Velocity Breakdown by Pitch Type

Data available for home games only

	Analysis Variable : velocity				
pitchType	N Obs	N	Minimum	Mean	Maximum
CB	41	41	54.0	69.0	73.0
CH	49	49	68.0	75.9	78.0
FB	82	82	76.0	79.9	87.0
SL	18	18	70.0	73.9	78.0

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
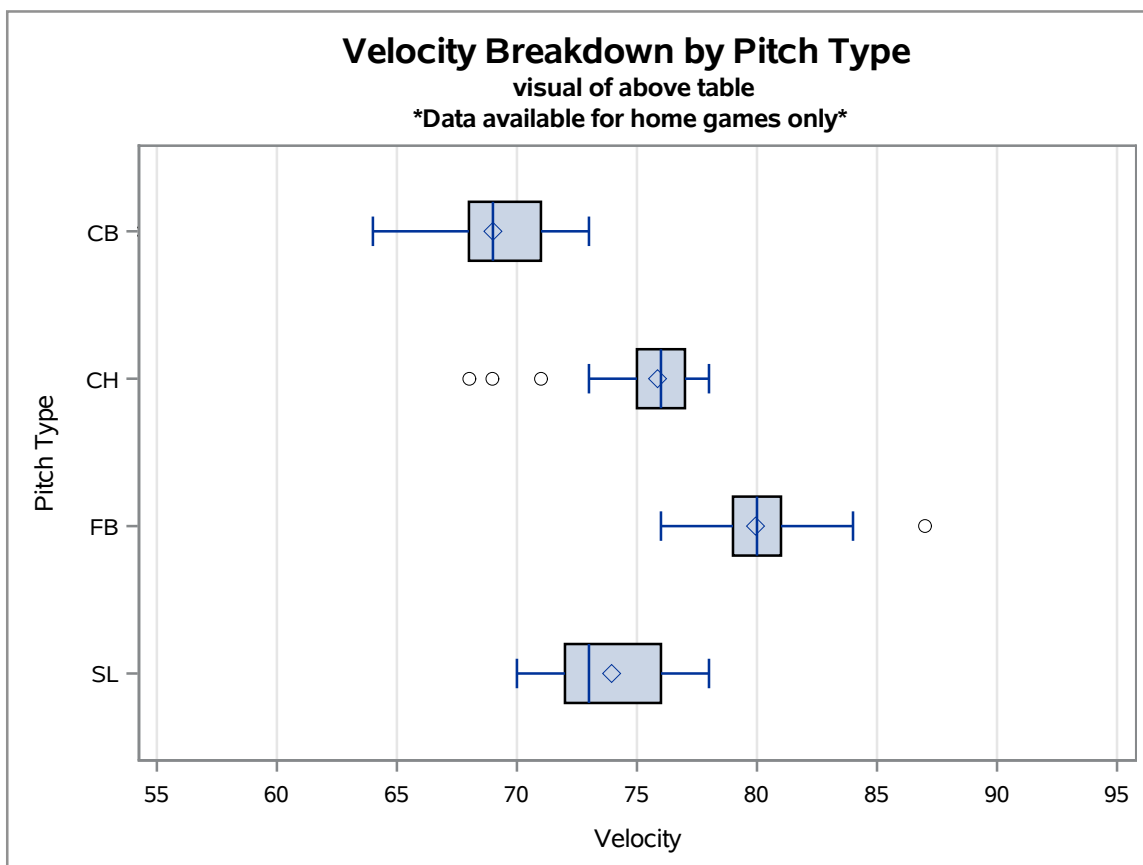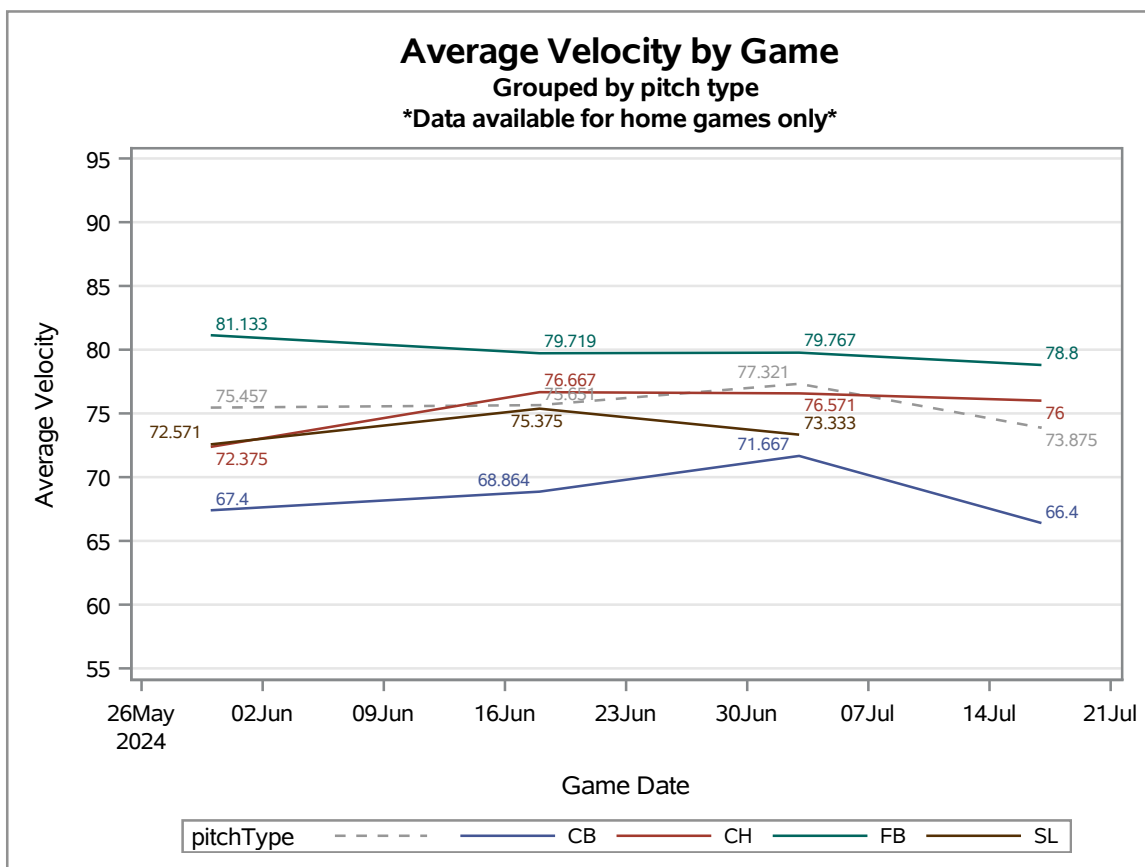
Dependent Variable: swingingStrRate

