

Results

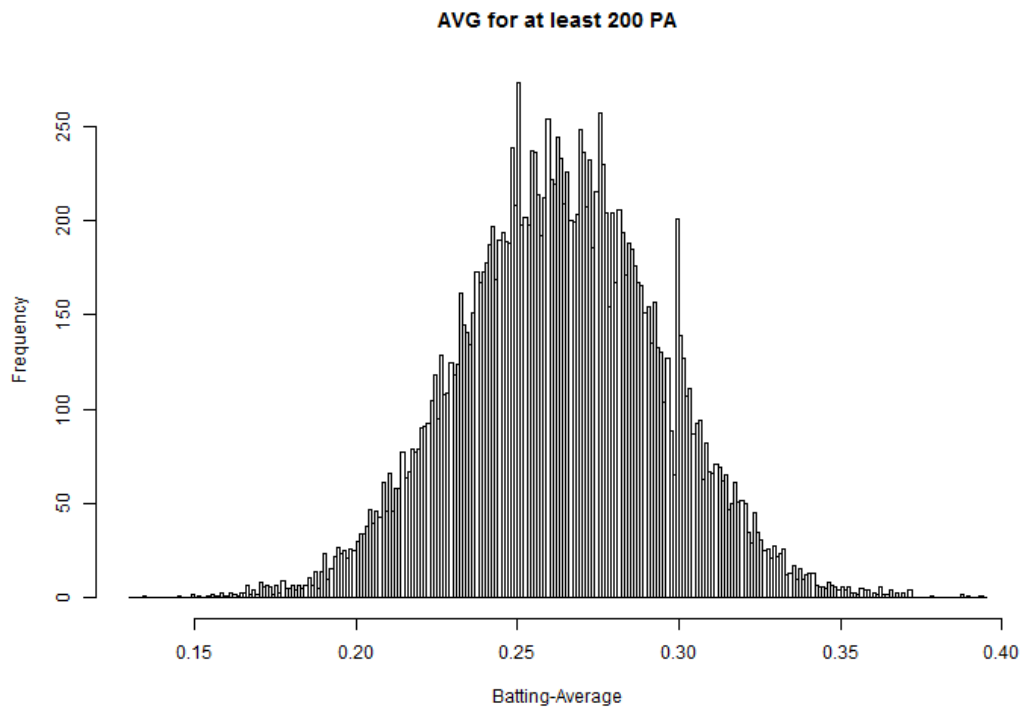
Reio.T

9/27/2018

Data = from 1957 to 2017 ($n = 53090$)

1 Full-sample analysis

- Batting-Average ($n = 17788$)



*difference between the number of batters with .299 (0.37%) and .300 (1.13%) is significant at 0.1% ($\chi^2 = 69.03$)

**Also, the difference between those with .299, .298 (0.87%) and with .300 and .301 (1.91%) is significant at 0.1% ($\chi^2 = 70.26$)

