Linear Regression

WNBA Salary

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INTRODUCTION

$221,450

Highest women's annual salary in the WNBA 2021

Diana Taurasi of Phoenix Mercury

Stephen Curry of Golden State Warriors

$45,780,966

Highest men's annual salary in the NBA 2021

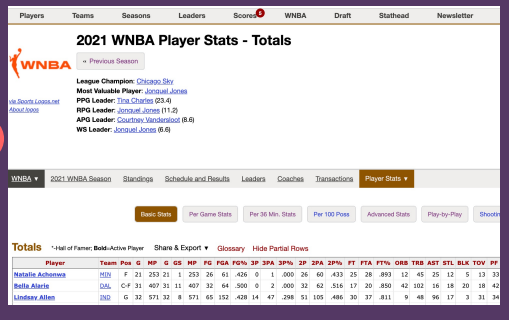
1. What determines player's value in the WNBA?
2. Predict player salary for contract negotiations

METHODOLOGY

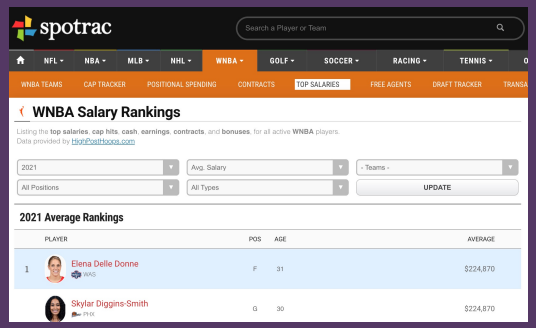
Used Beautiful Soup & Selenium to scrape data

Year	Rows
2016	5
2017	21
2018	94
2019	148
2020	137
2021	139
Total	**544**

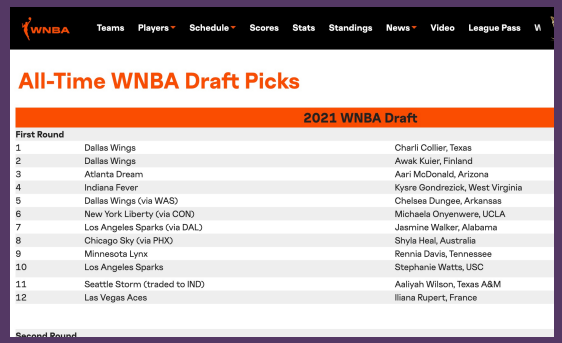
PLAYER STATS



ANNUAL SALARY



DRAFT PICKS



Sample data

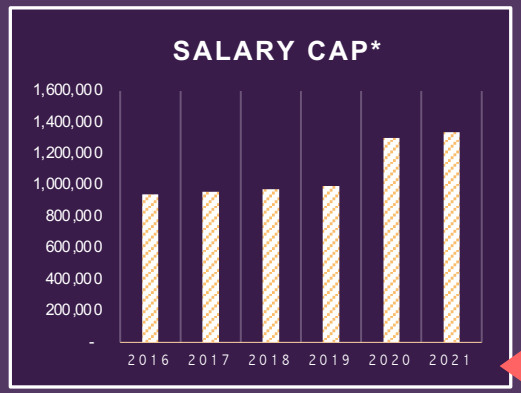
Diana Taurasi

Overall game metrics

Year	Player	Team	Pos	G	MP	GS	FG%	3P%	2P%	FT%
2021	Diana Taurasi	PHO	G	16	455	16	0.37	0.34	0.41	0.86
2020	Diana Taurasi	PHO	G	19	533	19	0.41	0.37	0.52	0.91
2019	Diana Taurasi	PHO	G	6	129	6	0.10	0.04	0.20	0.94
2018	Diana Taurasi	PHO	G	33	989	33	0.45	0.38	0.55	0.93
2017	Diana Taurasi	PHO	G	31	883	31	0.40	0.38	0.42	0.91

Per game metrics

Year	Player	MPpg	FGpg	3Ppg	2Ppg	FTpg	TRBpg	ASTpg	STLpg	BLKpg	PFpg	PTSpg
2021	Diana Taurasi	455	4.4	2.6	1.8	3.9	4.4	4.9	0.2	0.6	2.4	15.2
2020	Diana Taurasi	533	5.1	3.2	1.8	5.4	4.2	4.5	1.0	0.4	2.7	18.7
2019	Diana Taurasi	129	0.7	0.2	0.5	2.8	3.2	5.3	0.3	0.2	2.5	4.3
2018	Diana Taurasi	989	6.1	3.2	2.9	5.2	3.5	5.3	0.9	0.2	3.0	20.7
2017	Diana Taurasi	883	5.4	3.1	2.3	4.0	3.0	2.7	0.5	0.3	2.8	17.9