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	15	2.16475153	0.14431677	1.68	0.1186
Error	26	2.23010984	0.08577346		
Corrected Total	41	4.39486137			

R-Square	Coeff Var	Root MSE	swingingStrRate Mean
0.492564	105.1689	0.292871	0.278477

Source	DF	Type III SS	Mean Square	F Value	Pr > F
location	12	1.28375092	0.10697924	1.25	0.3057
pitchType	3	0.93265766	0.31088589	3.62	0.0261

Analysis of Swinging Strike Rate by Pitch Type and Location

Dependent Variable: swingingStrRate

Fit Diagnostics for swingingStrRate

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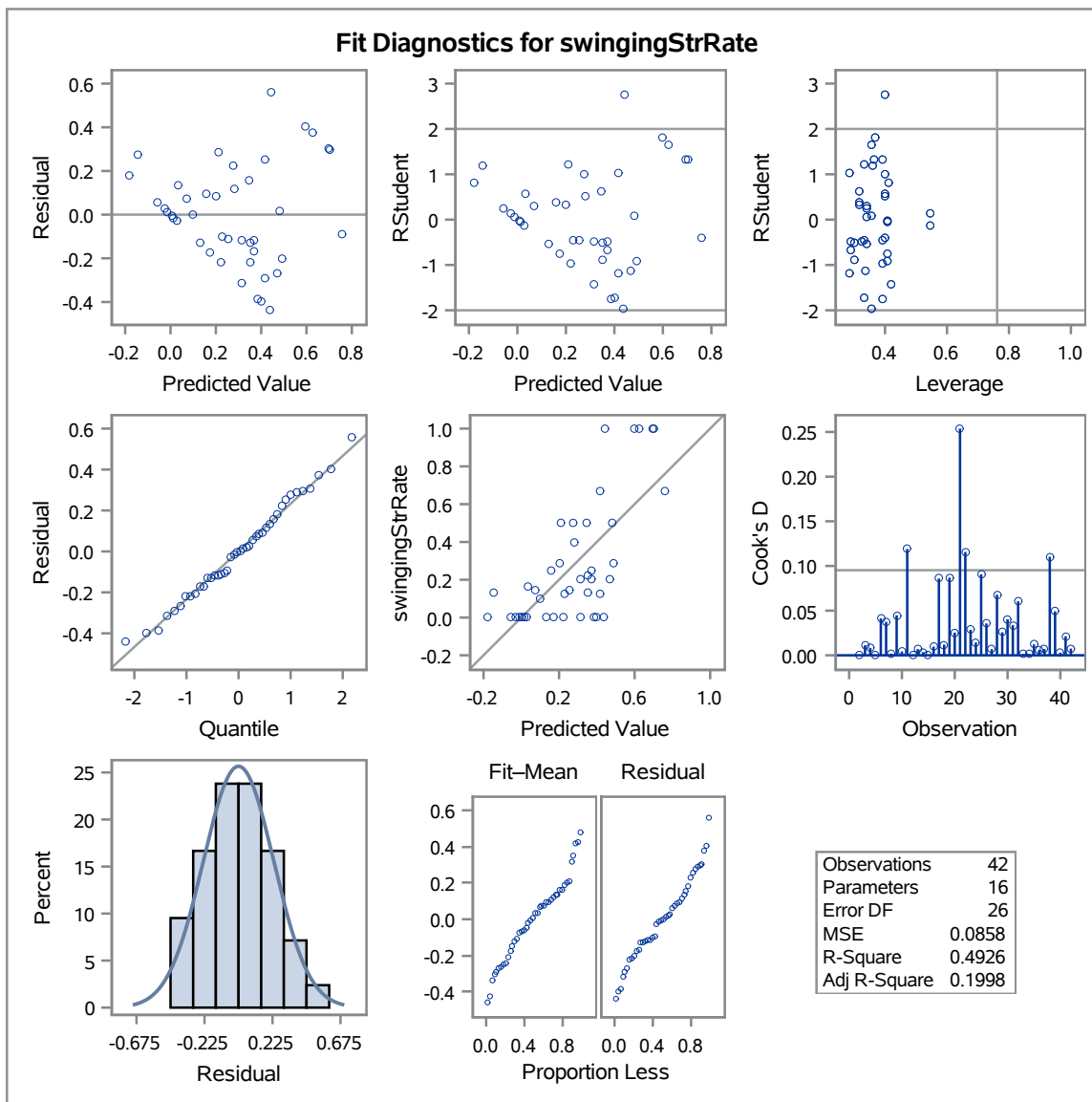
Interaction Plot for swingingStrRate
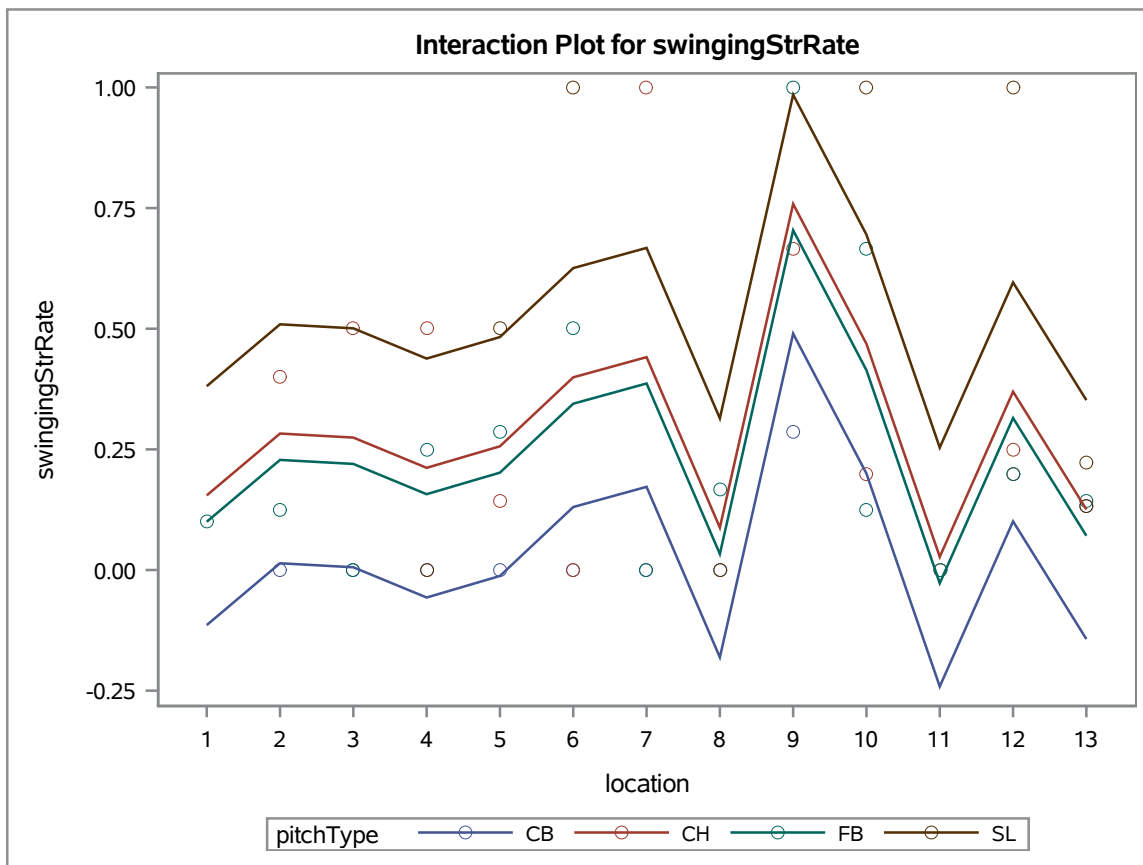
Least Squares Means
Adjustment for Multiple Comparisons: Tukey-Kramer