- Other Index for performance

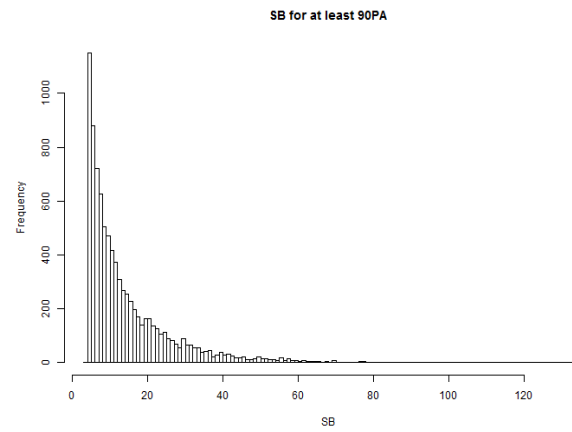
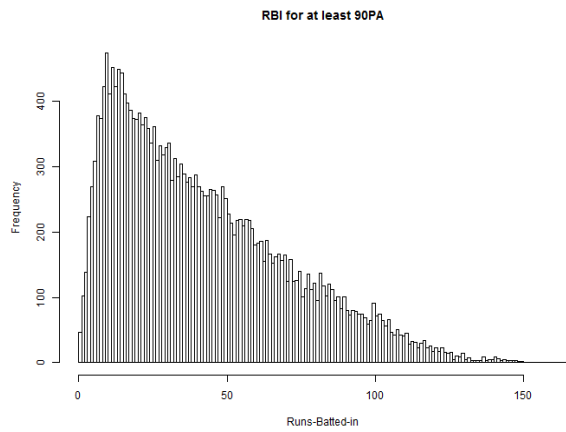
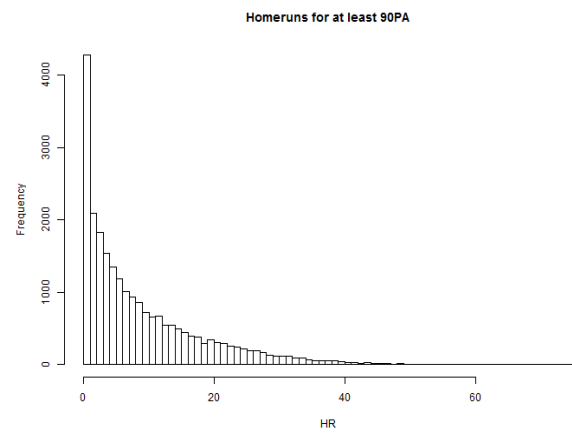
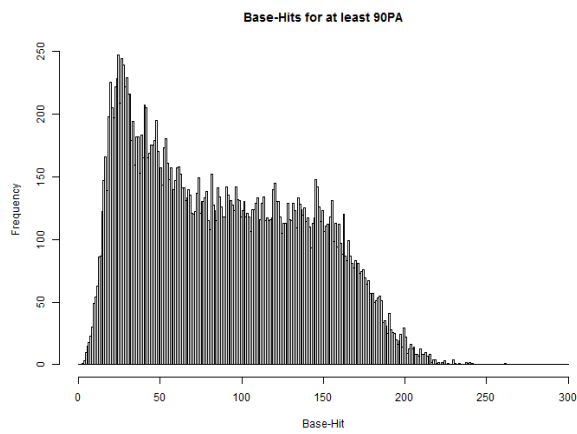
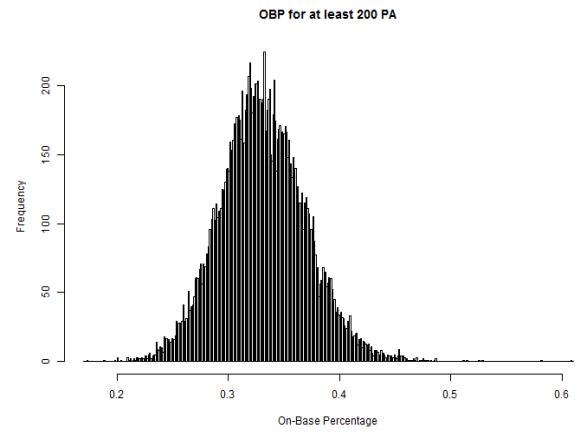
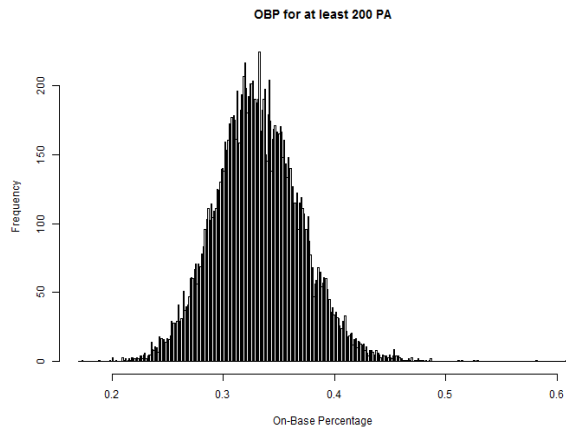


Table 1:

	<i>Dependent variable:</i>					
	(1)	(2)	(3)	(4)	(5)	(6)
	L.Sal					
AVG_87	9.849*** (0.616)					
OBP_87		10.439*** (0.453)				
OPS_87			4.999*** (0.162)			
wOBA				11.610*** (0.423)		
BATTING					0.031*** (0.001)	
fWAR						0.272*** (0.009)
ABOVE_300	-0.842 (0.767)	-0.481 (0.438)	-0.207 (0.336)	-0.565 (0.409)	-0.070 (0.055)	0.043 (0.071)
FIELDING	0.003* (0.002)	0.005*** (0.002)	0.007*** (0.002)	0.006*** (0.002)	0.007*** (0.002)	
BaseRun	-0.021*** (0.005)	-0.022*** (0.005)	-0.014*** (0.005)	-0.017*** (0.005)	-0.017*** (0.005)	
AVG_87:ABOVE_300	3.058 (2.456)					
OBP_87:ABOVE_300		1.515 (1.164)				
OPS_87:ABOVE_300			0.165 (0.389)			
wOBA:ABOVE_300				1.483 (1.092)		
BATTING:ABOVE_300					0.001 (0.002)	
fWAR:ABOVE_300						-0.012 (0.018)
Constant	11.618*** (0.160)	10.750*** (0.149)	10.485*** (0.121)	10.417*** (0.137)	14.187*** (0.014)	13.778*** (0.019)
Observations	8,883	8,883	8,883	8,883	8,883	8,928
R ²	0.065	0.101	0.146	0.125	0.140	0.153
Adjusted R ²	0.064	0.100	0.146	0.125	0.140	0.153
Residual Std. Error	1.295 (df = 8877)	1.270 (df = 8877)	1.238 (df = 8877)	1.253 (df = 8877)	1.242 (df = 8877)	1.231 (df = 8924)
F Statistic	122.451*** (df = 5; 8877)	199.008*** (df = 5; 8877)	304.053*** (df = 5; 8877)	254.613*** (df = 5; 8877)	290.119*** (df = 5; 8877)	539.388*** (df = 3; 8924)

