Analysis of 2015-16 NBA Season

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Monte Carlo Simulation

First, the starting Elo was calculated for each team using every game prior to the 2015 season. At the end of each season, each team's Elo was regressed 1/3 towards 1500. After this preparation, the season was simulated 10,000 times, taking into account home field advantage. Here is the result of this simulation:

	team	starting_elo	ending_elo	actual_wins	average_wins	division_titles	resid
1	Brooklyn Nets	1477.380	1279.867	21	28.032	0.000	-7.032
2	Charlotte Hornets	1435.442	1567.329	48	41.731	0.101	6.269
3	Chicago Bulls	1548.795	1459.711	42	43.581	0.005	-1.581
4	Cleveland Cavaliers	1619.220	1651.042	57	57.998	0.978	-0.998
5	Dallas Mavericks	1541.799	1529.471	42	43.400	0.000	-1.400
6	Denver Nuggets	1442.695	1415.289	33	32.578	0.000	0.422
7	Houston Rockets	1610.903	1540.599	41	44.174	0.002	-3.174
8	Indiana Pacers	1503.357	1529.383	45	44.515	0.017	0.485
9	Los Angeles Clippers	1629.398	1636.510	53	53.142	0.004	-0.142
10	Memphis Grizzlies	1579.607	1467.486	42	45.672	0.003	-3.672
11	Miami Heat	1477.671	1569.935	48	43.207	0.153	4.793
12	Milwaukee Bucks	1461.134	1394.435	33	33.743	0.000	-0.743
13	Minnesota Timberwolves	1337.277	1373.935	29	25.021	0.000	3.979
14	New Orleans Pelicans	1514.335	1385.331	30	35.703	0.000	-5.703
15	Oklahoma City Thunder	1559.539	1668.354	55	53.032	0.921	1.968
16	Orlando Magic	1368.695	1423.589	35	32.690	0.000	2.310
17	Phoenix Suns	1485.983	1332.224	23	29.870	0.000	-6.870
18	Portland Trailblazers	1537.759	1587.667	44	42.950	0.049	1.050
19	San Antonio Spurs	1641.568	1772.246	67	62.777	0.995	4.223
20	Toronto Raptors	1502.918	1637.105	56	50.538	0.785	5.462
21	Utah Jazz	1523.501	1524.487	40	42.407	0.030	-2.407
22	Washington Wizards	1530.816	1520.459	41	41.376	0.088	-0.376
23	Boston Celtics	1490.327	1571.275	48	45.809	0.215	2.191
24	Golden State Warriors	1710.609	1828.265	73	67.424	0.996	5.576
25	New York Knicks	1336.752	1370.702	32	29.951	0.000	2.049
26	Philadelphia 76ers	1338.044	1187.190	10	17.005	0.000	-7.005
27	Atlanta Hawks	1564.236	1598.693	48	48.159	0.658	-0.159
28	Detroit Pistons	1453.135	1511.434	44	40.366	0.000	3.634
29	Los Angeles Lakers	1352.086	1256.175	17	20.296	0.000	-3.296
30	Sacramento Kings	1425.045	1409.837	33	32.853	0.000	0.147

Histogram of Residuals

Actual Wins - Simulated Wins
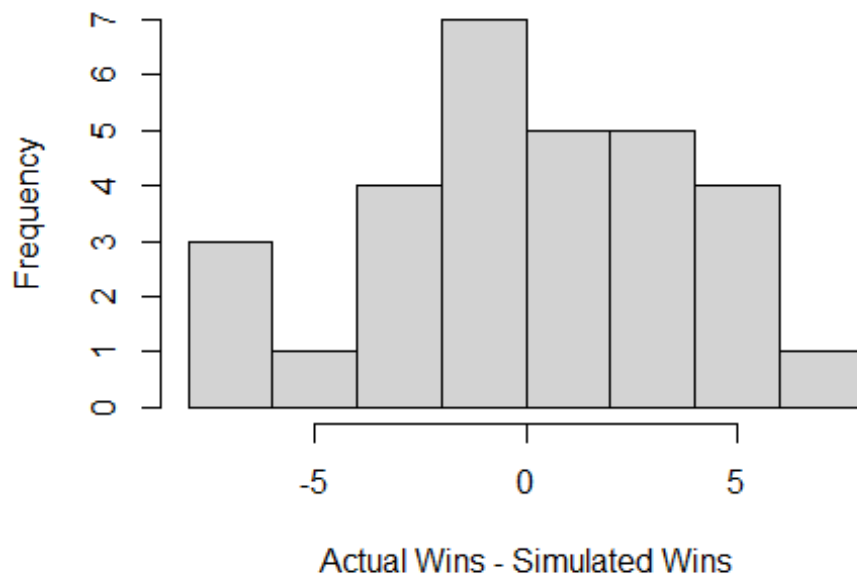
Scatterplot of Residuals against Actual Wins

