Velocity Breakdown by Pitch Type
Data available for home games only

Analysis Variable : velocity					
pitchType	N Obs	N	Minimum	Mean	Maximum
CB	57	57	60.0	68.5	73.0
CH	18	18	67.0	74.8	80.0
FB	111	111	77.0	80.0	83.0
SL	23	23	63.0	70.1	75.0

Velocity Breakdown by Pitch Type
visual of above table
Data available for home games only

Average Velocity by Game
Grouped by pitch type
Data available for home games only
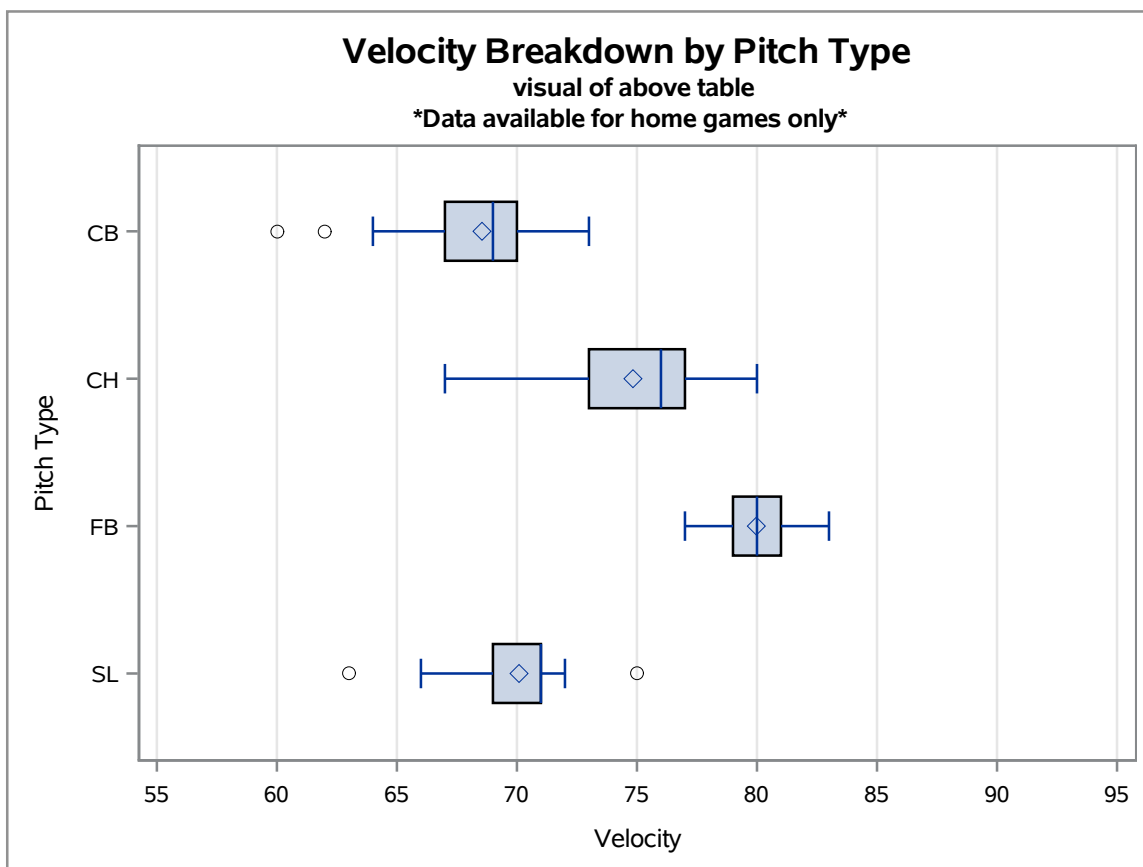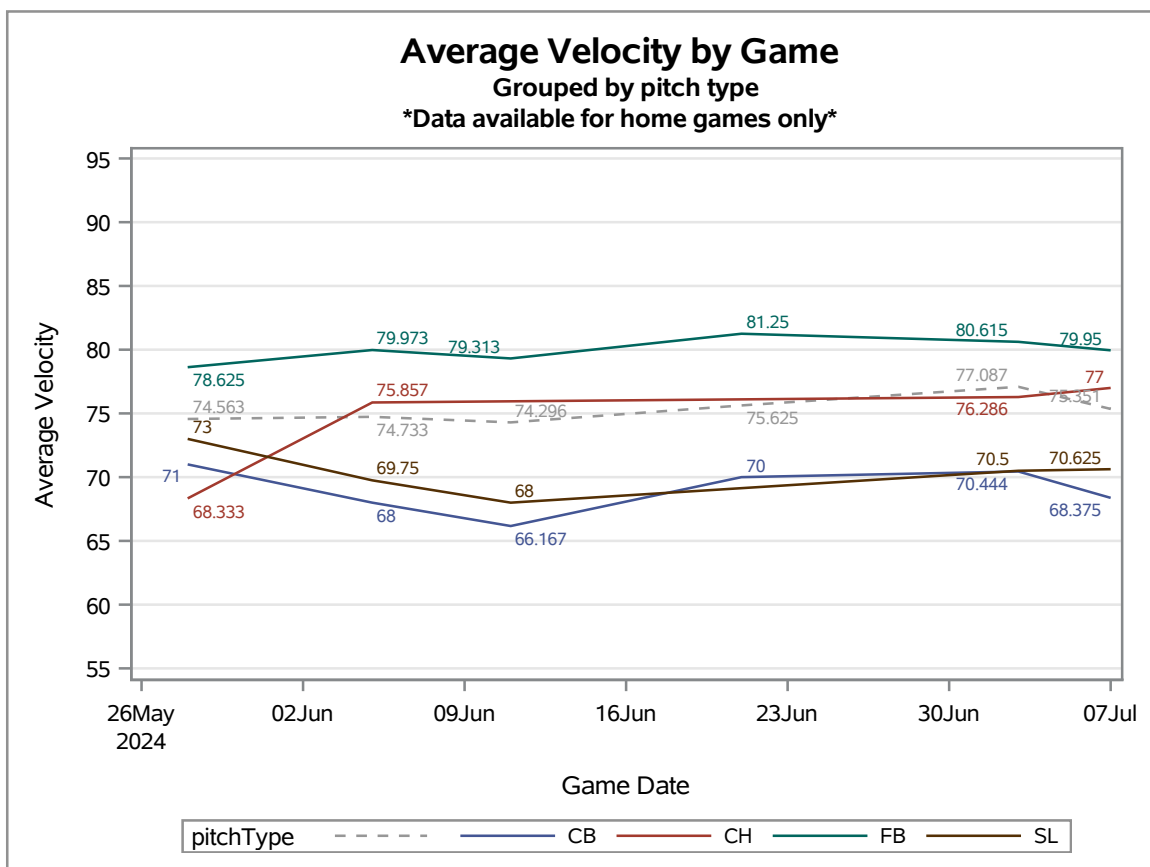
Dependent Variable: swingingStrRate

