

Yang, Kun 301178299

Assignment 2 Part 1 - Cereal**Cereal Analysis****part of the raw data**

Obs	name	mfr	type	calories	protein	fat	sodium	fiber	carbo
1	100%_Bran	N	C	60	4	1	130	10	5
2	100%_Natural_Bran	Q	C	110	3	5	15	2	8
3	All-Bran	K	C	80	4	1	260	9	7
4	All-Bran_with_Extra_Fiber	K	C	50	4	0	140	14	8
5	Almond_Delight	R	C	110	2	2	200	1	14
6	Apple_Cinnamon_Cheerios	G	C	110	2	2	180	1.5	10.5
7	Apple_Jacks	K	C	110	2	0	125	1	11
8	Basic_4	G	C	140	3	2	210	2	18
9	Bran_Chex	R	C	90	2	1	200	4	15
10	Bran_Flakes	P	C	90	3	0	210	5	13

Obs	sugars	shelf	potass	vitamins	weight	cups
1	6	3	280	25	1	0.33
2	8	3	135	0	1	-1
3	5	3	320	25	1	0.33
4	0	3	330	25	1	0.5
5	8	3	-1	25	1	0.75
6	10	1	70	25	1	0.75
7	14	2	30	25	1	1
8	8	3	100	25	1.33	0.75
9	6	1	125	25	1	0.67
10	5	3	190	25	1	0.67

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Assignment 2 Part 1 - Cereal**Cereal Analysis***part of the raw data after replacing -1 by missing values & add 'display_shelf' variable*

Obs	name	mfr	type	calories	protein	fat	sodium	fiber	carbo	sugars
1	100%_Bran	N	C	60	4	1	130	10	5	6
2	100%_Natural_Bran	Q	C	110	3	5	15	2	8	8
3	All-Bran	K	C	80	4	1	260	9	7	5
4	All-Bran_with_Extra_Fiber	K	C	50	4	0	140	14	8	0
5	Almond_Delight	R	C	110	2	2	200	1	14	8
6	Apple_Cinnamon_Cheerios	G	C	110	2	2	180	1.5	10.5	10
7	Apple_Jacks	K	C	110	2	0	125	1	11	14
8	Basic_4	G	C	140	3	2	210	2	18	8
9	Bran_Chex	R	C	90	2	1	200	4	15	6
10	Bran_Flakes	P	C	90	3	0	210	5	13	5

Obs	shelf	potass	vitamins	weight	cups	display_shelf
1	3	280	25	1	0.33	top
2	3	135	0	1	.	top
3	3	320	25	1	0.33	top
4	3	330	25	1	0.5	top
5	3	.	25	1	0.75	top
6	1	70	25	1	0.75	low
7	2	30	25	1	1	mid
8	3	100	25	1.33	0.75	top
9	1	125	25	1	0.67	low
10	3	190	25	1	0.67	top

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Assignment 2 Part 1 - Cereal
Cereal Analysis
basic statistics