* Maximum Salary a team can play its players for the year

Advanced metrics & other

Year	Player	PER	TS%	eFG%	3PAr	FTr	USG%	ORtg	DRtg	WS	years_ active	TTLAll Star	Pick	salary	salary_cap	%CAP
2021	Diana Taurasi	17.0	0.55	0.47	0.63	0.38	27.5	103	106	1.2	18	18	1	224,772	1,339,000	0.17
2020	Diana Taurasi	23.7	0.63	0.54	0.71	0.48	27.5	118	105	3	17	17	1	116,500	1,300,000	0.09
2019	Diana Taurasi	3.7	0.28	0.12	0.62	0.46	22.0	70	104	-0.4	16	16	1	116,500	996,100	0.12
2018	Diana Taurasi	24.2	0.64	0.56	0.61	0.41	28.8	120	108	5.6	15	15	1	116,500	976,300	0.12
2017	Diana Taurasi	19.0	0.58	0.51	0.60	0.32	27.8	110	106	3.3	14	14	1	116,500	959,394	0.12

RESULTS

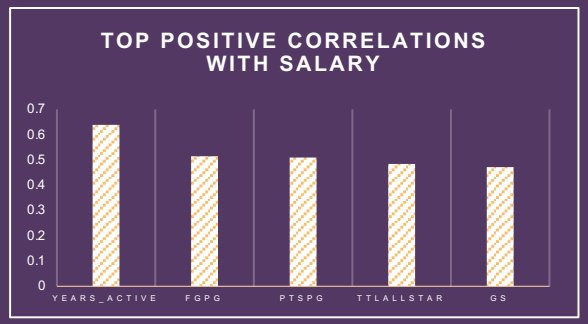
ITERATION 1

31 features
Train R-squared: 0.59
Test R-squared: 0.55
MAE: 0.02

→ Slight overfitting

LASSO

Reduced to 3 features
✓ Field Goals per game
✓ Assists per game
✓ Year Active



INTERACTION

FGpg x Years Active

RESULTS

FINAL MODEL

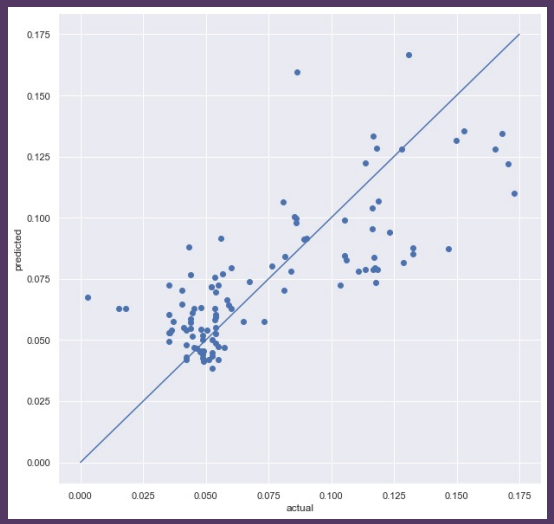
3 features + 1 interaction term

%CAP = 0.0036 Yact
+ 0.0031 FGpg
+ 0.0004 FGpg x Yact
+ 0.0032 ASTpg
+ 0.035

Train R-squared: 0.54
Test R-squared: 0.59
Mean Average Error: 0.018
(or $24k)

→ Improved test score & MAE

Linear Regression on test data



LIZ CAMBAGE

Bio:

- 2nd overall pick in 2011 draft
- 4 x WNBA all star
- Runner up MVP 2018
- Single game scoring record 53 points

2021 Stats:

Year	Player	Team	Position	Field Goals per game	Assists per game	Years Active	%CAP	Actual Salary
2021	Liz Cambage	Las Vegas Aces	Center	5.6	1.3	11	0.17	221,451

2021 Salary: $221,450

2022 signing:

- On Feb 18th LA Sparks announced signing of Cambage

ESPN

Details of Cambage's contract were not announced Friday, but sources told ESPN that she will sign for one year at $170,000. The WNBA's super-maximum salary for 2022 is $228,094, and the maximum is $196,267.

2022 Salary Prediction: $168,104

CONCLUSION

Player Development:

- Field Goals & Assists: Work on shooting & passing
- Years active: More experience in the league leads to higher salary

longevity is key!

Model improvement:

- Injuries
- Hard to model features e.g. personality, popularity, negotiation power?