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	15	12.93300192	0.86220013	1.74	0.1132
Error	23	11.41451611	0.49628331		
Corrected Total	38	24.34751803			

R-Square	Coeff Var	Root MSE	swingingStrRate Mean
0.531184	241.4592	0.704474	0.291757

Source	DF	Type III SS	Mean Square	F Value	Pr > F
location	12	12.47001006	1.03916751	2.09	0.0617
pitchType	3	0.16826490	0.05608830	0.11	0.9516

Analysis of Swinging Strike Rate by Pitch Type and Location

Dependent Variable: swingingStrRate

Fit Diagnostics for swingingStrRate

Observations	39
Parameters	16
Error DF	23
MSE	0.4963
R-Square	0.5312
Adj R-Square	0.2254

Dependent Variable: swingingStrRate
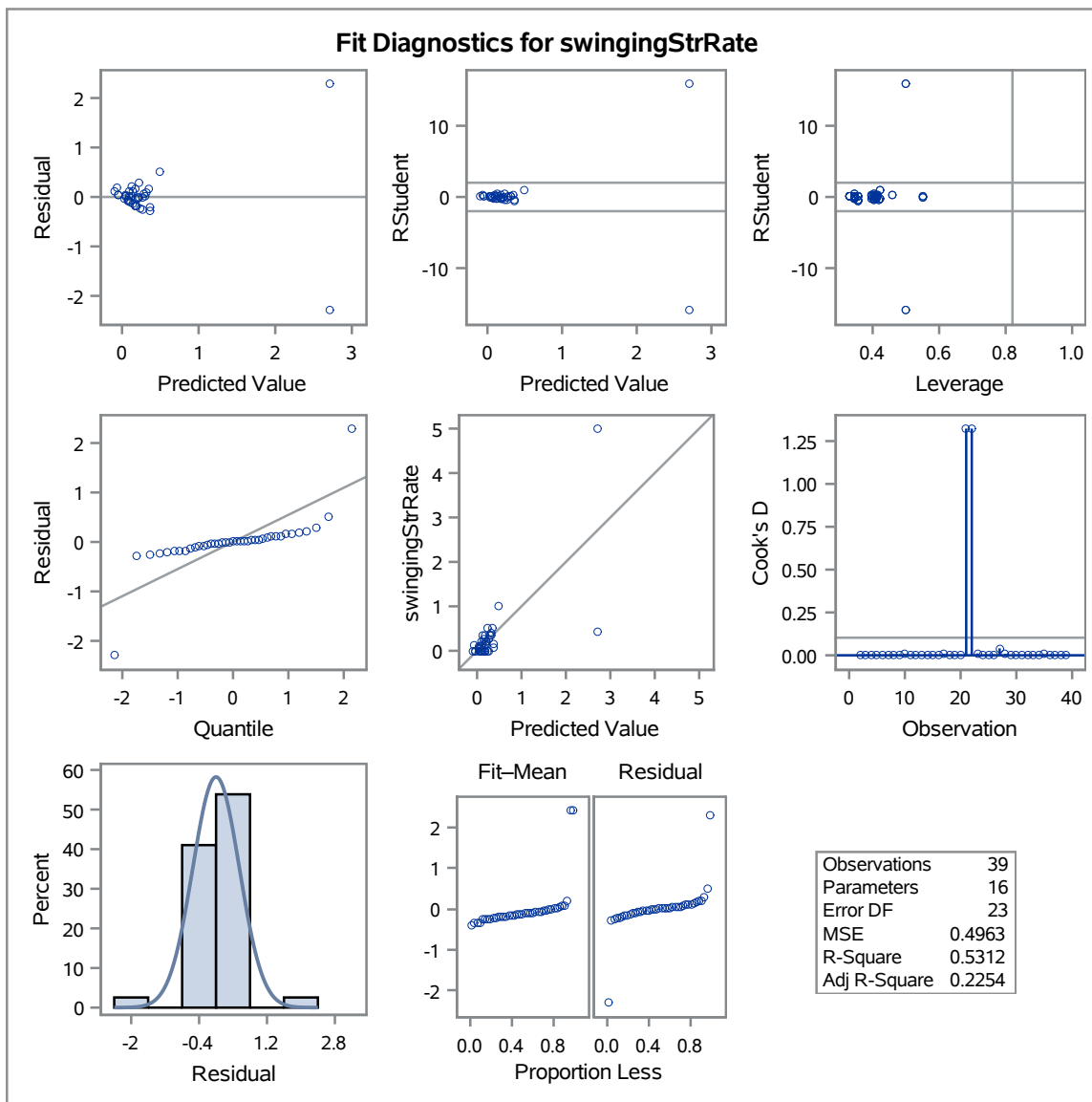
Interaction Plot for swingingStrRate
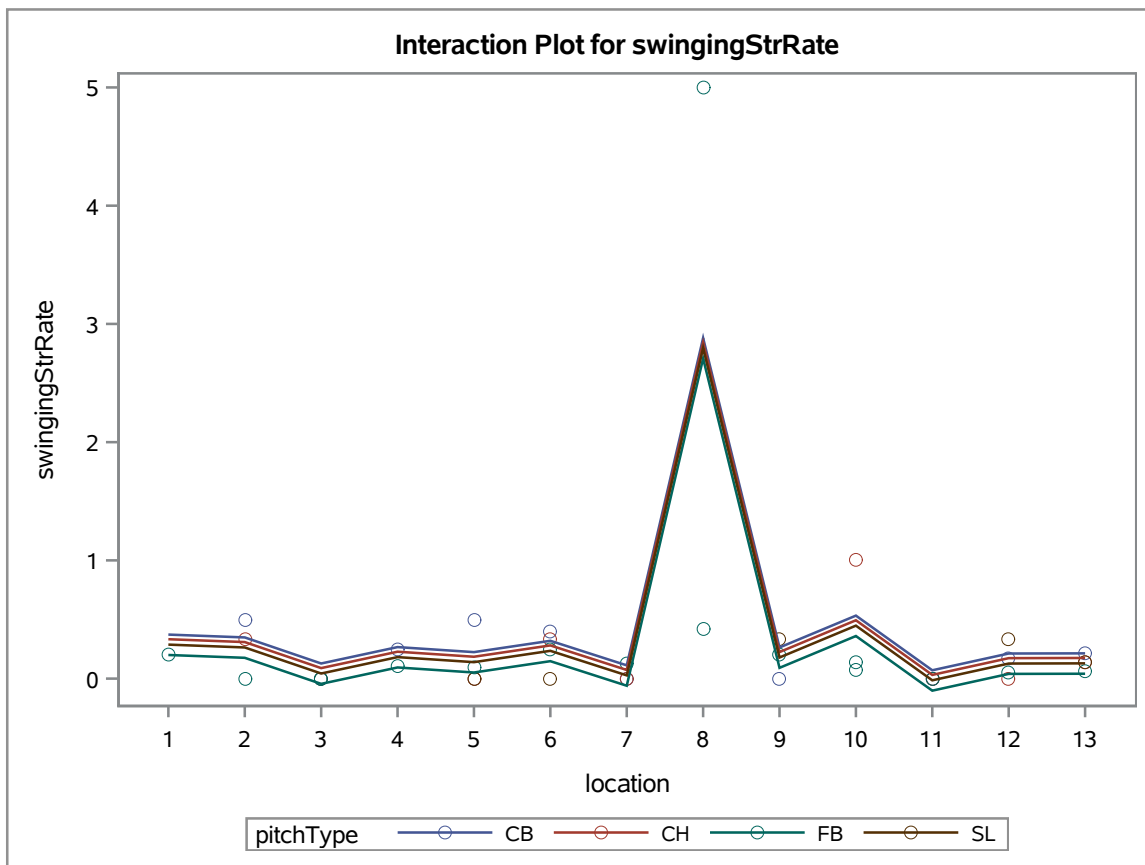
Least Squares Means
Adjustment for Multiple Comparisons: Tukey-Kramer