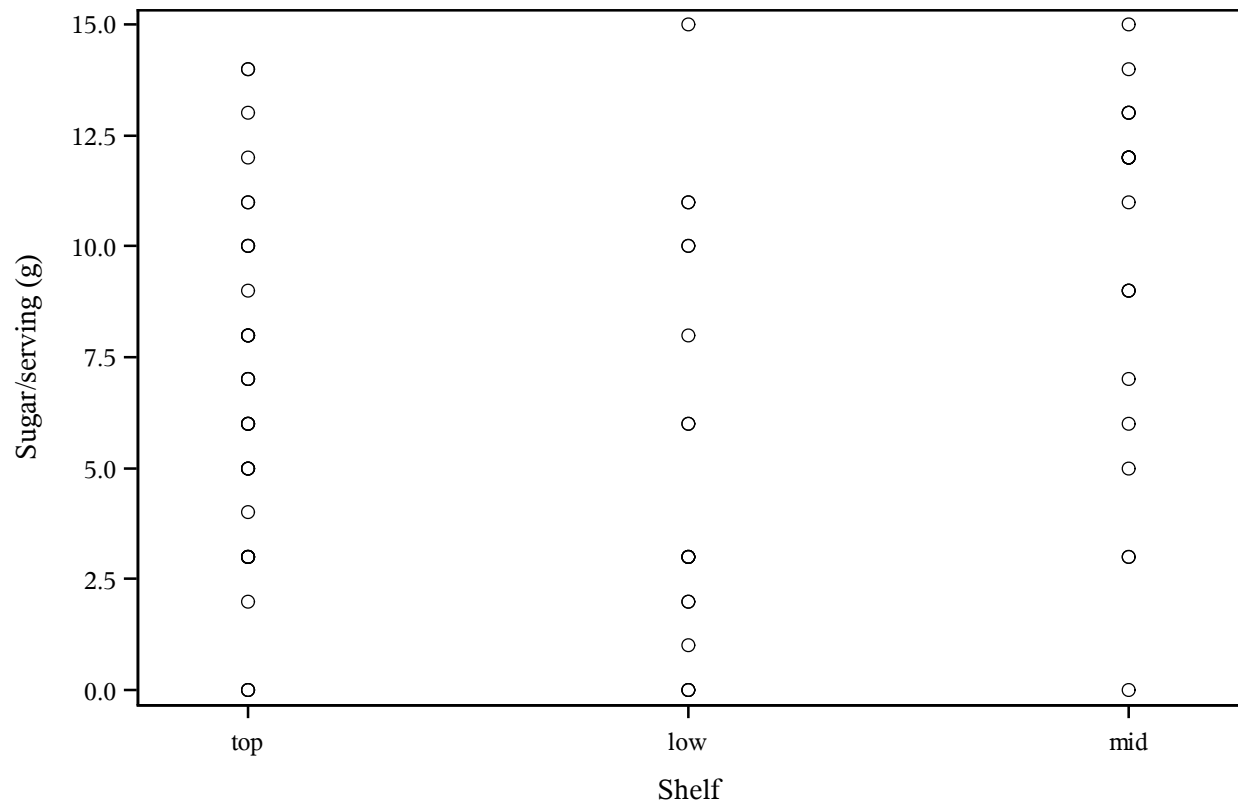
	sugars		
	N	Mean	Std
Shelf			
low	19	5.1	4.5
mid	21	9.6	4.1
top	36	6.5	3.8

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Assignment 2 Part 1 - Cereal