pitchType	swingingStrRate LSMEAN	LSMEAN Number
CB	0.02801150	1
CH	0.29677708	2
FB	0.24214544	3
SL	0.52312443	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		0.2433	0.3837	0.0157
2	0.2433		0.9702	0.4465
3	0.3837	0.9702		0.2101
4	0.0157	0.4465	0.2101	

pitchType	swingingStrRate LSMEAN	95% Confidence Limits	
CB	0.028011	-0.187153	0.243176
CH	0.296777	0.101903	0.491651
FB	0.242145	0.079841	0.404449
SL	0.523124	0.283769	0.762480

		Difference Between Means	Simultaneous 95% Confidence Limits for LSMean(i)-LSMean(j)	
i	**j**			
1	2	-0.268766	-0.652193	0.114662
1	3	-0.214134	-0.576038	0.147770
1	4	-0.495113	-0.912636	-0.077589
2	3	0.054632	-0.282841	0.392104

Least Squares Means for Effect pitchType

Least Squares Means
Adjustment for Multiple Comparisons: Tukey-Kramer

		Difference Between Means	Simultaneous 95% Confidence Limits for LSMean(i)-LSMean(j)	
i	j			
2	4	-0.226347	-0.637720	0.185025
3	4	-0.280979	-0.664407	0.102449