pitchType	swingingStrRate LSMEAN	LSMEAN Number
CB	0.45727257	1
CH	0.41818062	2
FB	0.28494223	3
SL	0.37250435	4

Least Squares Means for effect pitchType Pr > |t| for H0: LSMean(i)=LSMean(j) Dependent Variable: swingingStrRate				
i/j	1	2	3	4
1		0.9995	0.9499	0.9969
2	0.9995		0.9734	0.9995
3	0.9499	0.9734		0.9963
4	0.9969	0.9995	0.9963	

pitchType	swingingStrRate LSMEAN	95% Confidence Limits	
CB	0.457273	-0.070658	0.985203
CH	0.418181	-0.107062	0.943423
FB	0.284942	-0.091127	0.661011
SL	0.372504	-0.360105	1.105114

Least Squares Means for Effect pitchType				
i	j	Difference Between Means	Simultaneous 95% Confidence Limits for LSMean(i)-LSMean(j)	
1	2	0.039092	-0.922226	1.000410
1	3	0.172330	-0.721194	1.065855
1	4	0.084768	-1.058629	1.228165
2	3	0.133238	-0.731913	0.998390

Least Squares Means
Adjustment for Multiple Comparisons: Tukey-Kramer

			Least Squares Means for Effect pitchType		
i	j	Difference Between Means	Simultaneous 95% Confidence Limits for LSMean(i)-LSMean(j)		
2	4	0.045676	-1.126170	1.217523
3	4	-0.087562	-1.209816	1.034692

LS-Means for pitchType
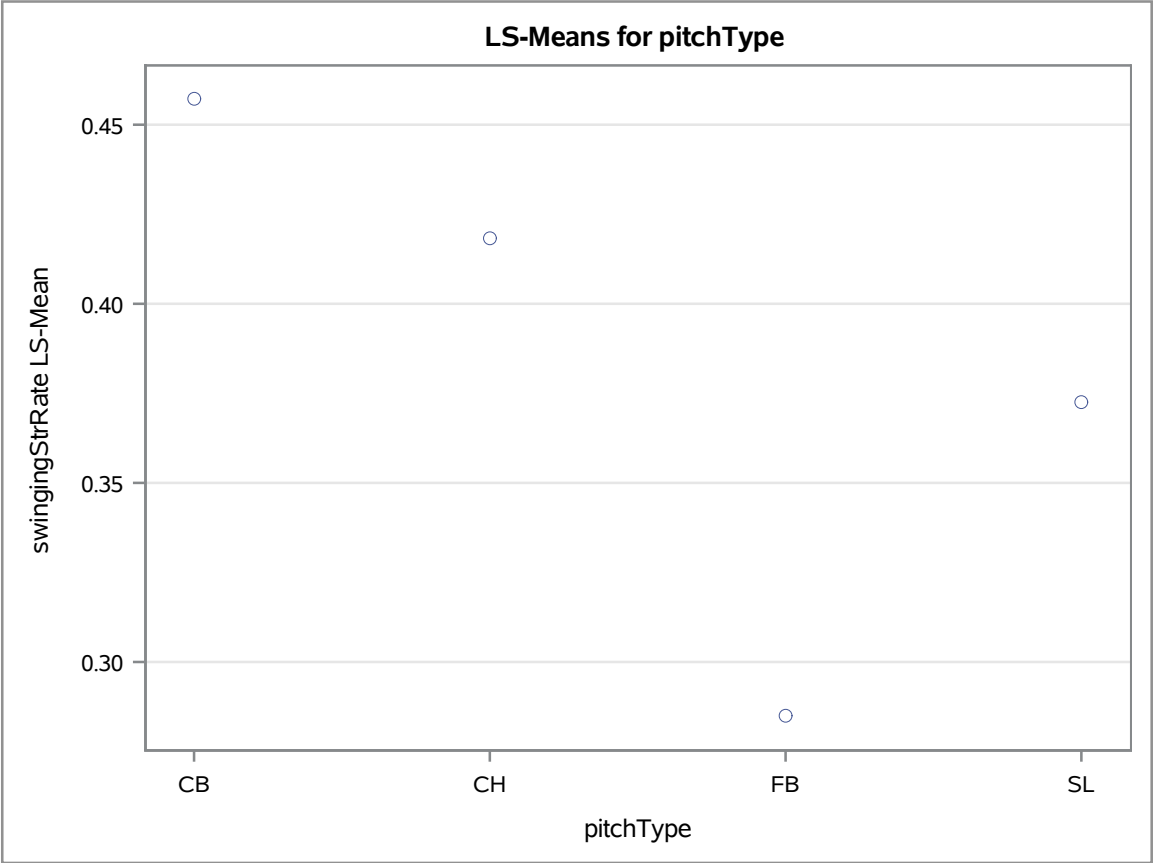
Least Squares Means
Adjustment for Multiple Comparisons: Tukey-Kramer

