

# NBA Injury Prediction



Peter Wen  
[petwen1027@gmail.com](mailto:petwen1027@gmail.com)  
[github.com/rayal34/Predicting\\_NBA\\_Injuries](https://github.com/rayal34/Predicting_NBA_Injuries)

# MOTIVATION

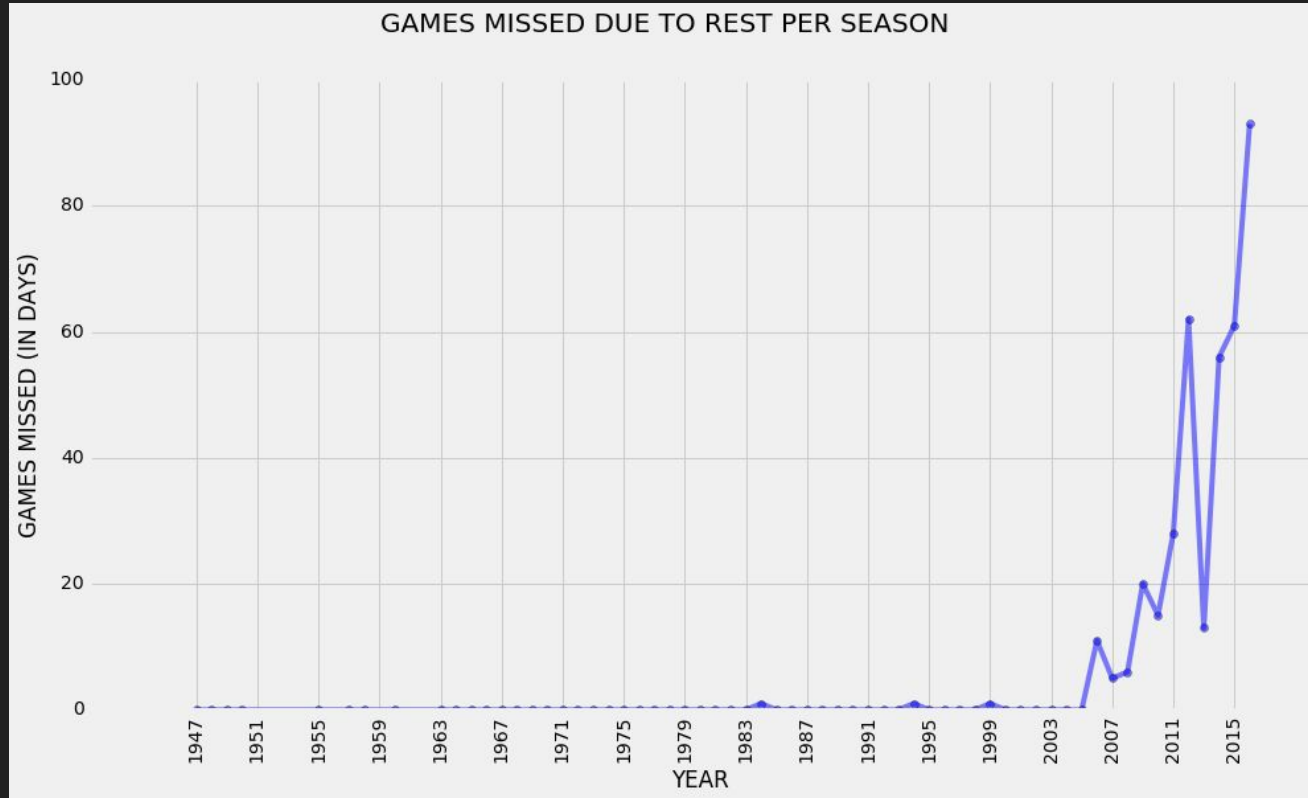
- Warriors' offensive rating with Steph Curry: 119.1
- Warriors' offensive rating without Steph Curry: 105.3