Cereal Analysis

basic plot WITHOUT jittering

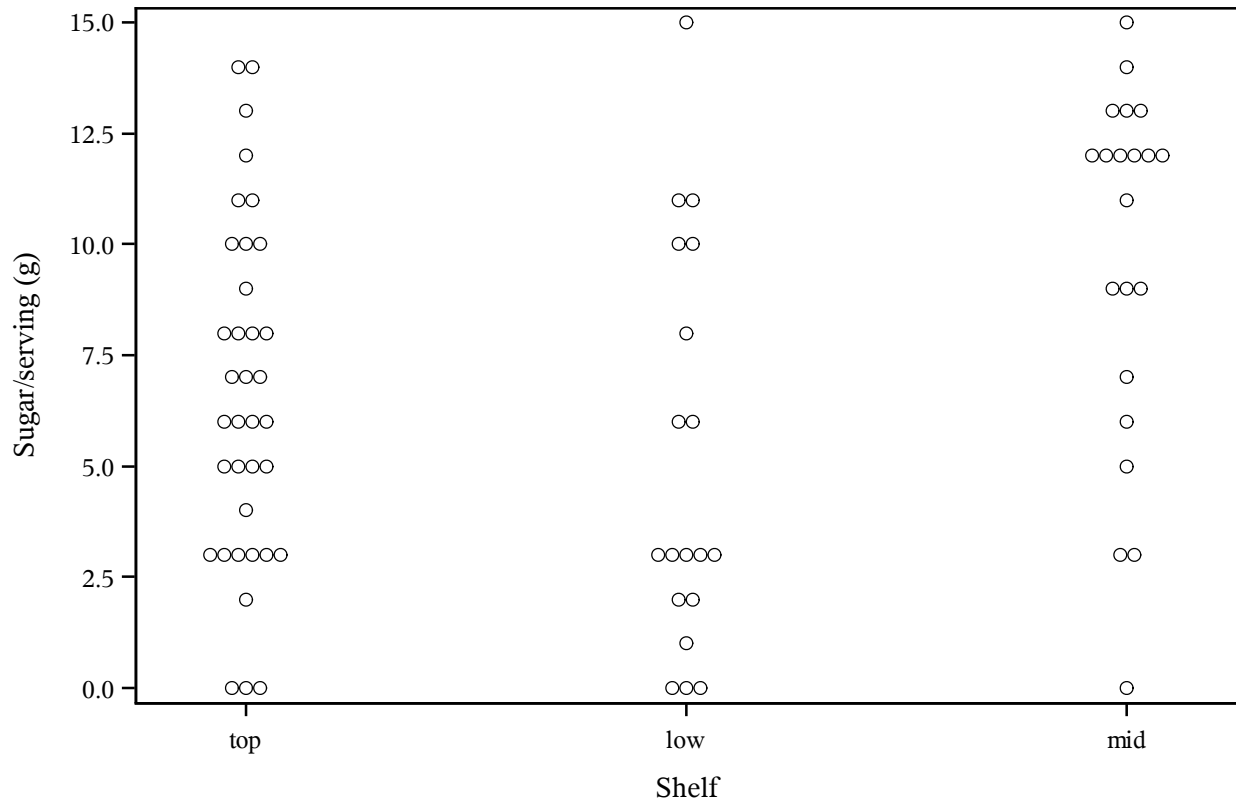


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Assignment 2 Part 1 - Cereal