swingingStrRate Comparisons for pitchType
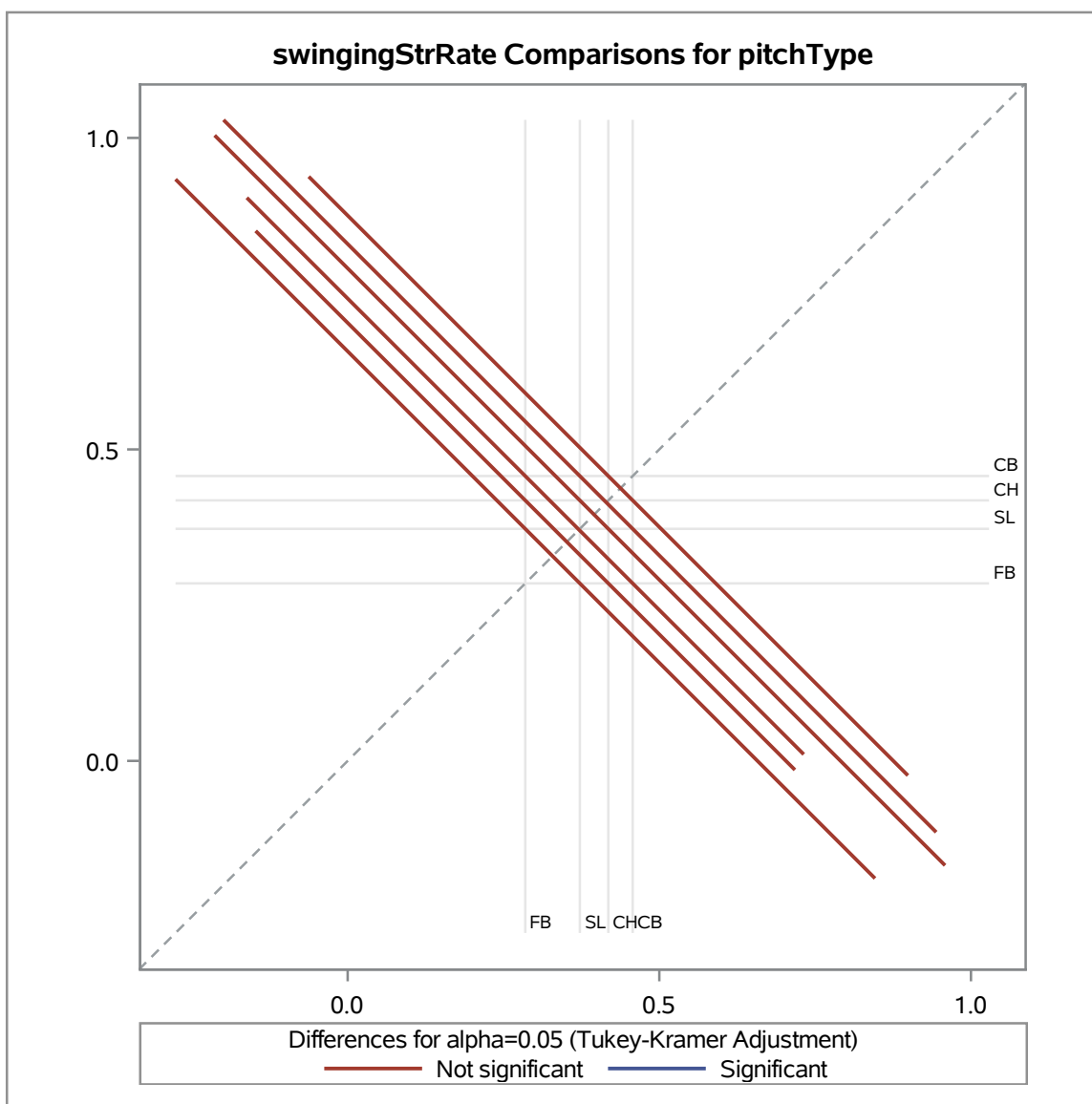
Swinging Strike Rate by Zone
Zones 1-9 are inside strikezone, 10-13 are outside of zone