Team Ratings		Glossary · SHARE · Embed · CSV · Export · PRE · <a href="#">LINK</a> · ?												
Rk	Team	Conf	Div	W	L	W/L%	Unadjusted				Adjusted			
							MOV	ORtg	DRtg	NRtg	MOV/A	ORtg/A ▼	DRtg/A	NRtg/A
1	<a href="#">Golden State Warriors</a>	W	P	73	9	.890	10.76	115.18	104.32	10.86	10.38	115.01	104.53	10.49
2	<a href="#">Oklahoma City Thunder</a>	W	NW	55	27	.671	7.28	113.76	106.22	7.54	7.09	113.64	106.29	7.35
3	<a href="#">Cleveland Cavaliers</a>	E	C	57	25	.695	5.99	111.80	105.32	6.48	5.44	111.75	105.85	5.90
4	<a href="#">Toronto Raptors</a>	E	A	56	26	.683	4.50	111.11	106.16	4.95	4.08	111.18	106.68	4.50
5	<a href="#">San Antonio Spurs</a>	W	SW	67	15	.817	10.63	111.04	99.55	11.49	10.28	110.59	99.49	11.10
6	<a href="#">Portland Trail Blazers</a>	W	NW	54	28	.659	7.00	109.55	108.67	0.88	0.98	109.48	108.67	0.81
7	<a href="#">Dallas Mavericks</a>	W	SW	54	28	.659	7.00	109.55	108.67	0.88	0.98	109.48	108.67	0.81
8	<a href="#">Houston Rockets</a>	W	SW	54	28	.659	7.00	109.55	108.67	0.88	0.98	109.48	108.67	0.81
9	<a href="#">New Orleans Pelicans</a>	W	SW	54	28	.659	7.00	109.55	108.67	0.88	0.98	109.48	108.67	0.81
10	<a href="#">Minnesota Timberwolves</a>	W	SW	54	28	.659	7.00	109.55	108.67	0.88	0.98	109.48	108.67	0.81
11	<a href="#">New York Knicks</a>	E	A	32	50	.390	-2.73	105.41	108.43	-3.03	-2.73	105.55	108.58	-3.02
12	<a href="#">Boston Celtics</a>	E	E	47	35	.571	-1.62	105.75	102.00	3.75	3.49	105.74	102.12	3.62
13	<a href="#">Miami Heat</a>	E	SE	48	34	.585	3.61	105.75	102.00	3.75	3.49	105.74	102.12	3.62
14	<a href="#">Orlando Magic</a>	E	SE	35	47	.427	-1.62	105.75	102.00	3.75	3.49	105.74	102.12	3.62
15	<a href="#">Atlanta Hawks</a>	E	SE	48	34	.585	3.61	105.75	102.00	3.75	3.49	105.74	102.12	3.62
16	<a href="#">New York Knicks</a>	E	A	32	50	.390	-2.73	105.41	108.43	-3.03	-2.73	105.55	108.58	-3.02
17	<a href="#">Milwaukee Bucks</a>	E	C	33	49	.402	-4.18	105.06	109.65	-4.59	-3.98	105.32	109.69	-4.37
18	<a href="#">Indiana Pacers</a>	E	C	45	37	.549	1.71	105.28	103.51	1.77	1.62	105.26	103.58	1.68
19	<a href="#">Brooklyn Nets</a>	E	A	21	61	.256	-7.35	103.74	111.60	-7.86	-7.11	104.06	111.66	-7.61
20	<a href="#">Phoenix Suns</a>	W	P	23	59	.280	-6.66	102.94	109.80	-6.86	-6.32	102.95	109.45	-6.50
21	<a href="#">Los Angeles Lakers</a>	W	P	17	65	.207	-9.56	102.29	112.40	-10.12	-8.92	102.49	111.92	-9.43
22	<a href="#">Philadelphia 76ers</a>	E	A	10	72	.122	-10.23	99.65	110.15	-10.50	-9.92	99.83	110.01	-10.18

105.3 = not good!

# MOTIVATION

- Increased awareness of player health.



# PROCESS

- Collected data by web scraping.



Data

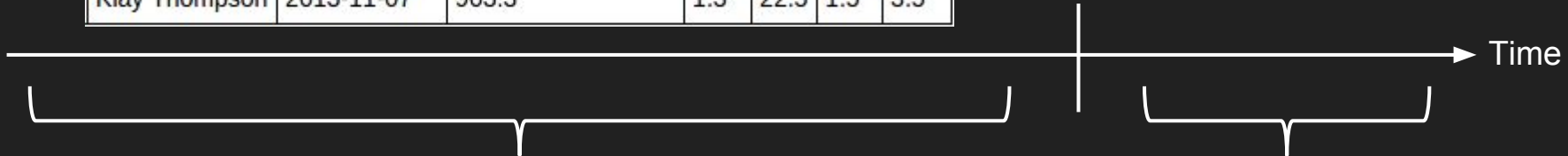
# PROCESS

- Used a three week aggregation moving window.