Least Squares Means for Effect pitchType

LS-Means for pitchType
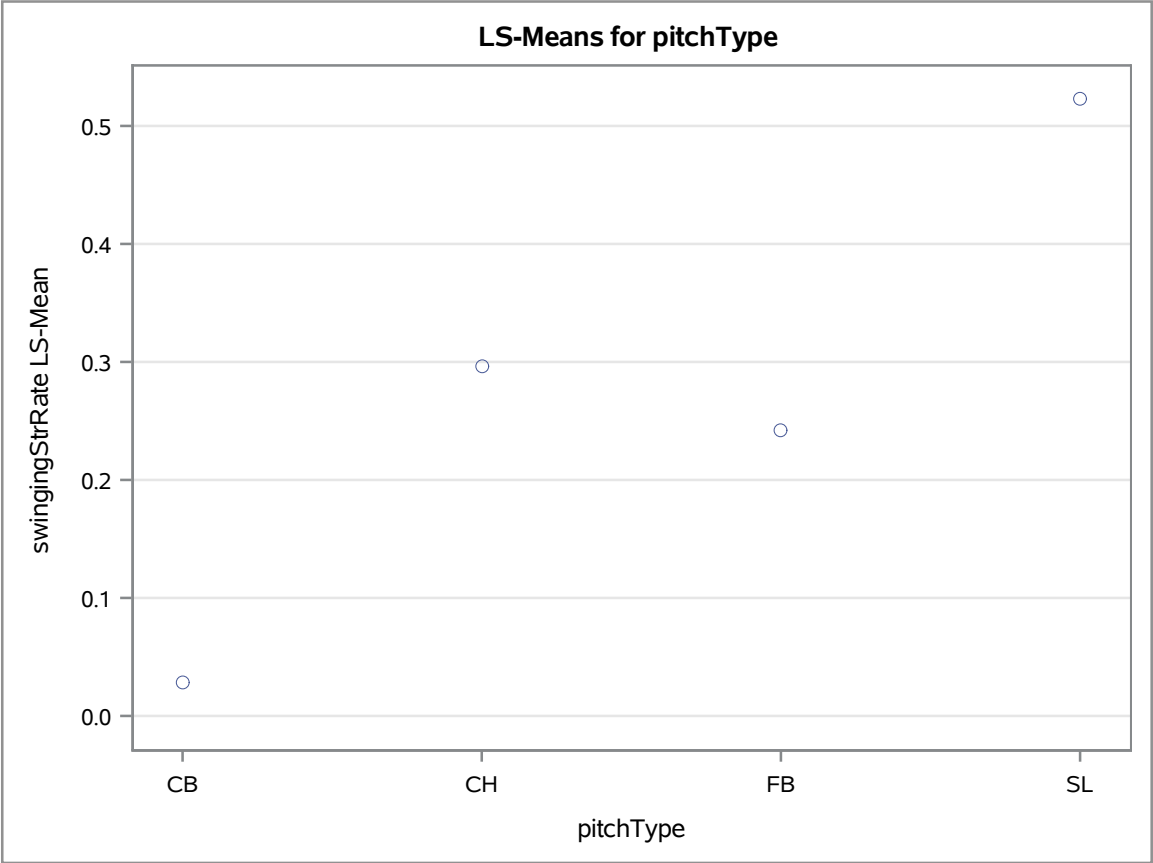
Least Squares Means
Adjustment for Multiple Comparisons: Tukey-Kramer
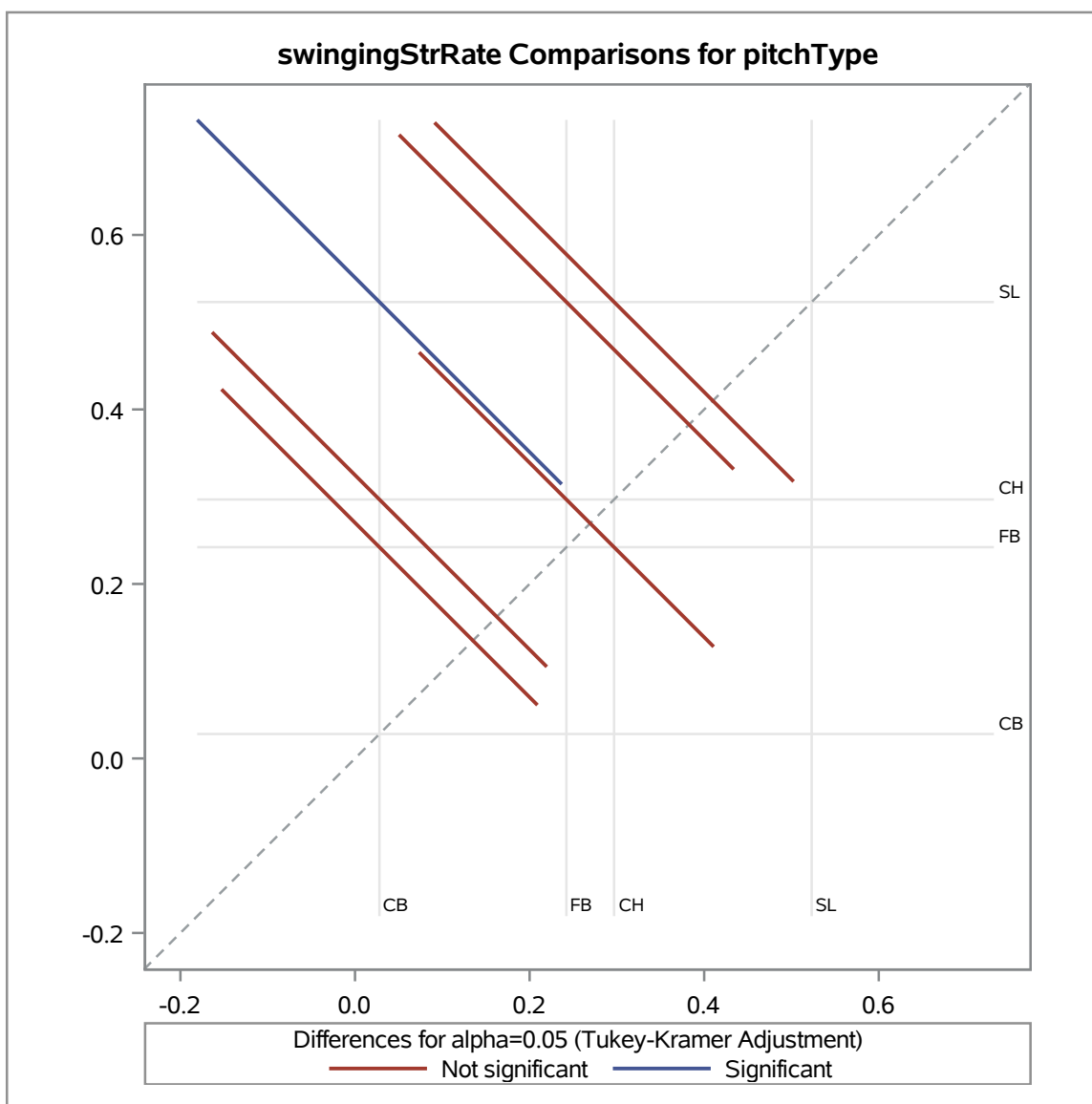
Swinging Strike Rate by Zone
Zones 1-9 are inside strikezone, 10-13 are outside of zone