* p<0.1; ** p<0.05; *** p<0.01

Note:

Table 2:

	Dependent variable:					
	OLS			felm		
	(1)	(2)	(3)	(4)	(5)	(6)
	Log-salary next season					
fWAR	0.272*** (0.009)	0.281*** (0.008)	0.279*** (0.008)	0.126*** (0.006)	0.124*** (0.006)	0.049*** (0.008)
ABOVE_300	0.043 (0.071)	-0.089 (0.062)	-0.102* (0.062)	-0.028 (0.046)	-0.032 (0.046)	0.011 (0.045)
AGE		0.928*** (0.034)	0.932*** (0.034)	1.684*** (0.028)	1.681*** (0.028)	1.616*** (0.028)
AGE.sq		-0.013*** (0.001)	-0.013*** (0.001)	-0.025*** (0.0005)	-0.025*** (0.0005)	-0.024*** (0.0005)
WPA						0.041*** (0.008)
nWPA						-0.086*** (0.004)
fWAR.ABOVE_300	-0.012 (0.018)	0.004 (0.015)	0.006 (0.015)	-0.020* (0.011)	-0.018 (0.011)	-0.008 (0.011)
Constant	13.778*** (0.019)	-1.664*** (0.498)				
Fixed effect	None	None	Team	Individual	Team + Individual	Team + Individual
Observations	8,928	8,928	8,928	8,928	8,928	8,928
R ²	0.153	0.358	0.366	0.787	0.790	0.801
Adjusted R ²	0.153	0.357	0.363	0.738	0.740	0.754
Residual Std. Error	1.231 (df = 8924)	1.073 (df = 8922)	1.068 (df = 8893)	0.686 (df = 7237)	0.682 (df = 7208)	0.664 (df = 7206)
F Statistic	539.388*** (df = 3; 8924)	993.022*** (df = 5; 8922)				

* p<0.1; ** p<0.05; *** p<0.01

Note:

Table 3:

	Dependent variable:					
	OLS			felm		
	(1)	(2)	(3)	(4)	(5)	(6)
	Log-salary next season					
BATTING	0.031*** (0.001)	0.030*** (0.001)	0.030*** (0.001)	0.030*** (0.001)	0.013*** (0.001)	0.007*** (0.001)
ABOVE_300	-0.070 (0.055)	-0.112** (0.049)	-0.099** (0.049)	-0.108** (0.049)	-0.062* (0.037)	-0.007 (0.036)
FIELDING	0.007*** (0.002)	0.008*** (0.002)	0.008*** (0.002)	0.008*** (0.002)	0.003*** (0.001)	0.002* (0.001)
BaseRun	-0.017*** (0.005)	0.007* (0.004)	0.001 (0.005)	0.002 (0.005)	0.0003 (0.004)	-0.005 (0.004)
AGE		0.947*** (0.035)	0.971*** (0.035)	0.976*** (0.035)	1.730*** (0.029)	1.625*** (0.028)
AGE.sq		-0.014*** (0.001)	-0.014*** (0.001)	-0.014*** (0.001)	-0.026*** (0.0005)	-0.024*** (0.0005)
WPA						0.037*** (0.009)
nWPA						-0.094*** (0.004)
BATTING:ABOVE_300	0.001 (0.002)	0.002 (0.002)	0.002 (0.002)	0.001 (0.002)	-0.001 (0.001)	-0.002 (0.001)
Constant	14.187*** (0.014)	-1.393*** (0.519)				
Fixed effect	None	None	Position	Position + Team	Team + Individual	Team + Individual
Observations	8,883	8,883	8,883	8,883	8,883	8,883
R ²	0.140	0.324	0.344	0.354	0.786	0.802
Adjusted R ²	0.140	0.324	0.343	0.350	0.735	0.755
Residual Std. Error	1.242 (df = 8877)	1.101 (df = 8875)	1.086 (df = 8863)	1.080 (df = 8834)	0.689 (df = 7163)	0.663 (df = 7161)
F Statistic	290.119*** (df = 5; 8877)	608.849*** (df = 7; 8875)				

