

# NBA Salary Prediction through Integrated Player Statistics and Contract Data

## Project Proposal

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### Group Information

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### Title

NBA Salary Prediction through Integrated Player Statistics and Contract Data

### Narrative

The topic of our project “NBA Salary Prediction through Integrated Player Statistics and Contract Data” revolves around the critical question of what factors influence NBA player salaries. The financial compensation of players is a topic of enduring interest and curiosity in the world of professional basketball. Our study aims to decipher this complex relationship by meticulously analyzing data and identifying the determinants that influence player salaries in the National Basketball Association.

Our project question is motivated by a recognition of the complex interplay between on-court performance and monetary rewards. Previous sports analytics literature and empirical studies have shed light on the impact of various factors on player salaries. These factors frequently include performance metrics such as points per game, assists, rebounds, steals, and shooting percentages, as well as contractual elements such as player contract length and historical team performance. However, a comprehensive, data-driven model that incorporates both player statistics and contractual data has remained elusive to date.

Our project’s hypothesis is that a predictive model, built upon an integrated dataset of player statistics and contract details, can offer a more accurate and comprehensive understanding of NBA player salaries. We anticipate that our project will reveal intricate relationships between specific performance metrics, the teams players are affiliated with, the contractual terms under which they operate, and the salaries they earn. Through the utilization of advanced data analytics and machine learning techniques, we aim to construct a model capable of estimating player salaries, thereby in the future offering a powerful tool for stakeholders to make informed decisions concerning player contracts.

### Data Description

The dataset for our project was sourced from two primary sources, Basketball-Reference’s NBA 2023 Totals ([https://www.basketball-reference.com/leagues/NBA\\_2023\\_totals.html](https://www.basketball-reference.com/leagues/NBA_2023_totals.html)) and Player Contracts (<https://www.basketball-reference.com/contracts/players.html>), forms the backbone of our comprehensive analysis. The amalgamation of these datasets is crucial for a holistic understanding of the factors influencing

player salaries. This website provides detailed statistics for NBA players in the 2023 season. The data includes player names, teams, games played, minutes played, assists, rebounds, steals and other relevant metrics. The dataset is comprehensive, covering a wide range of player performance indicators. The original curator of the data is Basketball-Reference, a reputable source for NBA statistics.

### Data Dictionary

- **Sal** – Salary of the Player. This is the response variable.
- **Player** – Player Name
- **Pos** – Position Age – Player’s age on February 1 of the season
- **Age** – Age of the player
- **Tm** – Team
- **G** – Games
- **GS** – Games Started
- **MP** – Minutes Played
- **FG** – Field Goals
- **FGA** – Field Goal Attempts
- **FG%** – Field Goal Percentage
- **3P** – 3-Point Field Goals
- **3PA** – 3-Point Field Goal Attempts
- **3P%** – 3-Point Field Goal Percentage
- **2P** – 2-Point Field Goals
- **2PA** – 2-point Field Goal Attempts
- **2P%** – 2-Point Field Goal Percentage

- **eFG%** – Effective Field Goal Percentage. This statistic adjusts for the fact that a 3-point field goal is worth one more point than a 2-point field goal.
- **FT** – Free Throws
- **FTA** – Free Throw Attempts
- **FT%** – Free Throw Percentage
- **ORB** – Offensive Rebounds
- **DRB** – Defensive Rebounds
- **TRB** – Total Rebounds
- **AST** – Assists
- **STL** – Steals
- **BLK** – Blocks
- **TOV** – Turnovers
- **PF** – Personal Fouls
- **PTS** – Points

## Evidence of Data

##		Player	Pos	Age	Tm	G	GS	MP	FG	FGA	FG%	3P	3PA				
## 1	0	Precious Achiuwa	C	23	TOR	55	12	1140	196	404	0.485	29	108				
## 2	1	Steven Adams	C	29	MEM	42	42	1133	157	263	0.597	0	1				
## 3	2	Bam Adebayo	C	25	MIA	75	75	2598	602	1114	0.540	1	12				
## 4	3	Ochai Agbaji	SG	22	UTA	59	22	1209	165	386	0.427	81	228				
## 5	4	Santi Aldama	PF	22	MEM	77	20	1682	247	525	0.470	94	266				
## 6	5	Nickeil Alexander-Walker	SG	24	TOT	59	3	884	131	295	0.444	61	159				
## 7	6	Nickeil Alexander-Walker	SG	24	UTA	36	3	528	83	170	0.488	35	87				
## 8	7	Nickeil Alexander-Walker	SG	24	MIN	23	0	356	48	125	0.384	26	72				
## 9	8	Grayson Allen	SG	27	MIL	72	70	1972	245	557	0.440	146	366				
## 10	9	Jarrett Allen	C	24	CLE	68	68	2220	403	626	0.644	1	10				
##		3P%	2P	2PA	2P%	eFG%	FT	FTA	FT%	ORB	DRB	TRB	AST	STL	BLK	TOV	PF
## 1	0.269	167	296	0.564	0.521	87	124	0.702	100	228	328	50	31	30	59	102	
## 2	0.000	157	262	0.599	0.597	47	129	0.364	214	271	485	97	36	46	79	98	
## 3	0.083	601	1102	0.545	0.541	324	402	0.806	184	504	688	240	88	61	187	208	
## 4	0.355	84	158	0.532	0.532	56	69	0.812	43	78	121	67	16	15	41	99	

## 5	0.353	153	259	0.591	0.560	108	144	0.750	85	286	371	97	45	48	60	143
## 6	0.384	70	136	0.515	0.547	40	60	0.667	15	86	101	108	32	21	55	88
## 7	0.402	48	83	0.578	0.591	27	39	0.692	8	51	59	76	24	14	45	58
## 8	0.361	22	53	0.415	0.488	13	21	0.619	7	35	42	32	8	7	10	30
## 9	0.399	99	191	0.518	0.571	114	126	0.905	61	176	237	163	62	14	72	117
## 10	0.100	402	616	0.653	0.645	162	221	0.733	221	445	666	113	54	84	93	153
##	PTS	2023-24														
## 1	508	\$4,379,527														
## 2	361	\$12,600,000														
## 3	1529	\$32,600,060														
## 4	467	\$4,114,200														
## 5	696	\$2,194,200														
## 6	363	\$4,687,500														
## 7	228	\$4,687,500														
## 8	135	\$4,687,500														
## 9	750	\$8,925,000														
## 10	969	\$20,000,000														