Pitch Location	Total Pitches	Total Swings	Total Misses	Swinging Strike Rate
1	10	8	1	10.00%
2	14	12	3	21.43%
3	11	9	2	18.18%
4	9	8	2	22.22%
5	19	14	4	21.05%
6	12	6	2	16.67%
7	7	7	2	28.57%
8	11	6	1	9.09%
9	12	6	2	16.67%
10	31	2	2	6.45%
11	14	6	0	0.00%
12	15	1	1	6.67%
13	46	7	5	10.87%

Pitch Type	Total Pitches	Total Swings	Total Misses	Swinging Strike Rate
CB	46	22	4	8.70%
CH	52	21	9	17.31%
FB	95	43	11	11.58%
SL	18	6	3	16.67%

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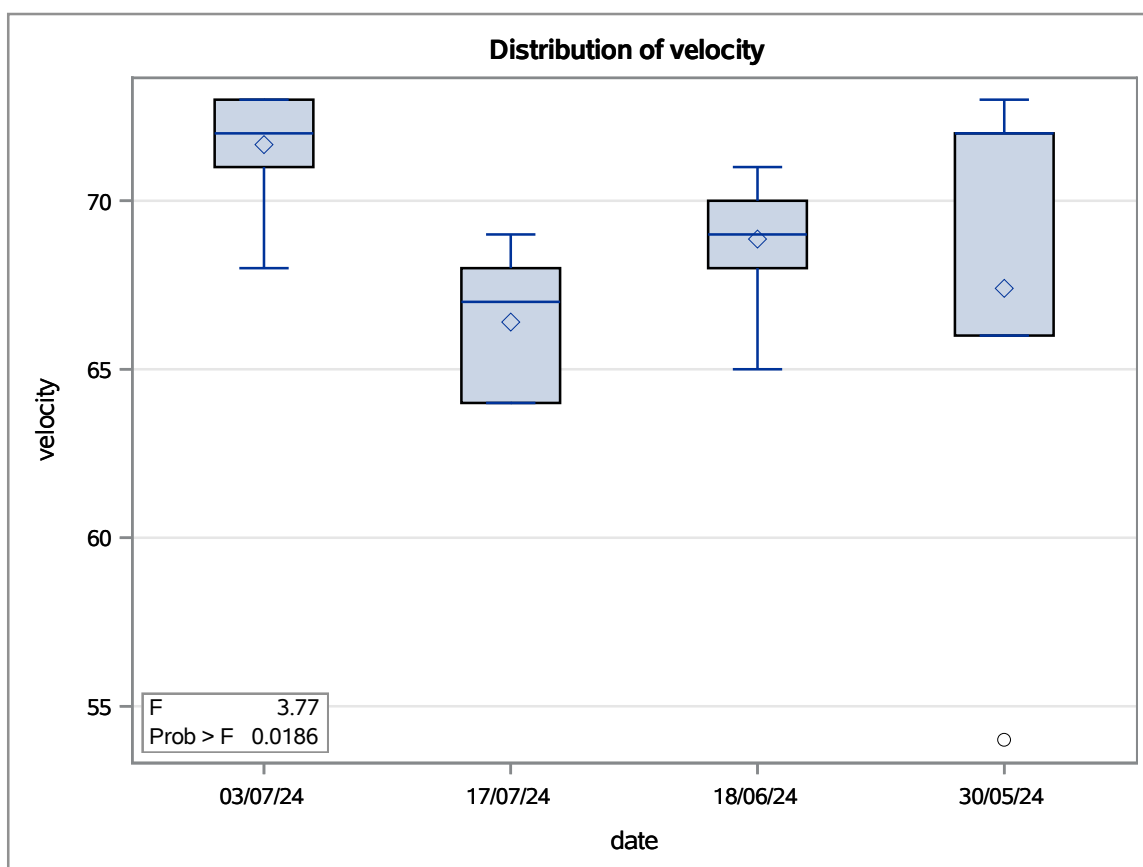*Data available for home games only*