Pitch Location	Total Pitches	Total Swings	Total Misses	Swinging Strike Rate
1	10	6	2	20.00%
2	11	9	2	18.18%
3	6	4	0	0.00%
4	13	8	2	15.38%
5	15	12	2	13.33%
6	20	12	6	30.00%
7	11	7	1	9.09%
8	13	10	5	38.46%
9	11	8	2	18.18%
10	22	1	1	4.55%
11	17	0	0	0.00%
12	30	5	3	10.00%
13	52	11	7	13.46%

Pitch Type	Total Pitches	Total Swings	Total Misses	Swinging Strike Rate
CB	60	18	11	18.33%
CH	22	11	3	13.64%
FB	125	53	15	12.00%
SL	24	11	4	16.67%

Dependent Variable: velocity

pitchType=CB

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	101.2097953	20.2419591	3.73	0.0059
Error	51	276.9305556	5.4300109		
Corrected Total	56	378.1403509			

R-Square	Coeff Var	Root MSE	velocity Mean
0.267651	3.399631	2.330238	68.54386

Source	DF	Type I SS	Mean Square	F Value	Pr > F
date	5	101.2097953	20.2419591	3.73	0.0059

Source	DF	Type III SS	Mean Square	F Value	Pr > F
date	5	101.2097953	20.2419591	3.73	0.0059
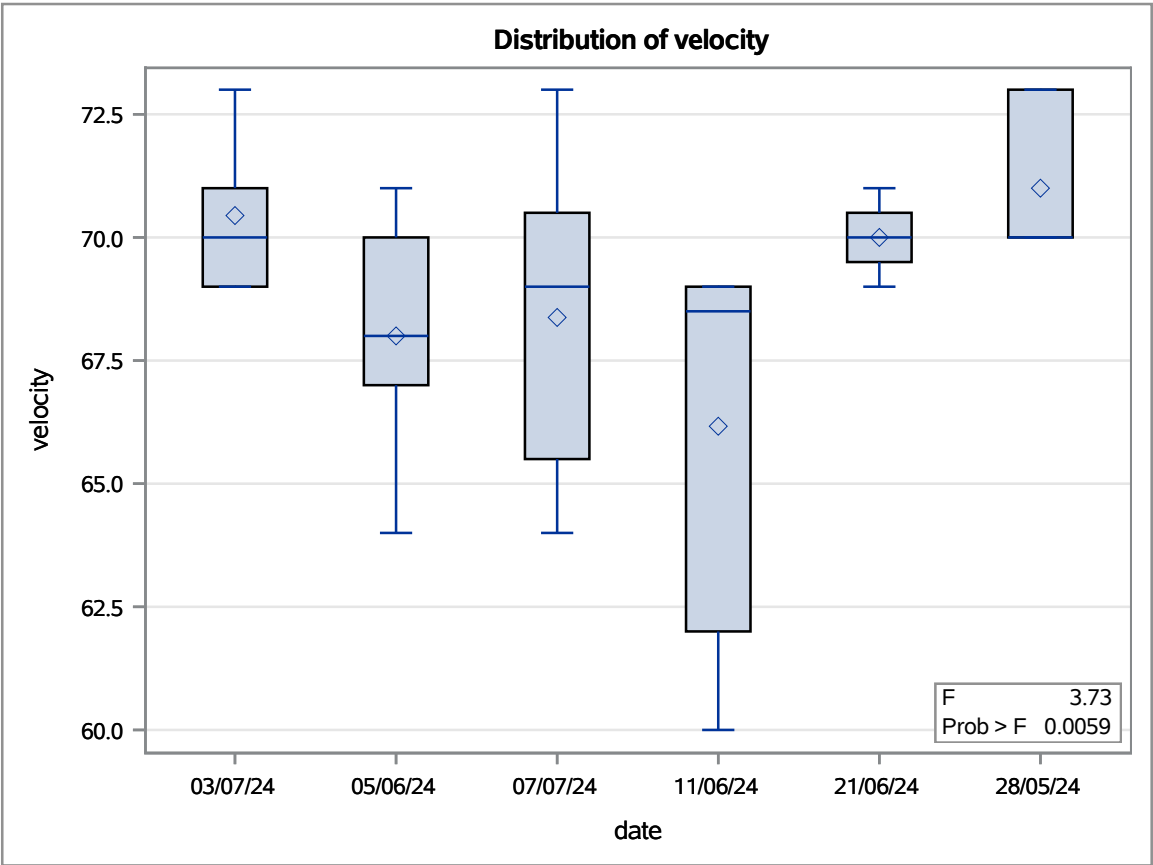
Distribution of velocity

