

Predicting Salary for Top 50 NBA Players using MLR

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What determines the “Top 50” NBA Players?

- Subjective as basketball is a sport and being the “best” is dependent upon a multitude of factors
- Referred to ESPN’s ranking list of “Top 50 NBA Players for the 2023-2024 Season”

Why choose the Top 50?

- Creates a more accurate regression analysis than a random sample of all players
- More statistics and attributes to use as independent variables than a random player

Independent Variables (Per Game Statistics)

- Points Per Game (PPG)
- Assists Per Game (APG)
- Rebounds Per Game (RPG)
- Blocks + Steals Per Game (BSPG)

Independent Variables (Advanced Statistics)

- True Shooting Percentage (TS%)
- Player Efficiency Rating (PER)
- Win Shares Per 48 Minutes (WS/48)

Independent Variables (Attributes)

- Age of Player
- Seasons Played
- Draft Position (First overall pick, etc.)
- All-Star Game Selections
- Games Played (Out of 82 in Season)

Independent Variables (Categorical)

- Position Dummy Variable (Guard, Forward, Center)
- Big Market Dummy Variable
- Rookie Deal Dummy Variable

Dependent Variable

- Salary (in USD)

Regression Results

SUMMARY OUTPUT					
<i>Regression Statistics</i>					
Multiple R	0.90783324				
R Square	0.82416119				
Adjusted R Square	0.73890602				
Standard Error	6200906.05				
Observations	50				
ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	16	5.9473E+15	3.7171E+14	9.66699276	2.8826E-08
Residual	33	1.2689E+15	3.8451E+13		
Total	49	7.2162E+15			

Regression Results

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	-41300627	51632094.7	-0.7999022	0.42948825	-146346914	63745659.6	-146346914	63745659.6
PPG	535388.534	631629.267	0.84763098	0.40274959	-749670.87	1820447.94	-749670.87	1820447.94
APG	158542.713	614137.187	0.25815521	0.79789038	-1090928.8	1408014.21	-1090928.8	1408014.21
RPG	519145.956	679507.343	0.76400345	0.45029362	-863322.13	1901614.04	-863322.13	1901614.04
BSPG	1784980.04	2003852.63	0.89077411	0.37949909	-2291888.8	5861848.86	-2291888.8	5861848.86
TS%	373131.582	790528.94	0.47200243	0.64003134	-1235211.6	1981474.8	-1235211.6	1981474.8
PER	-167673.66	1224779.99	-0.136901	0.89194085	-2659507.3	2324159.96	-2659507.3	2324159.96
WS/48	-29423770	59131877.4	-0.4975957	0.62206864	-149728480	90880938.8	-149728480	90880938.8
Age	1901095.98	1025776.29	1.85332416	0.07279501	-185861.58	3988053.54	-185861.58	3988053.54
Seasons	-1128283.8	1097750.2	-1.0278147	0.3115121	-3361673.4	1105105.74	-3361673.4	1105105.74
Draft Pos	462.720959	126395.557	0.0036609	0.99710108	-256690.97	257616.414	-256690.97	257616.414
All Stars	773311.7	624847.277	1.23760114	0.22459772	-497949.64	2044573.04	-497949.64	2044573.04
Games Playe	-54318.165	69806.425	-0.7781256	0.4420386	-196340.4	87704.0745	-196340.4	87704.0745
Guard	3204265.19	4330721.65	0.73989174	0.4645972	-5606654.2	12015184.6	-5606654.2	12015184.6
Forward	-937602.44	3686063.84	-0.2543641	0.80079264	-8436955.7	6561750.82	-8436955.7	6561750.82
Big Market	-3362414.3	2044911.65	-1.6442834	0.10961234	-7522818.3	797989.734	-7522818.3	797989.734
Rookie Deal	-20730454	4062634.8	-5.1027118	1.3628E-05	-28995947	-12464962	-28995947	-12464962

Regression Results (Players 1 - 26)