Dependent Variable: velocity

pitchType=CB

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	111.0090909	37.0030303	3.77	0.0186
Error	37	362.9909091	9.8105651		
Corrected Total	40	474.0000000			

R-Square	Coeff Var	Root MSE	velocity Mean
0.234196	4.539394	3.132182	69.00000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
date	3	111.0090909	37.0030303	3.77	0.0186

Source	DF	Type III SS	Mean Square	F Value	Pr > F
date	3	111.0090909	37.0030303	3.77	0.0186

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	118.0297619	39.3432540	19.68	<.0001
Error	45	89.9702381	1.9993386		
Corrected Total	48	208.0000000			

R-Square	Coeff Var	Root MSE	velocity Mean
0.567451	1.864003	1.413980	75.85714

Source	DF	Type I SS	Mean Square	F Value	Pr > F
date	3	118.0297619	39.3432540	19.68	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
date	3	118.0297619	39.3432540	19.68	<.0001
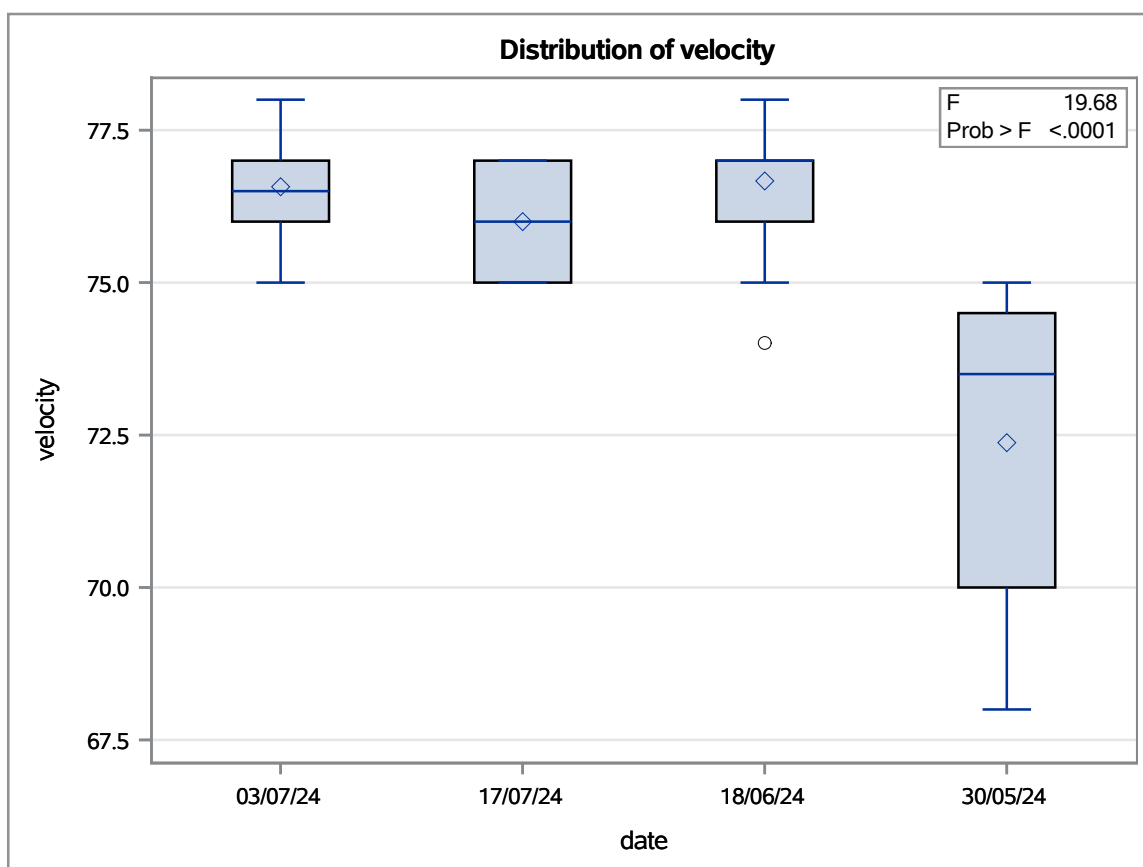
Distribution of velocity

