

White men cannot jump. A Study of winners and losers in the NBA.

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2/ 17 Introduction

- Have you ever asked yourself why players are good? Could not it be you instead of them?
- Thanks to the NBA stats website, we considered some of the factors improving their results.

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4/ 17 Dependent variable

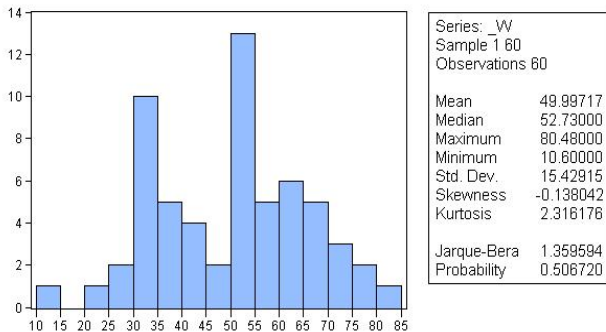


Figure: Win percentage over last 2 seasons histogram

5/ 17 Dependent variable

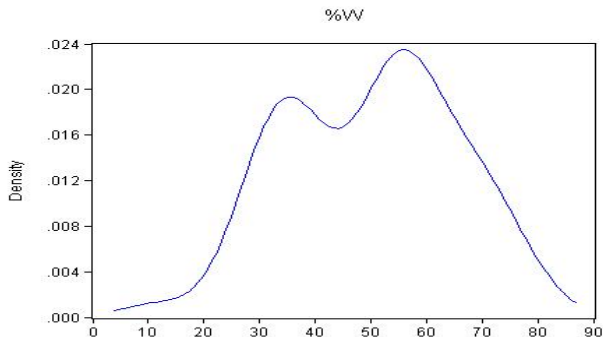


Figure: Win percentage kernel density

6/ 17 Explanatory variables

- Age
- Experience
- Height (m)
- Weight (pound)
- Points scored
- Rebounds (offensive and defensive)
- Number of white men in the team

7/17 White men repartition

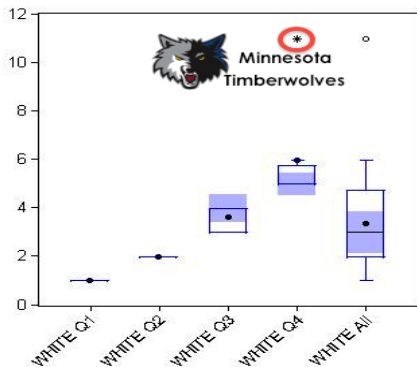


Figure: White men number in NBA teams repartition

Independent variables	Expected effect
Age	Ambiguous
Experience	Positive
Height	Positive
Weight	Ambiguous
Points scored	Positive
Rebounds	Positive
Number of white men	Negative

Table: Expected effects on the winning rate

9/ 17 First Equation

Winning rate between 2011 and 2013 function

$$\text{Winrate} = \beta_0 + \beta_1 \text{Age} + \beta_2 \text{Experience} + \beta_3 \text{Height} + \beta_4 \text{Weight} + \beta_5 \text{Pointsscored} + \beta_6 \text{Rebounds} + \beta_7 \text{Whitenumbers}$$

10/ 17 Is it like we expected ?

Dependent Variable: _W
 Method: Least Squares
 Date: 05/20/13 Time: 18:02
 Sample (adjusted): 1 30
 Included observations: 27 after adjustments

	Coefficient	Std. Error	t-Statistic	Prob.
AGE	1.036499	1.309101	0.791764	0.4383
EXP01	3.727187	1.593892	2.338419	0.0305
HEIGHT	184.1934	198.1196	0.929708	0.3642
PTS_SCORED	1.866821	0.600903	3.106695	0.0058
REBONDS	1.582577	1.391926	1.136969	0.2697
WEIGHT	-0.678500	0.659483	-1.028837	0.3165
WHITE	-1.247701	1.276564	-0.977391	0.3407
C	-459.9551	351.1735	-1.309766	0.2059
R-squared	0.646286	Mean dependent var	50.54185	
Adjusted R-squared	0.515943	S.D. dependent var	15.87940	
S.E. of regression	11.04797	Akaike info criterion	7.883566	
Sum squared resid	2319.097	Schwarz criterion	8.267517	
Log likelihood	-98.42814	Hannan-Quinn criter.	7.997735	
F-statistic	4.958949	Durbin-Watson stat	2.233821	
Prob(F-statistic)	0.002510			

Independent variables Observations

Age	Positive
Experience	Positive
Height	Positive
Weight	Negative
Points scored	Positive
Rebounds	Positive
Number of white men	Negative

Table: Observations of the model

Figure: First model.