Cereal Analysis

basic plot WITH jittering

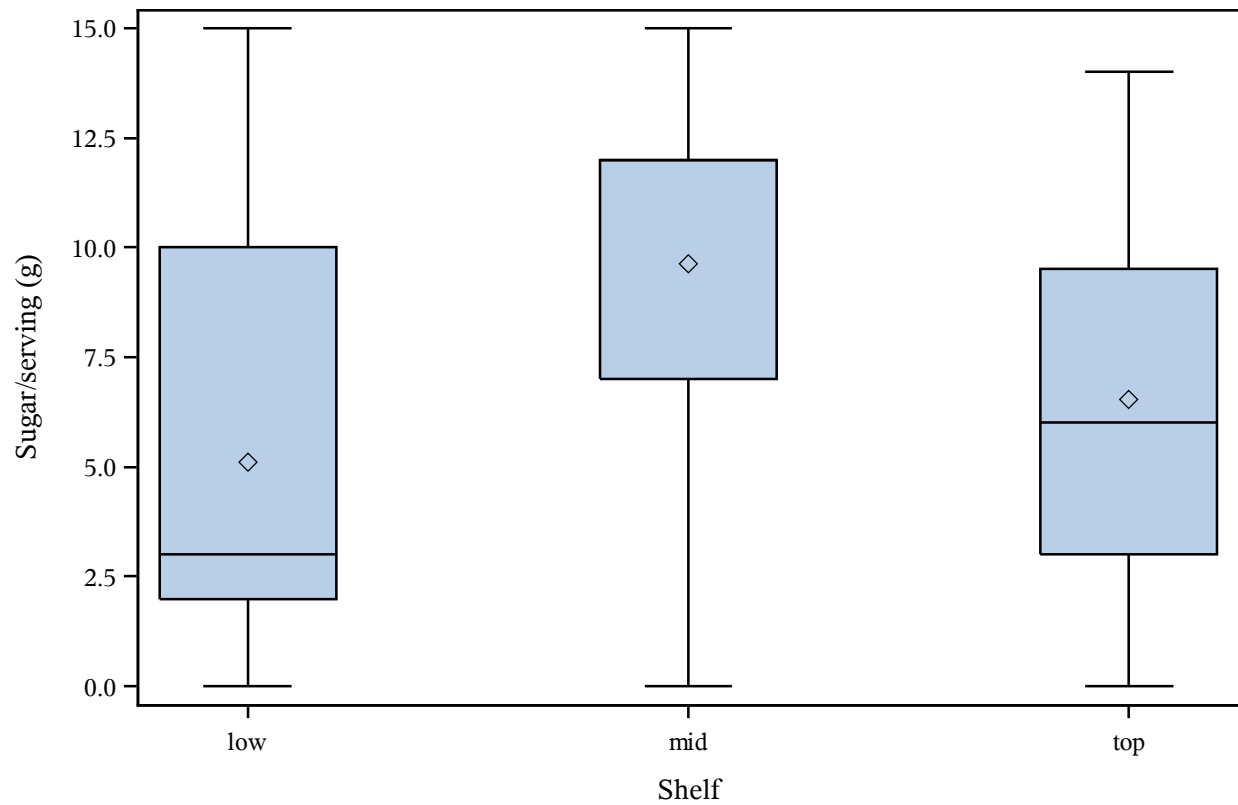


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Assignment 2 Part 1 - Cereal