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	3	30.3263720	10.1087907	4.80	0.0040
Error	78	164.3687500	2.1072917		
Corrected Total	81	194.6951220			

R-Square	Coeff Var	Root MSE	velocity Mean
0.155763	1.815948	1.451651	79.93902

Source	DF	Type I SS	Mean Square	F Value	Pr > F
date	3	30.32637195	10.10879065	4.80	0.0040

Source	DF	Type III SS	Mean Square	F Value	Pr > F
date	3	30.32637195	10.10879065	4.80	0.0040
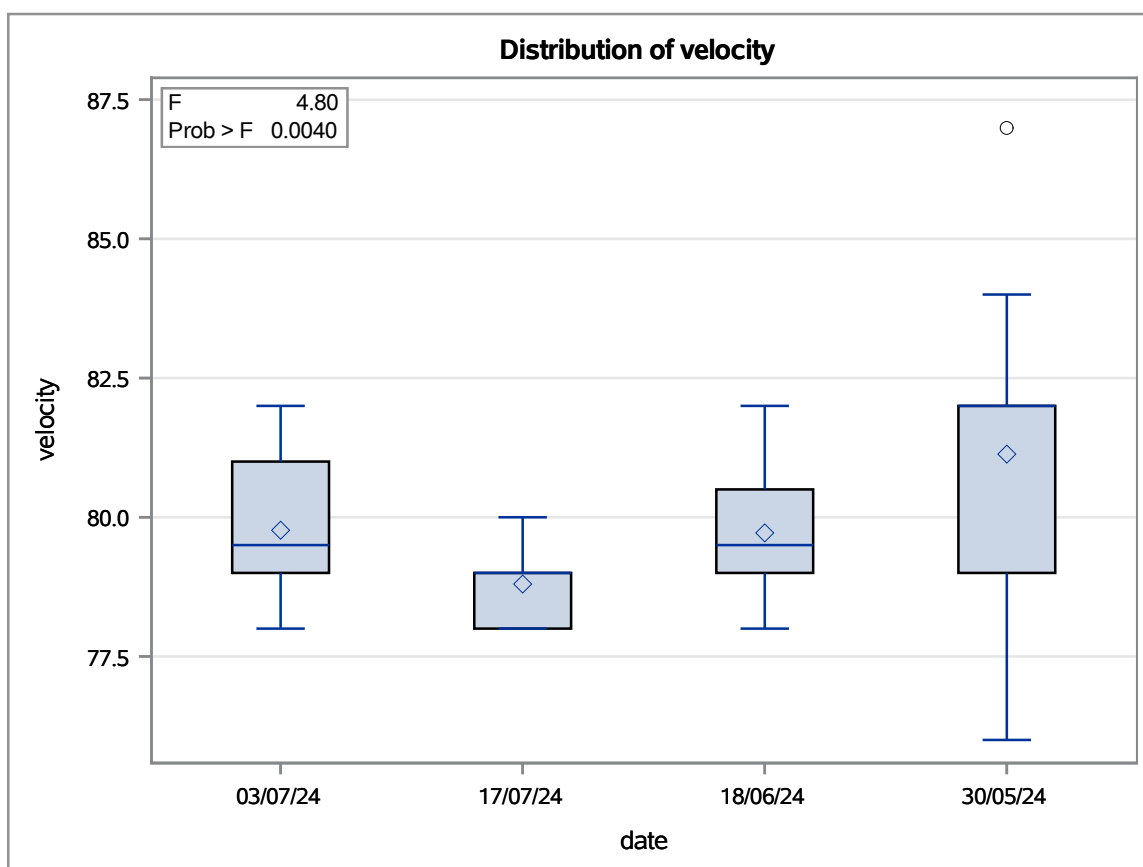
Distribution of velocity

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	2	30.68849206	15.34424603	4.24	0.0347
Error	15	54.25595238	3.61706349		
Corrected Total	17	84.94444444			

R-Square	Coeff Var	Root MSE	velocity Mean
0.361277	2.572009	1.901858	73.94444

Source	DF	Type I SS	Mean Square	F Value	Pr > F
date	2	30.68849206	15.34424603	4.24	0.0347

Source	DF	Type III SS	Mean Square	F Value	Pr > F
date	2	30.68849206	15.34424603	4.24	0.0347

Distribution of velocity