

NBA

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CALCULATING WINNING PERCENTAGE USING MULTIPLE REGRESSION MODEL

The FOLLOWING MODEL IS BASED ON 2017-18 NBA STATS DATA.

```
setwd("C:/Users/Laptop/Documents/ISQA 8086/Research/NBA")
NBAsStats2018<-read.csv("2017-18_TeamStats.csv")
NBAsPlayoffs2016<-read.csv("2016-17_TeamPlayoffsStats.csv")
NBAsStats2016<-read.csv("2016-17_TeamStats.csv")
x3<-NBAsStats2018$DREB
x2<-NBAsStats2018$FT_PCT
x1<-NBAsStats2018$Eff.FG
x4<-NBAsStats2018$TOV
y<-NBAsStats2018$W_PCT

dfrm<-data.frame(y,x1,x2,x3,x4)
m<-lm(formula = y ~ x1 + x2 + x3 + x4, data = dfrm)

summary(m)

##
## Call:
## lm(formula = y ~ x1 + x2 + x3 + x4, data = dfrm)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.222561 -0.059718  0.002671  0.048909  0.149253
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) -3.03711    0.72735  -4.176 0.000315 ***
## x1           6.60933    1.14002   5.798 4.81e-06 ***
## x2          -0.14011    0.78877  -0.178 0.860448
## x3           0.02575    0.01299   1.982 0.058631 .
## x4          -0.04700    0.01709  -2.751 0.010898 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.08801 on 25 degrees of freedom
## Multiple R-squared:  0.6995, Adjusted R-squared:  0.6515
## F-statistic: 14.55 on 4 and 25 DF,  p-value: 2.892e-06

x<-NBAsStats2018$OREB

m1<-lm(formula = y ~ x1 + x2 + x + x4, data = dfrm)
summary(m1)

##
```

```
## Call:
## lm(formula = y ~ x1 + x2 + x + x4, data = dfrm)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.121018 -0.047840 -0.004259  0.018424  0.205036
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) -3.94354    0.71491  -5.516 9.86e-06 ***
## x1           7.82598    0.96621   8.100 1.87e-08 ***
## x2           0.51168    0.72647   0.704  0.48773
## x            0.06264    0.01748   3.583  0.00143 **
## x4          -0.04463    0.01456  -3.064  0.00517 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.07695 on 25 degrees of freedom
## Multiple R-squared:  0.7703, Adjusted R-squared:  0.7336
## F-statistic: 20.96 on 4 and 25 DF,  p-value: 1.099e-07
```

THE FOOLOWING REGRESSION MODEL IS BASED ON DATA FROM 2016-17 PLAYOFFS AND REGULAR SEASON

```
y1<-NBAPlayoffs2016$W_PCT
y2<-NBAPlayoffs2016$Eff.FG
y3<-NBAPlayoffs2016$OREB
y4<-NBAPlayoffs2016$FT_PCT
y5<-NBAPlayoffs2016$TOV

dfrm1<-data.frame(y1, y2, y3, y4, y5)

m2<-lm(formula = y1 ~ y2 + y3 + y4 + y5, data = dfrm1)
summary(m2)
```

```
##
## Call:
## lm(formula = y1 ~ y2 + y3 + y4 + y5, data = dfrm1)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.46789 -0.03474  0.02470  0.07153  0.17500
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) -3.57616    1.34239  -2.664  0.02203 *
## y2           6.04124    1.71212   3.529  0.00473 **
## y3          -0.01610    0.02730  -0.590  0.56723
## y4           0.75119    0.92448   0.813  0.43371
## y5           0.03408    0.04761   0.716  0.48901
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1824 on 11 degrees of freedom
```

```
## Multiple R-squared:  0.5624, Adjusted R-squared:  0.4032
## F-statistic: 3.534 on 4 and 11 DF,  p-value: 0.04347
```

```
x3<-NBASStats2016$DREB
x2<-NBASStats2016$FT_PCT
x1<-NBASStats2016$Eff.FG
x4<-NBASStats2016$TOV
y<-NBASStats2016$W_PCT
```

```
dfrm<-data.frame(y,x1,x2,x3,x4)
```

```
m<-lm(formula = y ~ x1 + x2 + x3+ x4, data = dfrm)
```

```
summary(m)
```

```
##
## Call:
## lm(formula = y ~ x1 + x2 + x3 + x4, data = dfrm)
##
## Residuals:
```

	Min	1Q	Median	3Q	Max
	-0.16289	-0.06422	-0.02495	0.04977	0.16367

```
##
## Coefficients:
```

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	-2.33911	0.85579	-2.733	0.0113 *
x1	5.32738	0.91459	5.825	4.49e-06 ***
x2	0.01041	0.62881	0.017	0.9869
x3	0.01641	0.01495	1.098	0.2826
x4	-0.03251	0.01342	-2.423	0.0229 *

```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.09047 on 25 degrees of freedom
## Multiple R-squared:  0.621, Adjusted R-squared:  0.5603
## F-statistic: 10.24 on 4 and 25 DF,  p-value: 4.741e-05
```

```
x3<-NBASStats2016$OREB
x2<-NBASStats2016$FT_PCT
x1<-NBASStats2016$Eff.FG
x4<-NBASStats2016$TOV
y<-NBASStats2016$W_PCT
```

```
dfrm<-data.frame(y,x1,x2,x3,x4)
```

```
m<-lm(formula = y ~ x1 + x2 + x3+ x4, data = dfrm)
```

```
summary(m)
```

```
##
## Call:
## lm(formula = y ~ x1 + x2 + x3 + x4, data = dfrm)
##
```

```

## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.14370 -0.05626 -0.01952  0.05189  0.15987
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) -2.42964    0.70214  -3.460  0.00195 **
## x1           6.19075    0.90895   6.811 3.87e-07 ***
## x2          -0.01345    0.57643  -0.023  0.98157
## x3           0.03098    0.01429   2.169  0.03983 *
## x4          -0.03973    0.01313  -3.026  0.00567 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.08498 on 25 degrees of freedom
## Multiple R-squared:  0.6656, Adjusted R-squared:  0.6121
## F-statistic: 12.44 on 4 and 25 DF,  p-value: 1.054e-05

```