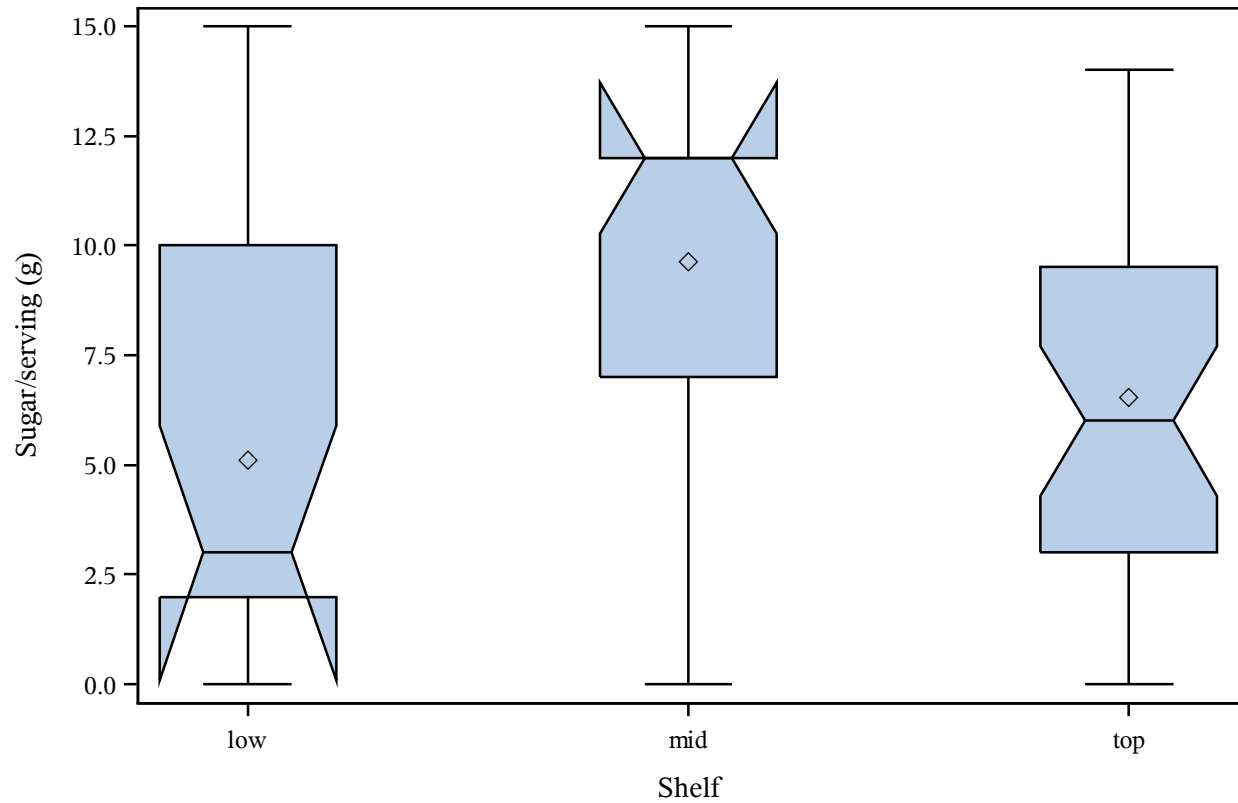
Cereal Analysis

Vertical box-plots WITHOUT notches



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Assignment 2 Part 1 - Cereal
Cereal Analysis
Vertical box-plots WITH notches



Yang, Kun 301178299**Assignment 2 Part 1 - Cereal****Cereal Analysis****does shelf height affect MEAN amount of sugar per serving****The GLM Procedure**

Class Level Information		
Class	Levels	Values
display_shelf	3	low mid top

Number of Observations Read	77
Number of Observations Used	76

Yang, Kun 301178299**Assignment 2 Part 1 - Cereal****Cereal Analysis****does shelf height affect MEAN amount of sugar per serving****The GLM Procedure****Dependent Variable: sugars**

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	220.233292	110.116646	6.60	0.0023
Error	73	1217.714077	16.681015		
Corrected Total	75	1437.947368			

R-Square	Coeff Var	Root MSE	sugars Mean
0.153158	58.12776	4.084240	7.026316

Source	DF	Type I SS	Mean Square	F Value	Pr > F
display_shelf	2	220.2332916	110.1166458	6.60	0.0023