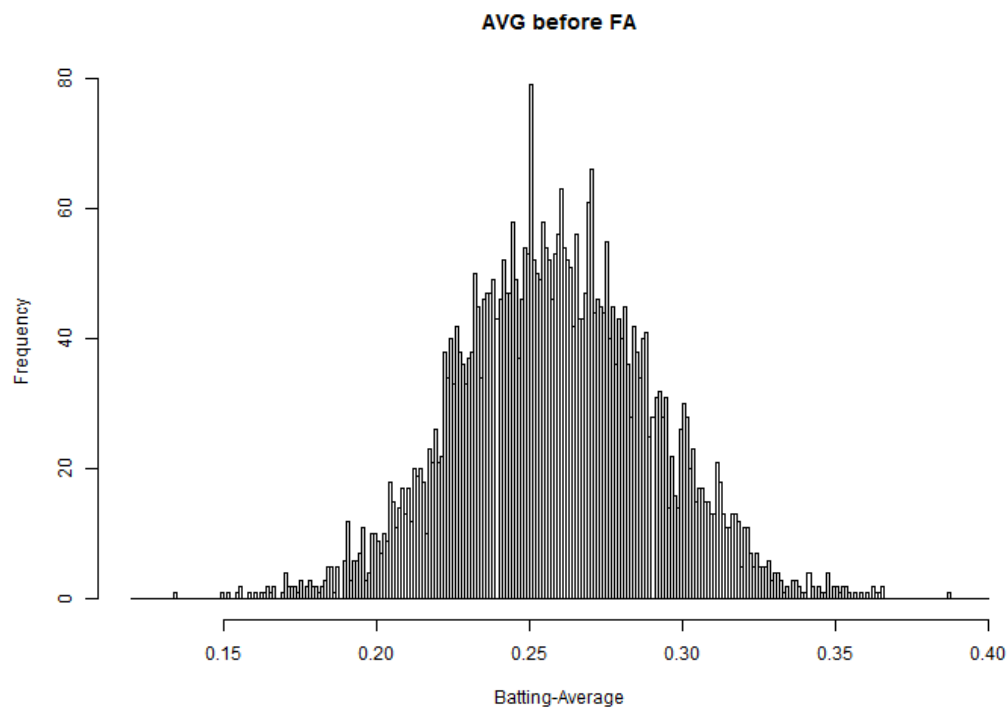
Note: *p<0.1; **p<0.05; ***p<0.01

2 Restricted-sample analysis

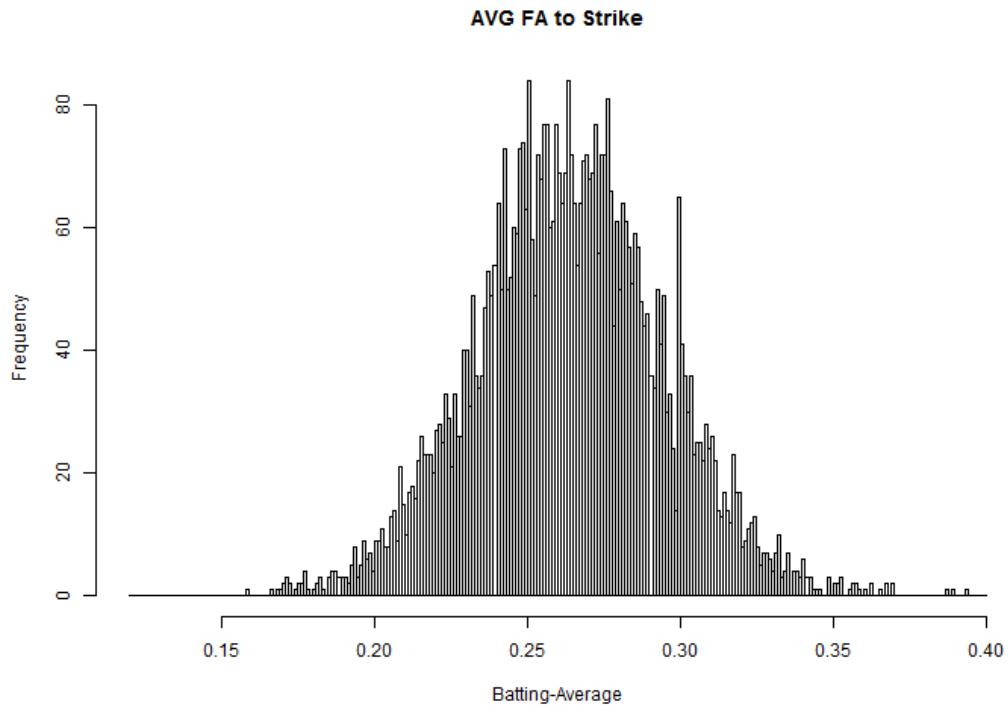
Behavior of the players may be influenced by the Season-specific effect.

Now I divide sample year into 4 era, according to three important events for the players' contract:

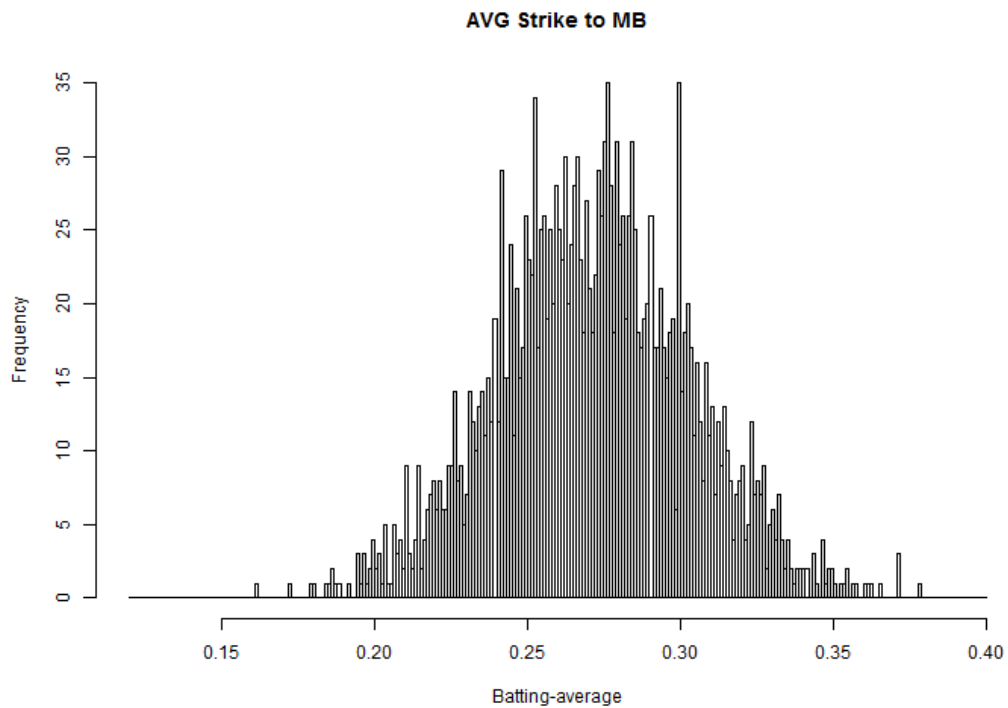
- Before "Free Agent" system was introduced: -1975 ($n = 4292$)
- Before "Strike" of the players occurred: 1976-1994 ($n = 5331$)
- Before 'Moneyball' was published: 1995-2001 ($n = 2028$)
- After 'Moneyball': 2002- ($n = 5555$)



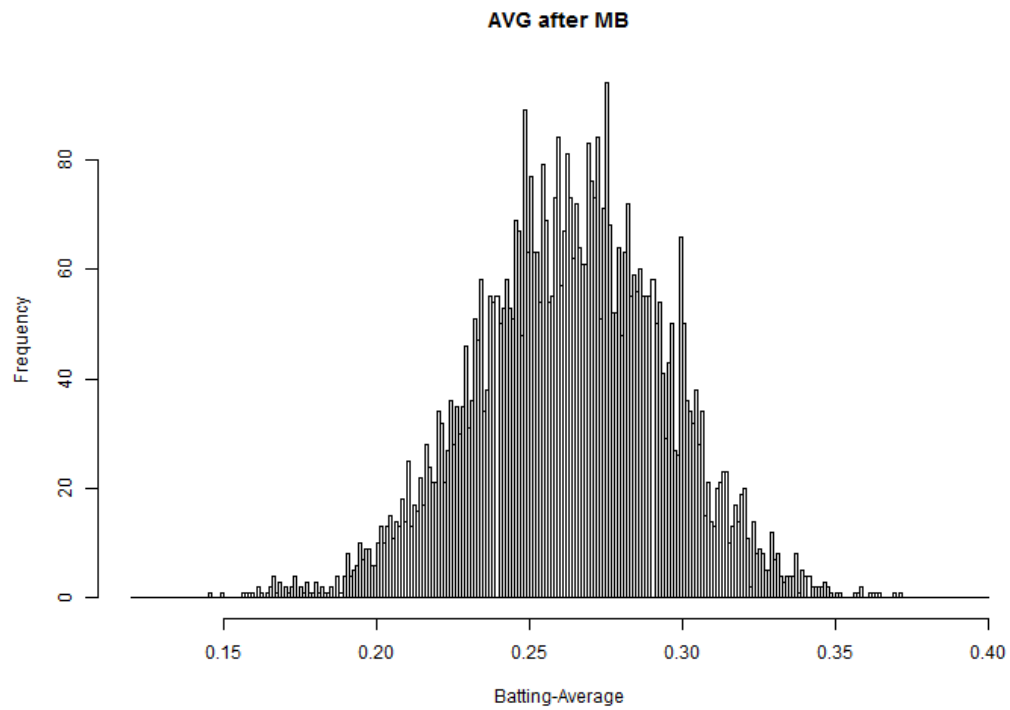
.299 to .300: significant at 5% ($\chi^2 = 3.04, p = 0.0406$)
.298, .299 to .300, .301: significant at 1% ($\chi^2 = 7.34, p = 0.0034$)



.299 to .300: significant at 0.1% ($\chi^2 = 31.88$)
 .298, .299 to .300, .301: significant at 0.1% ($\chi^2 = 31.60$)



.299 to .300: significant at 0.1% ($\chi^2 = 19.32$)
 .298, .299 to .300, .301: significant at 1% ($\chi^2 = 7.28, p = 0.0034$)



.299 to .300: significant at 0.1% ($\chi^2 = 16.67$)
.298, .299 to .300, .301: significant at 0.1% ($\chi^2 = 23.10$)

Table 4:

	Dependent variable:					
	OLS			Log-salary next season		
	(1)	(2)	(3)	(4)	(5)	(6)
fWAR_bfst	0.234*** (0.014)	0.234*** (0.012)	0.236*** (0.012)	0.124*** (0.010)	0.122*** (0.010)	0.062*** (0.013)
ABOVE_300_bfst	0.154 (0.120)	0.013 (0.104)	-0.003 (0.104)	0.138* (0.078)	0.114 (0.078)	0.168** (0.075)
AGE_bfst		0.812*** (0.054)	0.811*** (0.054)	1.872*** (0.061)	1.879*** (0.062)	1.829*** (0.060)
AGE_sq_bfst		-0.012*** (0.001)	-0.012*** (0.001)	-0.027*** (0.001)	-0.027*** (0.001)	-0.026*** (0.001)
WPA_bfst						0.025** (0.012)
nWPA_bfst						-0.080*** (0.007)
fWAR_bfst:ABOVE_300_bfst	-0.007 (0.030)	0.015 (0.026)	0.017 (0.026)	-0.037** (0.019)	-0.033* (0.019)	-0.027 (0.018)
Constant	13.047*** (0.030)	-0.294 (0.790)				
Fixed effect	None	None	Team	Individual	Team + Individual	Team + Individual
Observations	2,122	2,122	2,122	2,122	2,122	2,122
R ²	0.189	0.401	0.416	0.837	0.844	0.856
Adjusted R ²	0.188	0.399	0.407	0.778	0.784	0.800
Residual Std. Error	0.959 (df = 2118)	0.825 (df = 2116)	0.820 (df = 2089)	0.502 (df = 1556)	0.495 (df = 1529)	0.476 (df = 1527)
F Statistic	165.009*** (df = 3; 2118)	282.841*** (df = 5; 2116)				

Note: * p<0.1; ** p<0.05; ***p<0.01

Table 5:

	Dependent variable:					
	OLS			felm		
	(1)	(2)	(3)	(4)	(5)	(6)
BATTING.bfst	0.027*** (0.002)	0.026*** (0.002)	0.027*** (0.002)	0.028*** (0.002)	0.015*** (0.002)	0.011*** (0.002)
ABOVE_300.bfst	0.037 (0.102)	-0.102 (0.089)	-0.112 (0.089)	-0.114 (0.089)	0.033 (0.066)	0.096 (0.063)
FIELDING.bfst	0.006** (0.003)	0.005* (0.002)	0.004* (0.002)	0.005* (0.002)	0.002 (0.002)	0.001 (0.002)
BaseRun.bfst	0.044*** (0.013)	0.049*** (0.011)	0.044*** (0.012)	0.044*** (0.012)	0.010 (0.011)	0.007 (0.010)
AGE.bfst		0.819*** (0.056)	0.825*** (0.056)	0.832*** (0.056)	1.932*** (0.064)	1.837*** (0.061)
AGE.sq.bfst		-0.012*** (0.001)	-0.012*** (0.001)	-0.012*** (0.001)	-0.028*** (0.001)	-0.026*** (0.001)
WPA.bfst						0.008 (0.013)
nWPA.bfst						-0.088*** (0.007)
BATTING.bfst:ABOVE_300.bfst	0.001 (0.004)	0.006* (0.004)	0.006 (0.004)	0.005 (0.004)	-0.004 (0.003)	-0.004 (0.002)
Constant	13.388*** (0.023)	0.004 (0.820)				
Fixed effect	None	None	Position	Position + Team	Team + Individual	Team + Individual
Observations	2,108	2,108	2,108	2,108	2,108	2,108
R ²	0.171	0.374	0.382	0.400	0.840	0.857
Adjusted R ²	0.169	0.372	0.378	0.388	0.778	0.802
Residual Std. Error	0.972 (df = 2102)	0.845 (df = 2100)	0.841 (df = 2093)	0.834 (df = 2066)	0.503 (df = 1515)	0.475 (df = 1513)
F Statistic	86.931*** (df = 5; 2102)	179.240*** (df = 7; 2100)				

Note: *p<0.1; **p<0.05; ***p<0.01

Table 6:

	<i>Dependent variable:</i>					
	<i>OLS</i>			<i>Log-salary next season</i>		
	(1)	(2)	(3)	(4)	(5)	(6)
fWAR_stmb	0.314*** (0.016)	0.292*** (0.014)	0.285*** (0.014)	0.108*** (0.011)	0.103*** (0.011)	0.063*** (0.014)
ABOVE_300_stmb	0.159 (0.105)	0.026 (0.090)	0.006 (0.090)	0.085 (0.068)	0.080 (0.069)	0.099 (0.067)
AGE_stmb		0.964*** (0.063)	0.960*** (0.063)	2.140*** (0.068)	2.183*** (0.069)	2.070*** (0.069)
AGE_sq_stmb		-0.014*** (0.001)	-0.014*** (0.001)	-0.032*** (0.001)	-0.032*** (0.001)	-0.031*** (0.001)
WPA_stmb						0.009 (0.012)
nWPA_stmb						-0.063*** (0.007)
fWAR_stmb:ABOVE_300_stmb	-0.050* (0.027)	-0.013 (0.023)	-0.010 (0.023)	-0.042** (0.017)	-0.040** (0.017)	-0.030* (0.016)
Constant	13.566*** (0.033)	-2.169** (0.917)				
Fixed effect	None	None	Team	Individual	Team + Individual	Team + Individual
Observations	2,063	2,063	2,063	2,063	2,063	2,063
R ²	0.263	0.462	0.486	0.872	0.877	0.884
Adjusted R ²	0.262	0.461	0.477	0.821	0.825	0.834
Residual Std. Error	1.048 (df = 2059)	0.896 (df = 2057)	0.882 (df = 2028)	0.517 (df = 1474)	0.510 (df = 1445)	0.498 (df = 1443)
F Statistic	244.465*** (df = 3; 2059)	353.758*** (df = 5; 2057)				