Regression Analysis of Velocity by Pitch Type
Data available for home games only

Dependent Variable: velocity

pitchType=CH

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	153.5476190	51.1825397	11.76	0.0004
Error	14	60.9523810	4.3537415		
Corrected Total	17	214.5000000			

R-Square	Coeff Var	Root MSE	velocity Mean
0.715840	2.788279	2.086562	74.83333

Source	DF	Type I SS	Mean Square	F Value	Pr > F
date	3	153.5476190	51.1825397	11.76	0.0004

Source	DF	Type III SS	Mean Square	F Value	Pr > F
date	3	153.5476190	51.1825397	11.76	0.0004
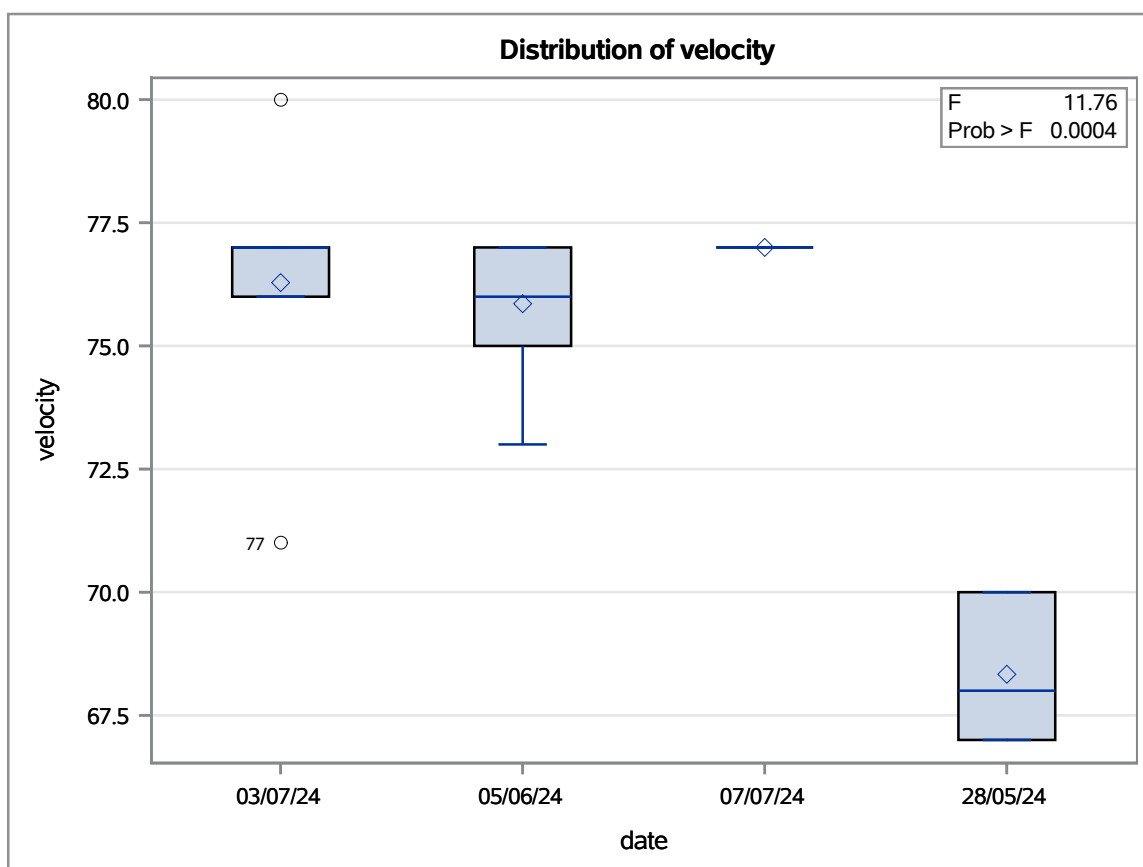
Distribution of velocity