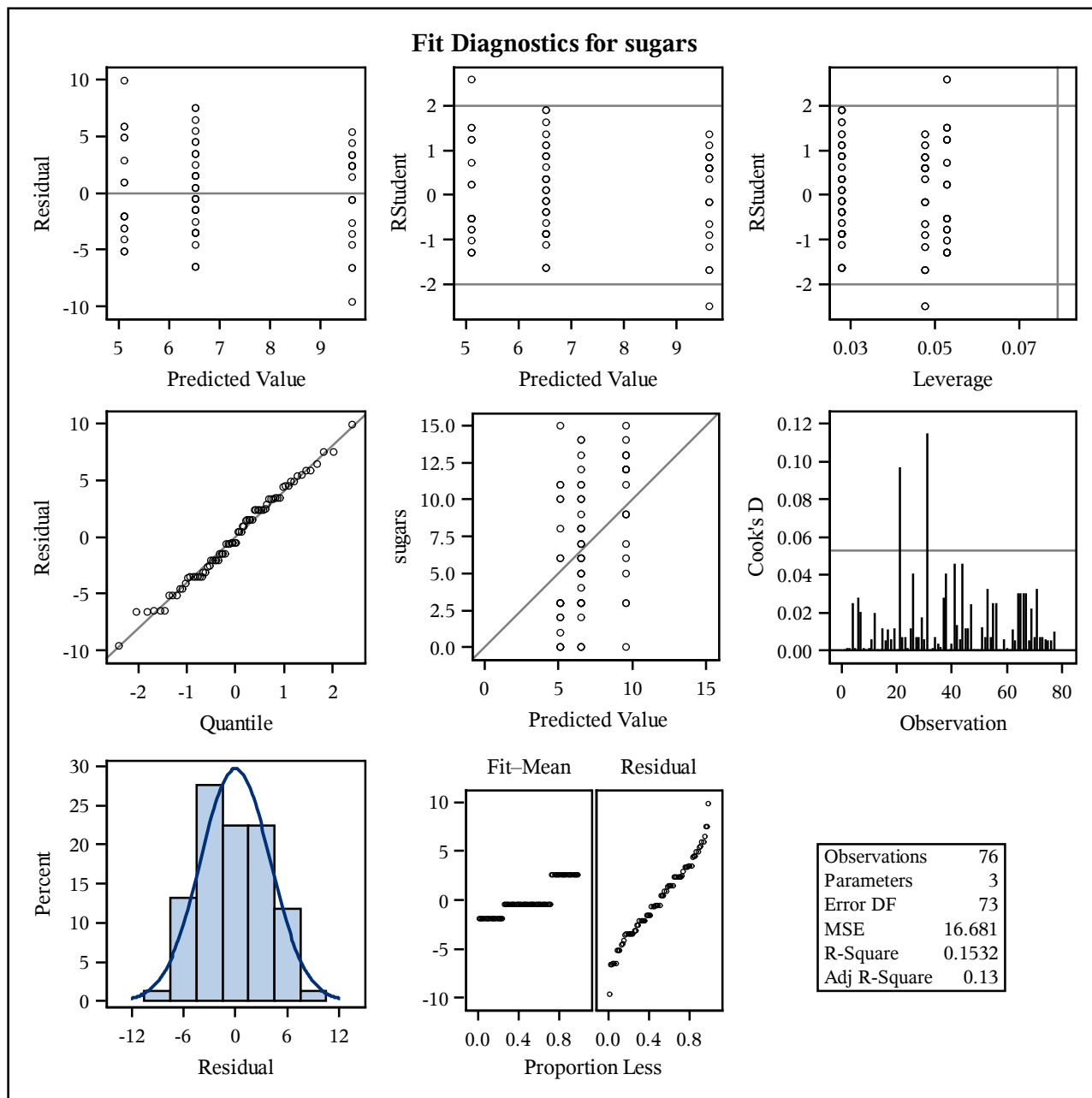
Source	DF	Type III SS	Mean Square	F Value	Pr > F
display_shelf	2	220.2332916	110.1166458	6.60	0.0023