PLAYER	GAME_DATE	MILES_TRAVELED	TOV	PTS	AST	REB
Klay Thompson	2013-10-30	0.0	1.0	38.0	1.0	3.0
Klay Thompson	2013-10-31	372.0	2.0	10.0	1.0	1.0
Klay Thompson	2013-11-02	372.0	1.0	27.0	2.0	7.0
Klay Thompson	2013-11-04	2869.0	1.0	15.0	2.0	3.0



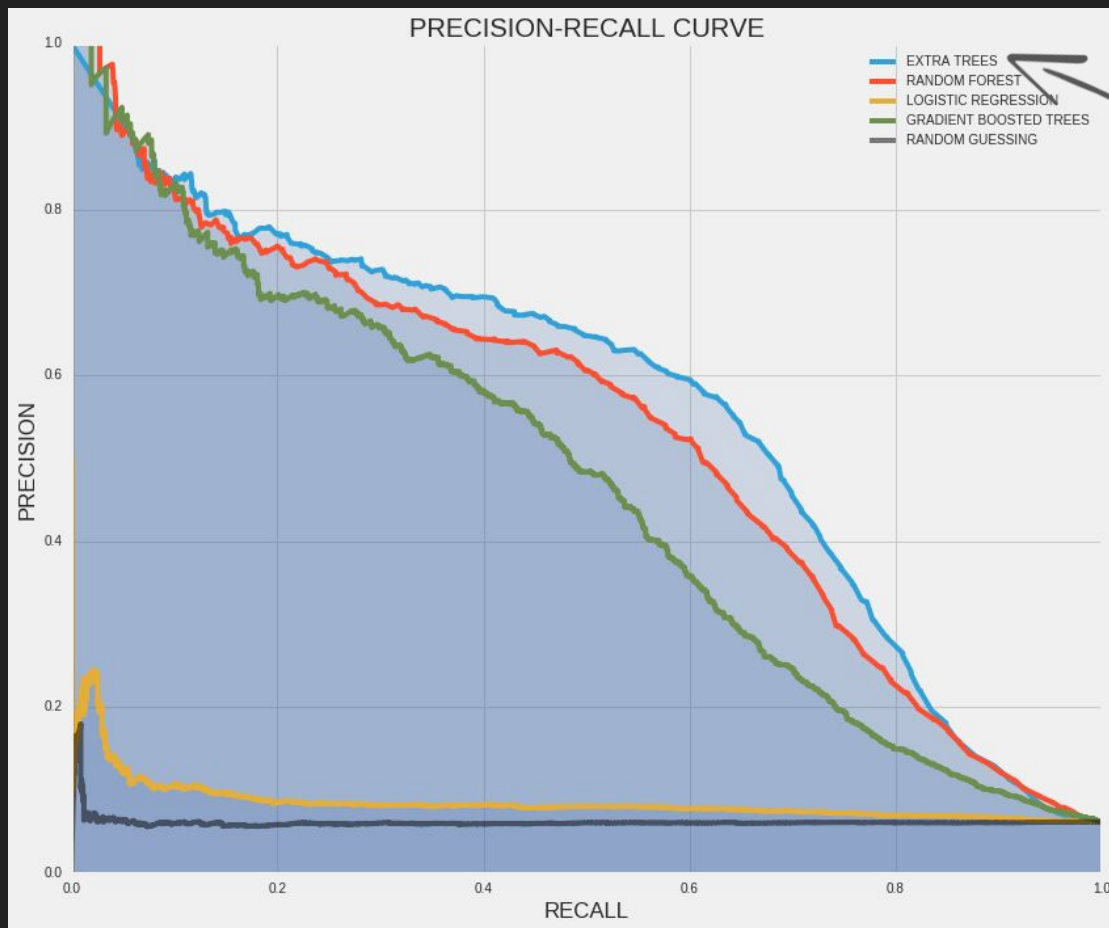
Klay Thompson	2013-11-07	903.3	1.3	22.5	1.5	3.5
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Aggregate box score  
statistics in the three  
weeks leading up to the  
prediction