Regression Analysis of Velocity by Pitch Type
Data available for home games only

Dependent Variable: velocity

pitchType=FB

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	38.7795998	7.7559200	3.63	0.0045
Error	105	224.1393191	2.1346602		
Corrected Total	110	262.9189189			

R-Square	Coeff Var	Root MSE	velocity Mean
0.147496	1.826927	1.461048	79.97297

Source	DF	Type I SS	Mean Square	F Value	Pr > F
date	5	38.77959979	7.75591996	3.63	0.0045

Source	DF	Type III SS	Mean Square	F Value	Pr > F
date	5	38.77959979	7.75591996	3.63	0.0045
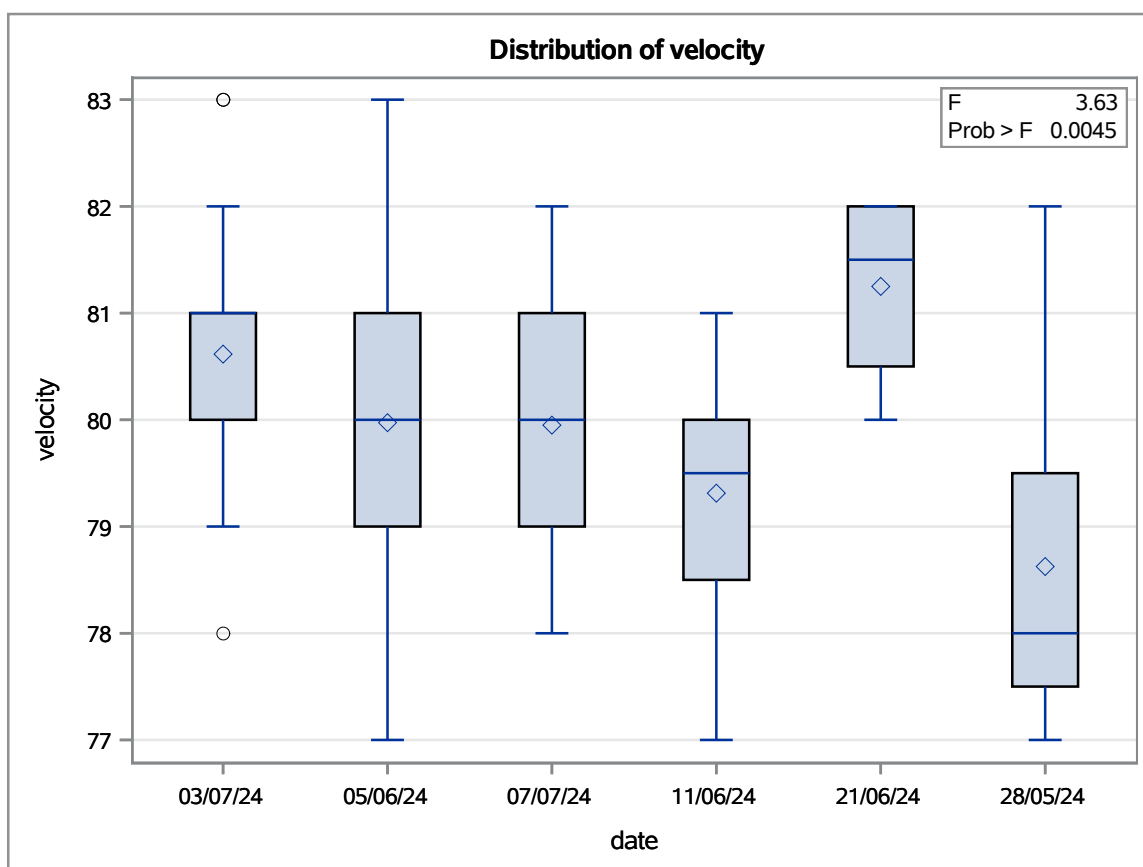
Distribution of velocity

Regression Analysis of Velocity by Pitch Type
Data available for home games only

Dependent Variable: velocity

pitchType=SL

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	42.2010870	10.5502717	2.27	0.1017
Error	18	83.6250000	4.6458333		
Corrected Total	22	125.8260870			

R-Square	Coeff Var	Root MSE	velocity Mean
0.335392	3.075350	2.155420	70.08696

Source	DF	Type I SS	Mean Square	F Value	Pr > F
date	4	42.20108696	10.55027174	2.27	0.1017

Source	DF	Type III SS	Mean Square	F Value	Pr > F
date	4	42.20108696	10.55027174	2.27	0.1017

Distribution of velocity