Cereal Analysis

does shelf height affect MEAN amount of sugar per serving

The GLM Procedure

Dependent Variable: sugars



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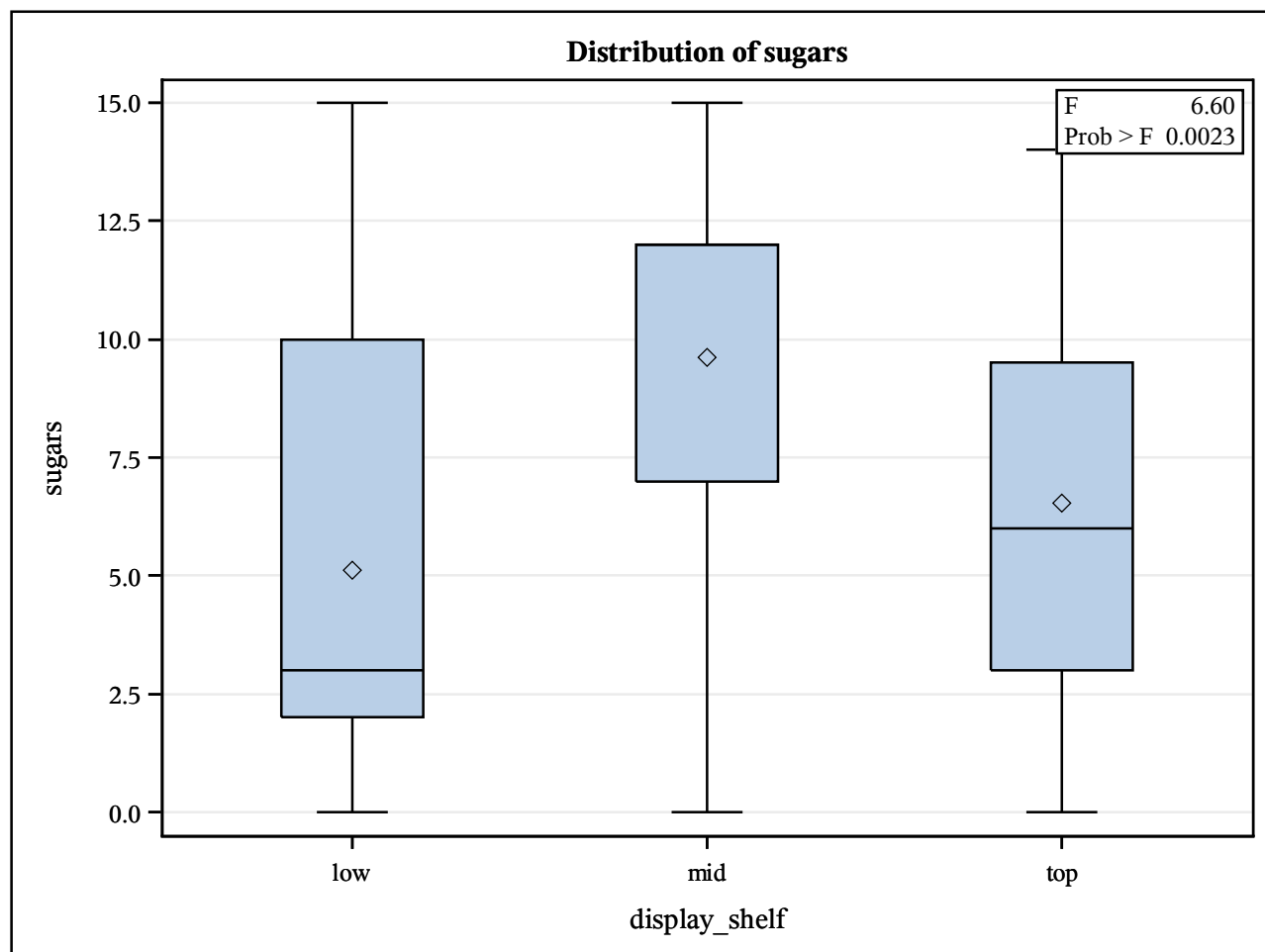
Assignment 2 Part 1 - Cereal

Cereal Analysis

does shelf height affect MEAN amount of sugar per serving

The GLM Procedure

Dependent Variable: sugars



Assignment 2 Part 1 - Cereal**Cereal Analysis****does shelf height affect MEAN amount of sugar per serving****The GLM Procedure****Least Squares Means****Adjustment for Multiple Comparisons: Tukey-Kramer**

display_shelf	sugars LSMEAN	LSMEAN Number
low	5.10526316	1
mid	9.61904762	2
top	6.52777778	3

Least Squares Means for effect display_shelf Pr > t for H0: LSMean(i)=LSMean(j)			
Dependent Variable: sugars			
i/j	1	2	3
1		0.0023	0.4405
2	0.0023		0.0199
3	0.4405	0.0199	

display_shelf	sugars LSMEAN	95% Confidence Limits	
low	5.105263	3.237847	6.972679
mid	9.619048	7.842781	11.395315
top	6.527778	5.171131	7.884424

Least Squares Means for Effect display_shelf				
i	j	Difference Between Means	Simultaneous 95% Confidence Limits for LSMean(i)-LSMean(j)	
1	2	-4.513784	-7.607604	-1.419965
1	3	-1.422515	-4.193312	1.348282
2	3	3.091270	0.408225	5.774315

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Assignment 2 Part 1 - Cereal