Player	Salary	Predicted	Prediction Error	Player	Salary	Predicted	Prediction Error
Giannis Antetokounmpo	\$45,640,084.00	43185445.7	-\$2,454,638.35	Damian Lillard	\$45,640,084.00	46391162.7	\$751,078.73
Nikola Jokic	\$47,607,350.00	38505180.6	-\$9,102,169.40	Donovan Mitchell	\$32,600,060.00	41999223.6	\$9,399,163.60
Joel Embiid	\$47,607,350.00	43364710	-\$4,242,640.01	Bam Adebayo	\$32,600,060.00	32555516.4	-\$44,543.64
Luka Doncic	\$40,064,220.00	37171853.8	-\$2,892,366.23	Jamal Murray	\$33,833,400.00	31669172.5	-\$2,164,227.53
Stephen Curry	\$51,915,615.00	47595534.3	-\$4,320,080.72	Paul George	\$45,640,084.00	38726174.4	-\$6,913,909.60
Jayson Tatum	\$32,600,060.00	29353965.1	-\$3,246,094.92	Jaylen Brown	\$31,830,357.00	28958813.3	-\$2,871,543.69
Kevin Durant	\$47,649,433.00	51102760	\$3,453,326.97	Karl Anthony-Townsend	\$36,016,200.00	35332609.7	-\$683,590.27
Shai Gilgeous-Alexander	\$33,386,850.00	35995884	\$2,609,033.96	Tyrese Haliburton	\$5,807,435.00	9025064.52	\$3,217,629.52
LeBron James	\$47,607,350.00	53244291.3	\$5,636,941.30	Domantas Sabonis	\$28,000,000.00	32183825.3	\$4,183,825.30
Anthony Davis	\$40,600,080.00	40896684.3	\$296,604.35	De'Aaron Fox	\$32,600,060.00	36335164.8	\$3,735,104.83
Devin Booker	\$36,016,200.00	36544491.2	\$528,291.24	Kawhi Leonard	\$45,640,084.00	37590934.5	-\$8,049,149.50
Jimmy Butler	\$45,183,960.00	40034772.6	-\$5,149,187.40	Pascal Siakam	\$37,893,408.00	34503515.8	-\$3,389,892.17
Anthony Edwards	\$13,534,817.00	10758399.2	-\$2,776,417.85	Jrue Holiday	\$34,954,667.00	31398979.5	-\$3,555,687.52

Regression Results (Players 27 - 50)

Player	Salary	Predicted	Prediction Error	Player	Salary	Predicted	Prediction Error
Brandon Ingr	\$33,833,400.00	27721025.3	-\$6,112,374.74	DeMar Deroz	\$28,600,000.00	35584075.9	\$6,984,075.93
Lauri Markka	\$17,259,999.00	28356529.7	\$11,096,530.65	Evan Mobley	\$8,882,640.00	9627933.62	\$745,293.62
Trae Young	\$40,064,220.00	33360926.2	-\$6,703,293.84	Klay Thompson	\$43,219,440.00	39135114.2	-\$4,084,325.81
Paolo Banche	\$11,608,080.00	5165664.9	-\$6,442,415.10	Tyrese Maxey	\$4,343,920.00	7186644.1	\$2,842,724.10
Jaren Jackson	\$27,102,202.00	30718223.6	\$3,616,021.55	James Harde	\$35,640,000.00	41272844.6	\$5,632,844.62
Jalen Brunso	\$26,346,666.00	32307405.4	\$5,960,739.40	CJ McCollum	\$35,802,469.00	38298174.2	\$2,495,705.23
Mikal Bridges	\$21,700,000.00	26746647.6	\$5,046,647.60	Julius Randle	\$25,660,800.00	32656274.1	\$6,995,474.13
Kyrie Irving	\$37,037,037.00	40401347.3	\$3,364,310.34	Khris Middlet	\$28,703,704.00	34058209.5	\$5,354,505.53
Ja Morant	\$34,005,250.00	37241720.9	\$3,236,470.93	Victor Wemb	\$12,160,680.00	11860562.5	-\$300,117.52
Darius Garla	\$34,005,250.00	30628907.9	-\$3,376,342.09	LaMelo Ball	\$10,900,000.00	13613303.2	\$2,713,303.22
Bradley Beal	\$46,741,590.00	37105732.4	-\$9,635,857.56	Deandre Ayto	\$32,459,438.00	30255046.4	-\$2,204,391.59
Zach Lavine	\$40,064,220.00	33086419.4	-\$6,977,800.58	Jarrett Allen	\$20,000,000.00	27797411	\$7,797,410.95