Predict if an injury  
will occur in the next  
3 games

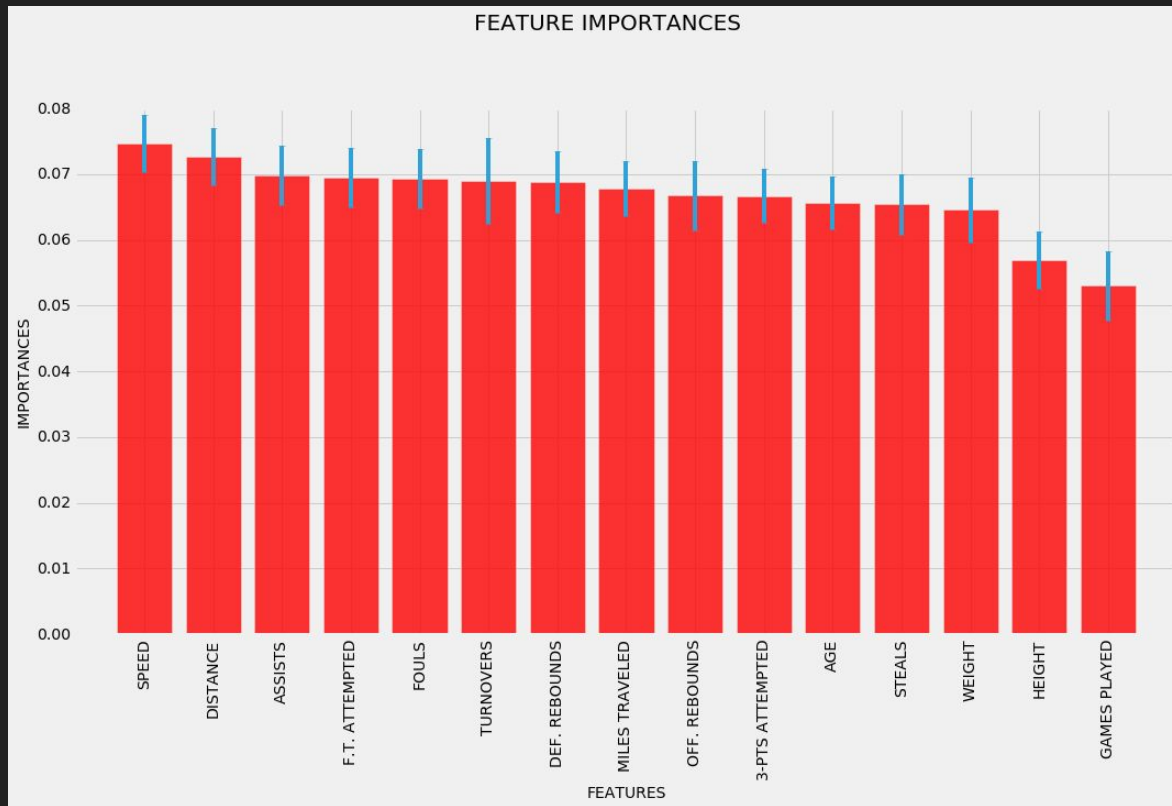
# RESULTS



Winner!  
AUC = 0.549

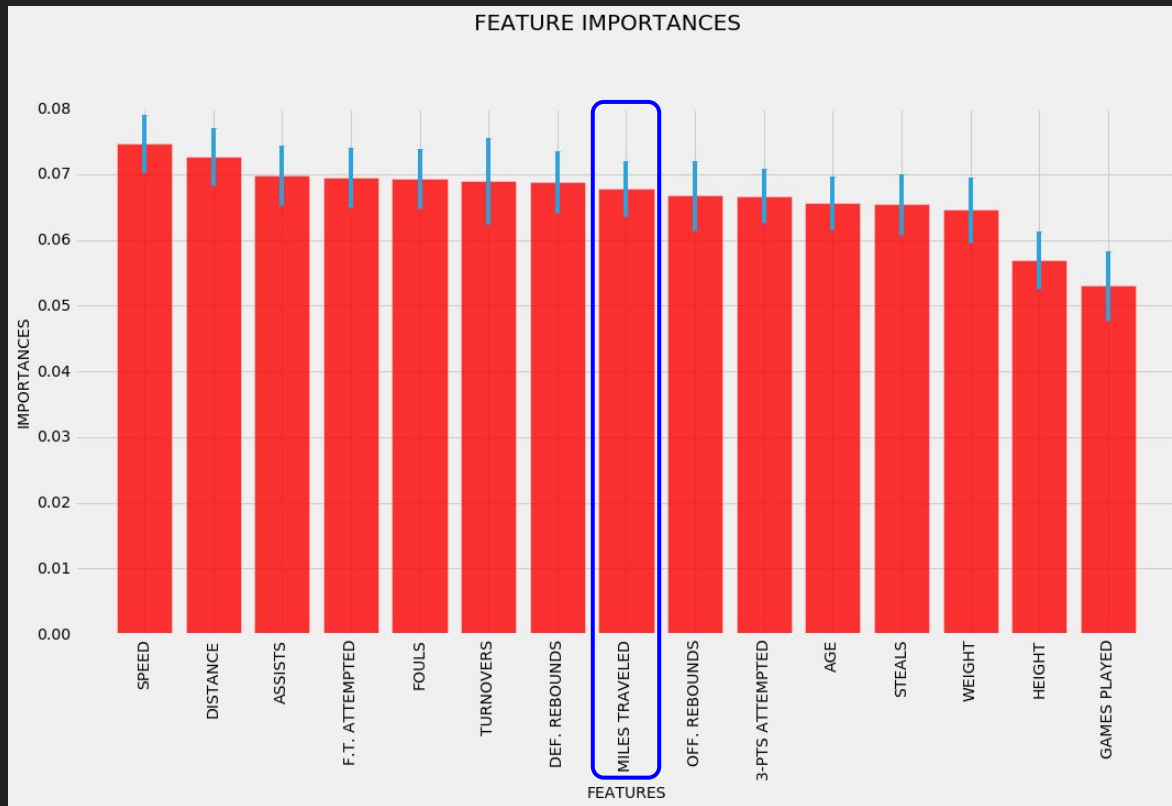
# INSIGHTS

- Important features to the model.



# INSIGHTS

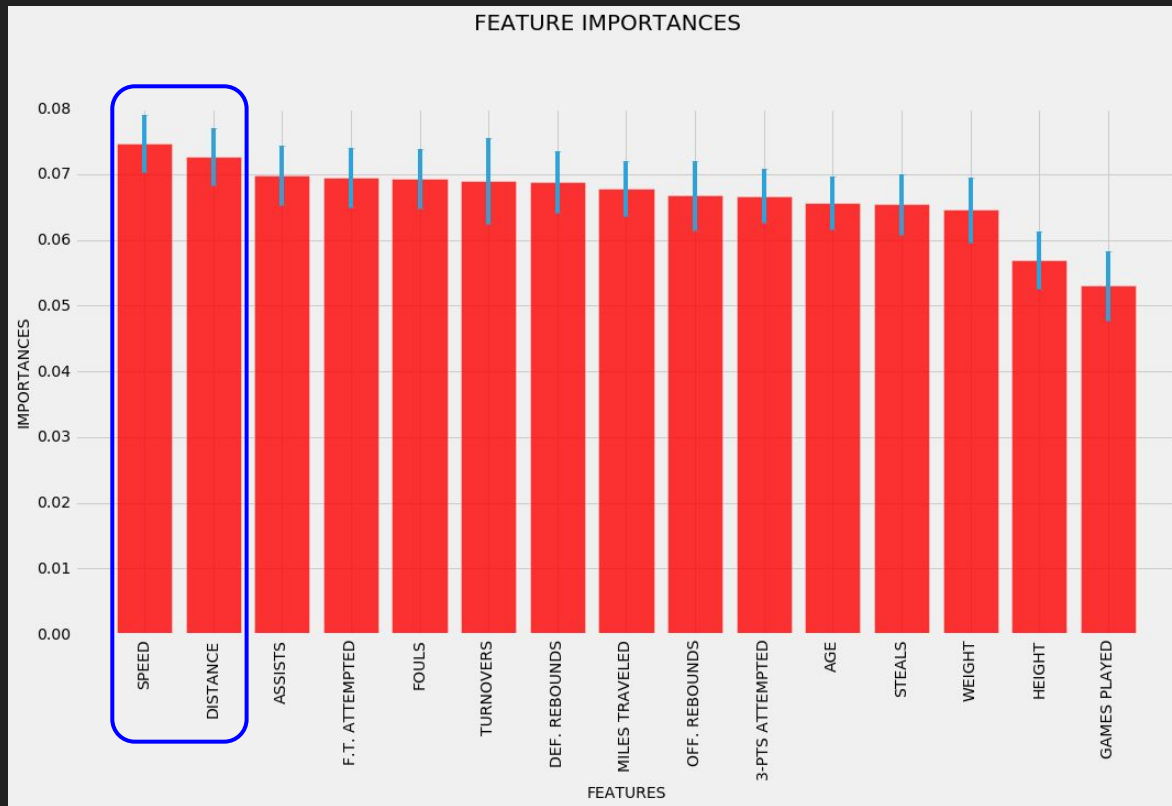
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# INSIGHTS

- Important features to the model.



# INSIGHTS

- **Speed:** slower running speed might signal an injury.
- **Distance:** greater distance ran might also signal an injury.

## FUTURE WORK

- Investigate hustle stats.
  - Ex: charges drawn, loose balls recovered.
  - Diving head-first into the stands = higher injury risk!



# Thank you!

# Any questions?

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F1, PRECISION, AND RECALL VS THRESHOLDS