Actual Wins - Simulated Wins
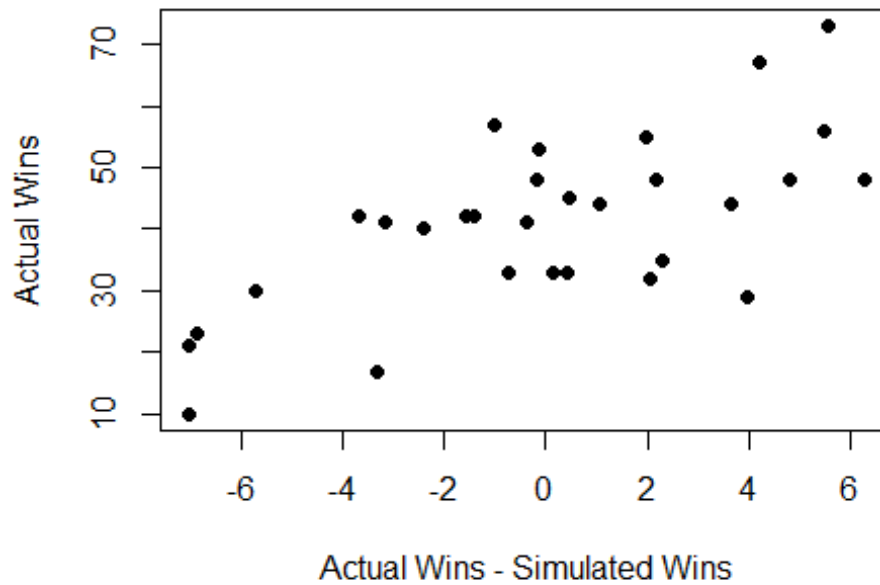
Scatterplot of Simulated Wins against Actual Wins
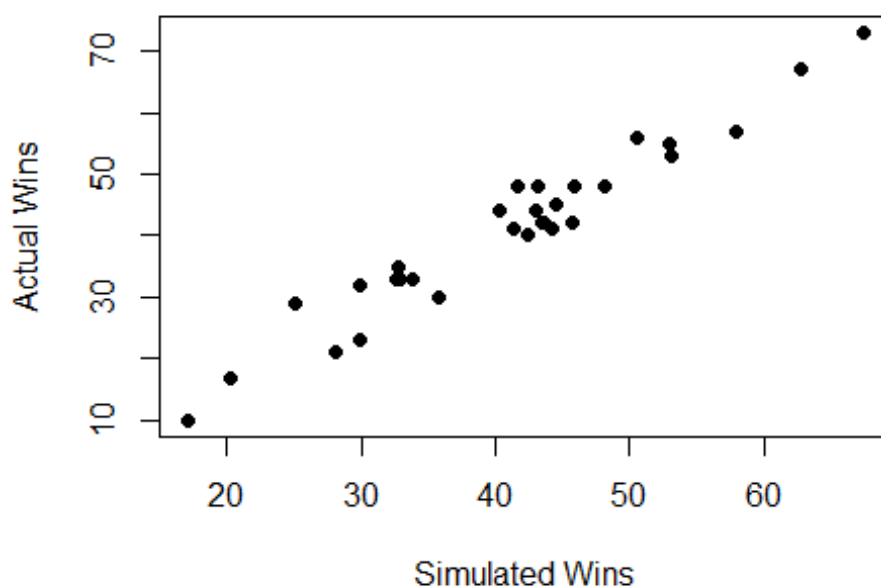
Analysis

The biggest overachiever in the 2015-2016 NBA season was the Charlotte Hornets, with a residual of 6.27, meaning they outperformed the model's average by just over 6 wins. The biggest underachiever was the Brooklyn Nets, with a residual of -7.032, meaning they had 7 less wins than the model predicted. In general, there is a moderately positive relationship between residuals and actual win totals. This means that performed worse in the reason tended to underachieve what the model predicted. Similarly, teams that did well generally overpredicted what the model predicted.

This simulation was generally accurate in replicating teams' wins totals throughout the season. There is a strong positive correlation between actual wins and predicted wins, without any real outliers in this trend. The largest residual was 7, meaning that all predictions were within 7 wins of the actual count. For a game with an 82-game season, this model was impressively accurate. Additionally, this model accurately predicted the Warriors, Spurs, Cavaliers, Thunder, and Raptors as the division winners, missing only the Miami Heat.