Note: * p<0.1, ** p<0.05, *** p<0.01

Table 7:

	Dependent variable:					
	OLS			felm		
	(1)	(2)	(3)	(4)	(5)	(6)
BATTING.stmb	0.030*** (0.002)	0.026*** (0.002)	0.026*** (0.002)	0.026*** (0.002)	0.009*** (0.001)	0.007*** (0.002)
ABOVE_300.stmb	-0.029 (0.084)	-0.013 (0.073)	-0.020 (0.073)	-0.040 (0.073)	0.035 (0.055)	0.046 (0.053)
FIELDING.stmb	0.007** (0.003)	0.009*** (0.002)	0.009*** (0.002)	0.007*** (0.002)	0.006*** (0.002)	0.004** (0.002)
BaseRun.stmb	0.056*** (0.017)	0.069*** (0.015)	0.066*** (0.015)	0.063*** (0.015)	-0.003 (0.011)	-0.006 (0.011)
AGE.stmb		1.031*** (0.067)	1.052*** (0.068)	1.053*** (0.067)	2.290*** (0.071)	2.108*** (0.070)
AGE.sq.stmb		-0.015*** (0.001)	-0.016*** (0.001)	-0.016*** (0.001)	-0.034*** (0.001)	-0.031*** (0.001)
WPA.stmb						0.010 (0.014)
nWPA.stmb						-0.073*** (0.007)
BATTING.stmb:ABOVE_300.stmb	0.002 (0.003)	0.003 (0.003)	0.003 (0.003)	0.003 (0.003)	-0.004* (0.002)	-0.003* (0.002)
Constant	14.027*** (0.027)	-2.606*** (0.983)				
Fixed effect	None	None	Position	Position + Team	Team + Individual	Team + Individual
Observations	2,051	2,051	2,051	2,051	2,051	2,051
R ²	0.226	0.414	0.421	0.452	0.875	0.885
Adjusted R ²	0.224	0.412	0.417	0.441	0.822	0.835
Residual Std. Error	1.076 (df = 2045)	0.937 (df = 2043)	0.933 (df = 2036)	0.914 (df = 2007)	0.516 (df = 1433)	0.497 (df = 1431)
F Statistic	119.371*** (df = 5; 2045)	206.223*** (df = 7; 2043)				

Note: *p<0.1; **p<0.05; ***p<0.01

Table 8:

	Dependent variable:					
	OLS			Log-salary next season		
	(1)	(2)	(3)	(4)	(5)	(6)
fWAR.afmb	0.251*** (0.012)	0.278*** (0.010)	0.273*** (0.010)	0.109*** (0.010)	0.107*** (0.010)	0.044*** (0.013)
ABOVE_300.afmb	-0.037 (0.105)	-0.135 (0.088)	-0.158* (0.088)	-0.080 (0.075)	-0.082 (0.074)	-0.042 (0.074)
AGE.afmb		1.008*** (0.044)	1.010*** (0.044)	1.850*** (0.047)	1.827*** (0.048)	1.771*** (0.047)
AGE_sq.afmb		-0.015*** (0.001)	-0.015*** (0.001)	-0.028*** (0.001)	-0.027*** (0.001)	-0.026*** (0.001)
WPA.afmb						0.038*** (0.012)
nWPA.afmb						-0.070*** (0.007)
fWAR.afmb:ABOVE_300.afmb	0.013 (0.026)	0.018 (0.022)	0.020 (0.022)	-0.012 (0.018)	-0.007 (0.018)	0.001 (0.018)
Constant	14.224*** (0.027)	-2.553*** (0.646)				
Fixed effect	None	None	Team	Individual	Team + Individual	Team + Individual
Observations	4,743	4,743	4,743	4,743	4,743	4,743
R ²	0.135	0.381	0.396	0.761	0.766	0.772
Adjusted R ²	0.134	0.380	0.392	0.690	0.694	0.702
Residual Std. Error	1.230 (df = 4739)	1.040 (df = 4737)	1.030 (df = 4708)	0.736 (df = 3657)	0.731 (df = 3628)	0.721 (df = 3626)
F Statistic	245.749*** (df = 3; 4739)	583.306*** (df = 5; 4737)				

Note: *p<0.1; **p<0.05; ***p<0.01

Table 9:

	Dependent variable:					
	OLS			felm		
	(1)	(2)	(3)	(4)	(5)	(6)
	Log-salary next season					
BATTING.afmb	0.032*** (0.002)	0.031*** (0.001)	0.031*** (0.001)	0.031*** (0.001)	0.012*** (0.001)	0.006*** (0.002)
ABOVE_300.afmb	-0.126 (0.080)	-0.152** (0.069)	-0.149** (0.069)	-0.167** (0.068)	-0.080 (0.059)	-0.019 (0.058)
FIELDING.afmb	0.006** (0.003)	0.008*** (0.002)	0.008*** (0.002)	0.008*** (0.002)	0.003 (0.002)	0.002 (0.002)
BaseRun.afmb	-0.031*** (0.005)	-0.002 (0.005)	-0.007 (0.005)	-0.006 (0.005)	0.002 (0.005)	-0.003 (0.005)
AGE.afmb		1.027*** (0.046)	1.052*** (0.045)	1.058*** (0.045)	1.863*** (0.049)	1.770*** (0.048)
AGE.sq.afmb		-0.015*** (0.001)	-0.015*** (0.001)	-0.016*** (0.001)	-0.028*** (0.001)	-0.026*** (0.001)
WPA.afmb						0.037*** (0.014)
nWPA.afmb						-0.077*** (0.006)
BATTING.afmb:ABOVE_300.afmb	0.003 (0.003)	0.003 (0.003)	0.003 (0.003)	0.003 (0.003)	-0.001 (0.002)	-0.002 (0.002)
Constant	14.607*** (0.019)	-2.230*** (0.670)				
Fixed effect	None	None	Position	Position + Team	Team + Individual	Team + Individual
Observations	4,724	4,724	4,724	4,724	4,724	4,724
R ²	0.140	0.354	0.366	0.384	0.763	0.773
Adjusted R ²	0.139	0.353	0.364	0.377	0.690	0.703
Residual Std. Error	1.226 (df = 4718)	1.063 (df = 4716)	1.054 (df = 4704)	1.043 (df = 4675)	0.736 (df = 3608)	0.720 (df = 3606)
F Statistic	153.663*** (df = 5; 4718)	368.576*** (df = 7; 4716)				

* p<0.1; ** p<0.05; *** p<0.01

Note:

Table 10:

	Dependent variable:
	L_Sal
fWAR	0.184*** (0.033)
ABOVE_300	-0.108 (0.198)
Eraafmb	-0.134 (0.083)
Erabfst	0.231*** (0.074)
Erastmb	0.034 (0.073)
FIELDING	-0.013*** (0.001)
BaseRun	-0.019*** (0.004)
AGE	1.673*** (0.028)
AGE_sq	-0.025*** (0.0005)
fWAR:ABOVE_300	-0.005 (0.060)
fWAR:Eraafmb	-0.019 (0.033)
fWAR:Erabfst	-0.027 (0.034)
fWAR:Erastmb	-0.012 (0.034)
ABOVE_300TRUE:Eraafmb	-0.081 (0.208)
ABOVE_300TRUE:Erabfst	0.090 (0.220)
ABOVE_300TRUE:Erastmb	0.141 (0.214)
fWAR:ABOVE_300TRUE:Eraafmb	0.007 (0.063)
fWAR:ABOVE_300TRUE:Erabfst	-0.023 (0.065)
fWAR:ABOVE_300TRUE:Erastmb	-0.046 (0.064)
Fixed effect	Position + Team + Individual
Observations	8,883
R ²	0.797
Adjusted R ²	0.747
Residual Std. Error	0.674 (df = 7139)
Note: *p<0.1; **p<0.05; ***p<0.01	

Table 11:

	<i>Dependent variable:</i>
	L.Sal
BATTING	0.011*** (0.004)
ABOVE_300	0.010 (0.154)
Eraafmb	-0.110 (0.070)
Erabfst	0.194*** (0.059)
Erastmb	0.045 (0.058)
FIELDING	0.003*** (0.001)
BaseRun	0.002 (0.004)
AGE	1.736*** (0.029)
AGE_sq	-0.026*** (0.0005)
BATTING:ABOVE_300	-0.001 (0.007)
BATTING:Eraafmb	0.003 (0.004)
BATTING:Erabfst	0.002 (0.004)
BATTING:Erastmb	-0.0001 (0.004)
ABOVE_300TRUE:Eraafmb	-0.146 (0.163)
ABOVE_300TRUE:Erabfst	-0.034 (0.174)
ABOVE_300TRUE:Erastmb	0.007 (0.166)
BATTING:ABOVE_300TRUE:Eraafmb	0.001 (0.007)
BATTING:ABOVE_300TRUE:Erabfst	-0.001 (0.008)
BATTING:ABOVE_300TRUE:Erastmb	-0.001 (0.007)
Fixed effect	Position + Team + Individual
Observations	8,883
R ²	0.789
Adjusted R ²	0.737
Residual Std. Error	0.687 (df = 7139)
<i>Note:</i>	*p<0.1; **p<0.05; ***p<0.01