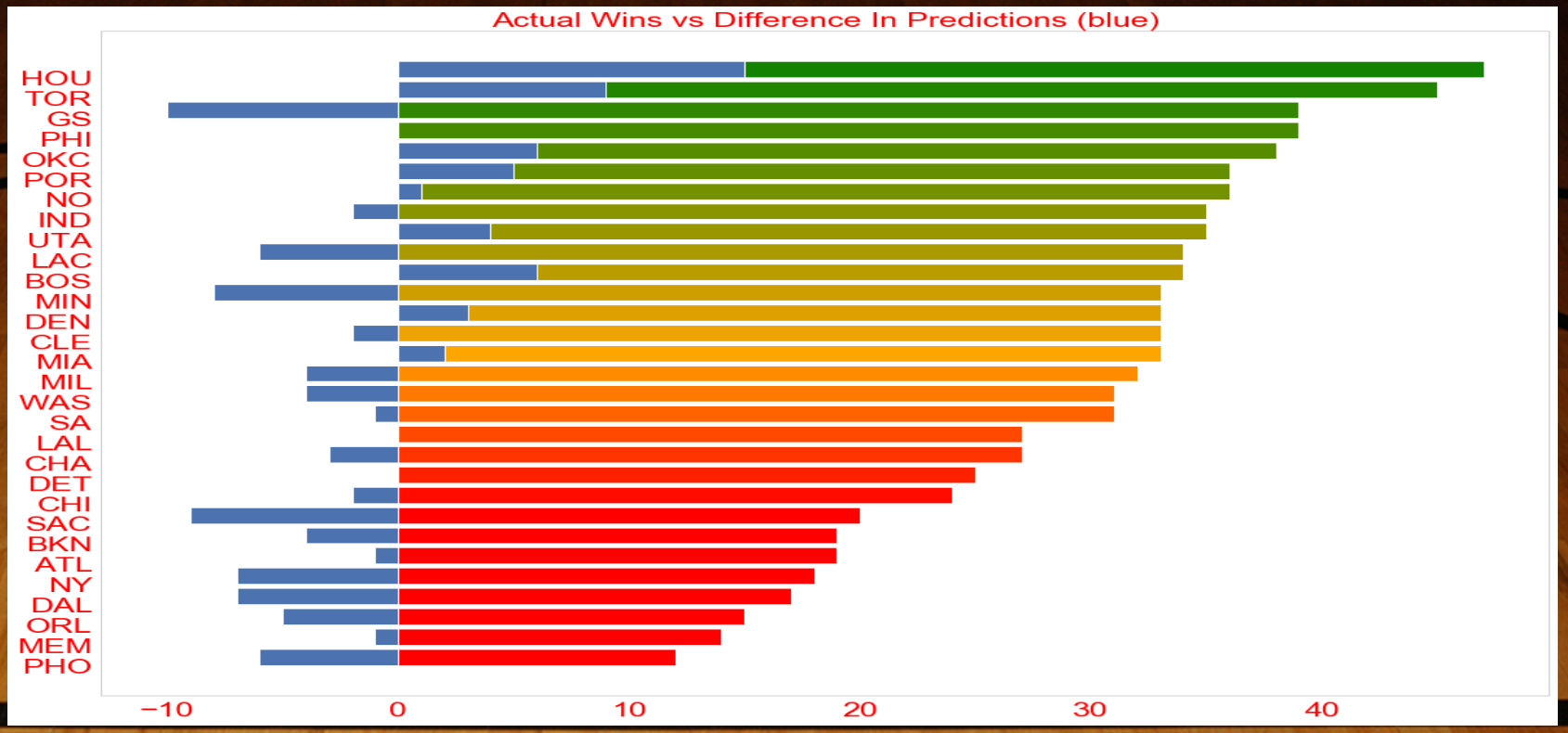
- Five Period Moving Averages
- Exclude First Month of the Season
  - 10,800 Games

Second Model – Version One

- 60.35% Training Accuracy
- 58.46% Test Accuracy
- Coefficients

FGA	FGM	TO	ORB	DRB	FTA	FTM	Location	Days Off	PF
-0.08	0.12	-0.05	0.06	0.04	-0.02	0.03	0.74	0.03	-0.004