11/ 17 Wald tests

Wald Test:

Test Statistic	Value	df	Probability
F-statistic	0.589272	(4, 19)	0.6744
Chi-square	2.357090	4	0.6704

Figure: Wald test, 4 variables ignored

Wald Test:

Test Statistic	Value	df	Probability
F-statistic	0.824823	(5, 19)	0.5474
Chi-square	4.124115	5	0.5317

Figure: Wald test, 5 variables ignored

Wald Test:

Test Statistic	Value	df	Probability
F-statistic	0.511335	(2, 21)	0.6070
Chi-square	1.022670	2	0.5997

Figure: Wald test, 2 variables ignored

12/ 17 Second equation

Winning rate between 2011 and 2013 function

$$\text{Winrate} = \beta_0 + \beta_1 \text{Experience} + \beta_2 \text{Pointsscored} + \beta_3 \text{Rebounds}$$

Dependent Variable: _W
Method: Least Squares
Date: 05/20/13 Time: 18:05
Sample: 1 60
Included observations: 60

	Coefficient	Std. Error	t-Statistic	Prob.
EXP01	4.054347	1.077837	3.761559	0.0004
PTS_SCORED	1.534383	0.405341	3.785415	0.0004
REBONDS	1.775479	0.944083	1.880638	0.0652
C	-193.5691	45.77675	-4.228547	0.0001
R-squared	0.440377	Mean dependent var		49.99717
Adjusted R-squared	0.410398	S.D. dependent var		15.42915
S.E. of regression	11.84736	Akaike info criterion		7.846428
Sum squared resid	7860.158	Schwarz criterion		7.986051
Log likelihood	-231.3928	Hannan-Quinn criter.		7.901042
F-statistic	14.68915	Durbin-Watson stat		1.928546
Prob(F-statistic)	0.000000			

Figure: Second model

13/ 17 Second equation

	EXP01	REBONDS	PTS_SCORED
EXP01	1.000000	-0.158996	0.169255
REBONDS	-0.158996	1.000000	0.304599
PTS_SCORED	0.169255	0.304599	1.000000

Figure: Correlation matrix

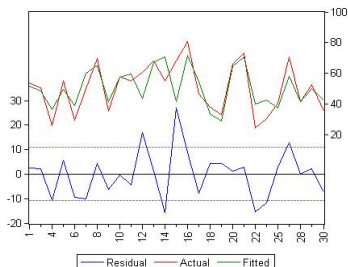
14/ 17 Heteroskedasticity & Residuals

Heteroskedasticity

We cannot conclude that there is no heteroskedasticity.

Heteroskedasticity Test: White

F-statistic	0.922002	Prob. F(9,50)	0.5143
Obs*R-squared	8.540271	Prob. Chi-Square(9)	0.4807
Scaled explained SS	7.565926	Prob. Chi-Square(9)	0.5784



Residuals

Their level is quite important.
 The model is improvable.

15/ 17 Model comparison to reality

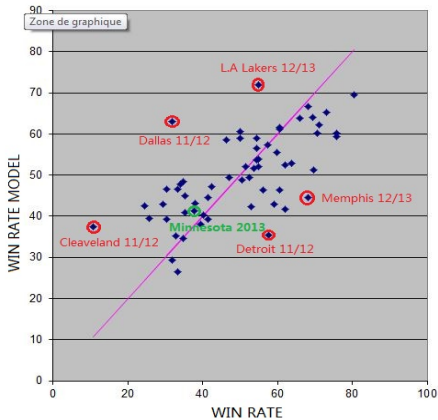


Figure: Win rate model=Win rate

16/ 17 Conclusion

- A model with strong evidences
- However, a non exhaustive model with a lake of accuracy:
 - ★ Field goals
 - ★ Good coach
 - ★ Number of years in the same club
 - Etc...

17/ 17 References

Websites:

- NBA STATS
(stats.nba.com)
- Google Image

Any question?