Second Model – Version One

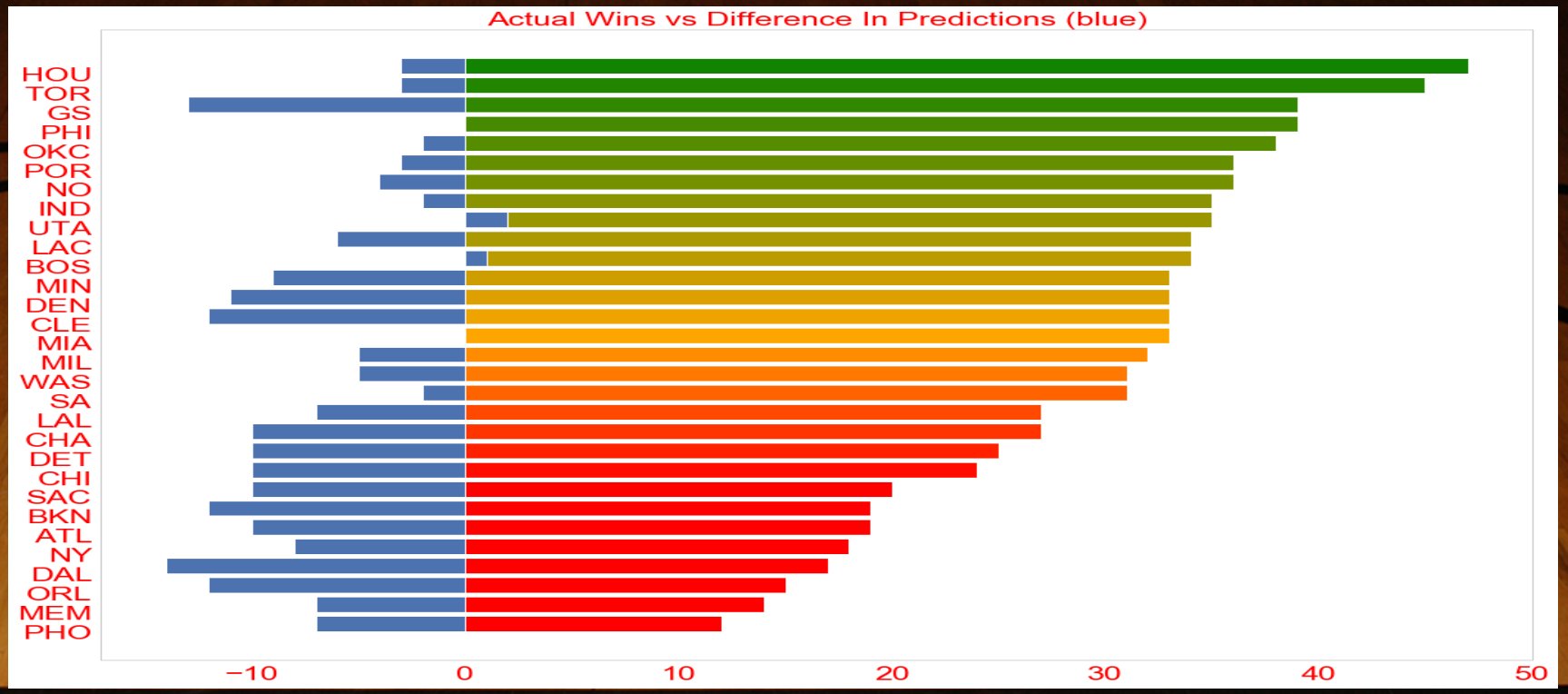


Second Model – Version Two

- 59.85% Training Accuracy
- 57.89% Test Accuracy
- Coefficients

EFG%	TO%	TREB%	FT%	Location	Days Off	PF
0.07	0.08	0.03	0.002	0.73	0.04	-0.02

Second Model – Version Two

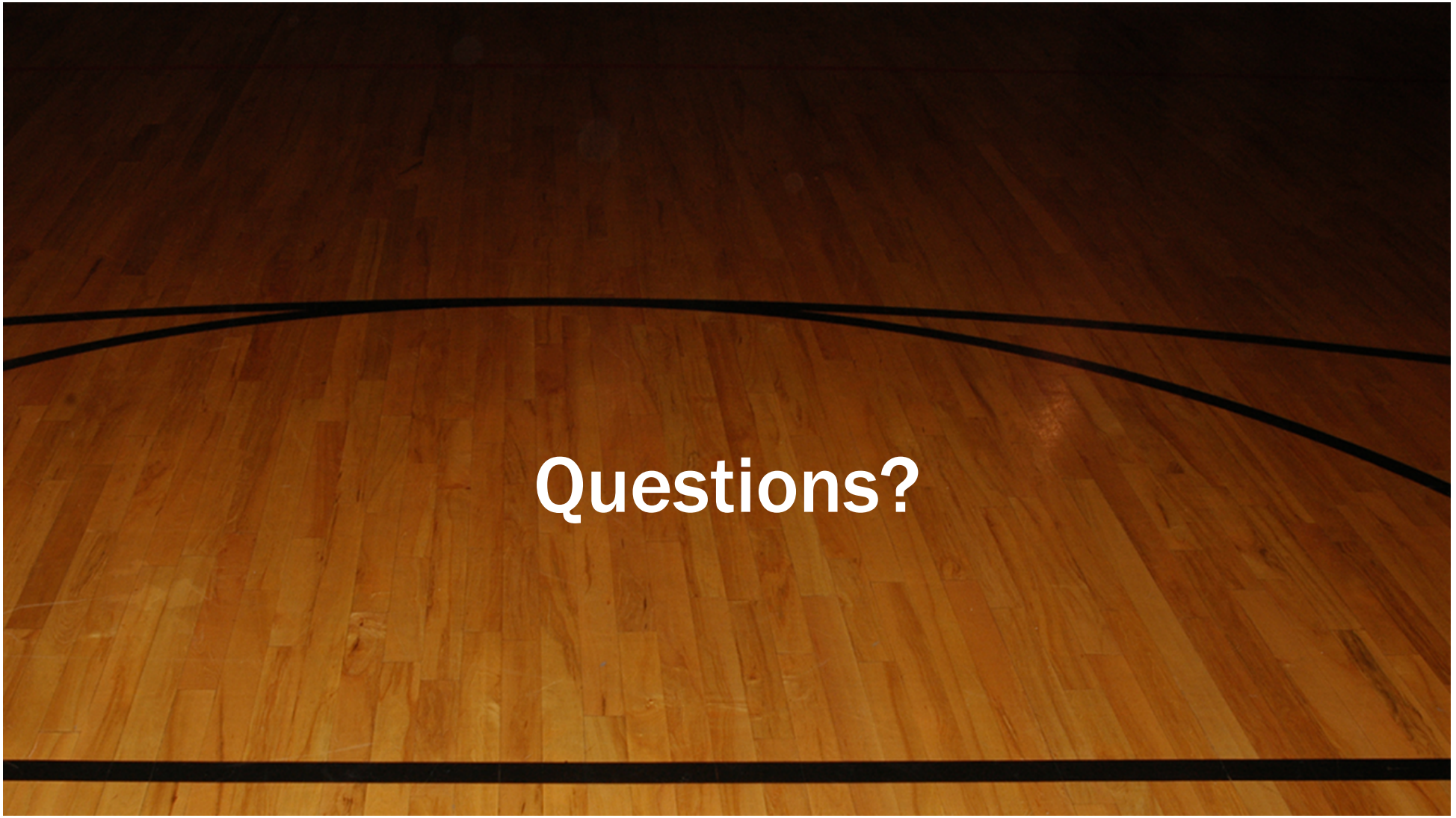


Conclusion

- First Model
  - Overall Accurate But Loses Predictive Power On Weaker Teams
  - Backward Looking
- Second Model
  - Moving Averages
  - Smoothing And Trends Less Predictive
- Predicting Favorites?

Further Work

- Create And Employ Better Metrics
- Look For Interactions
- Calculate Win Probabilities
- Favorites vs. Dogs?
- NCAA
- Pythagorean Expectation And Log 5 Models
- Look For Value Against Vegas Moneylines
- Phone Interview Tomorrow


Questions?