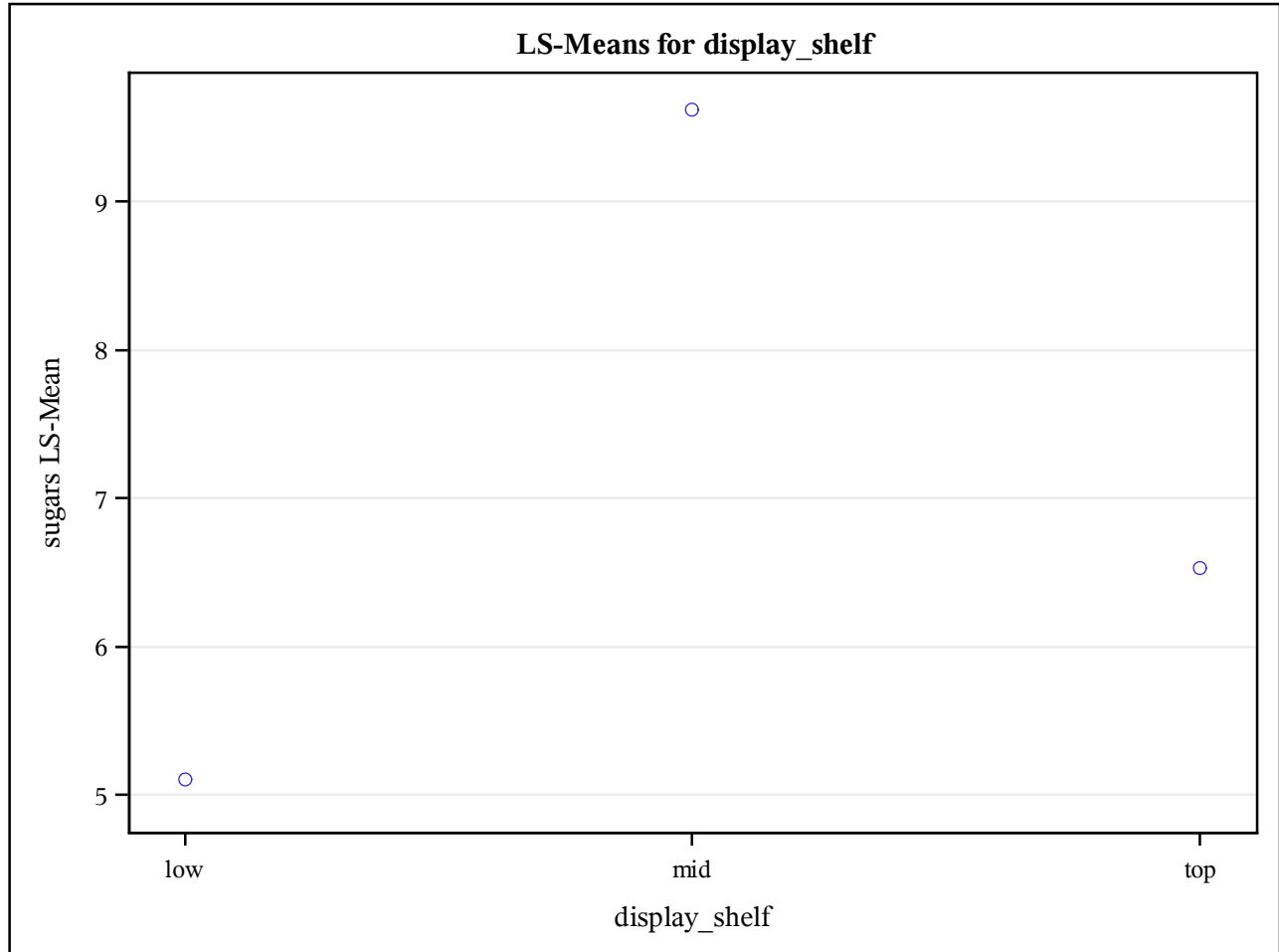
Cereal Analysis

does shelf height affect MEAN amount of sugar per serving

The GLM Procedure

Least Squares Means

Adjustment for Multiple Comparisons: Tukey-Kramer



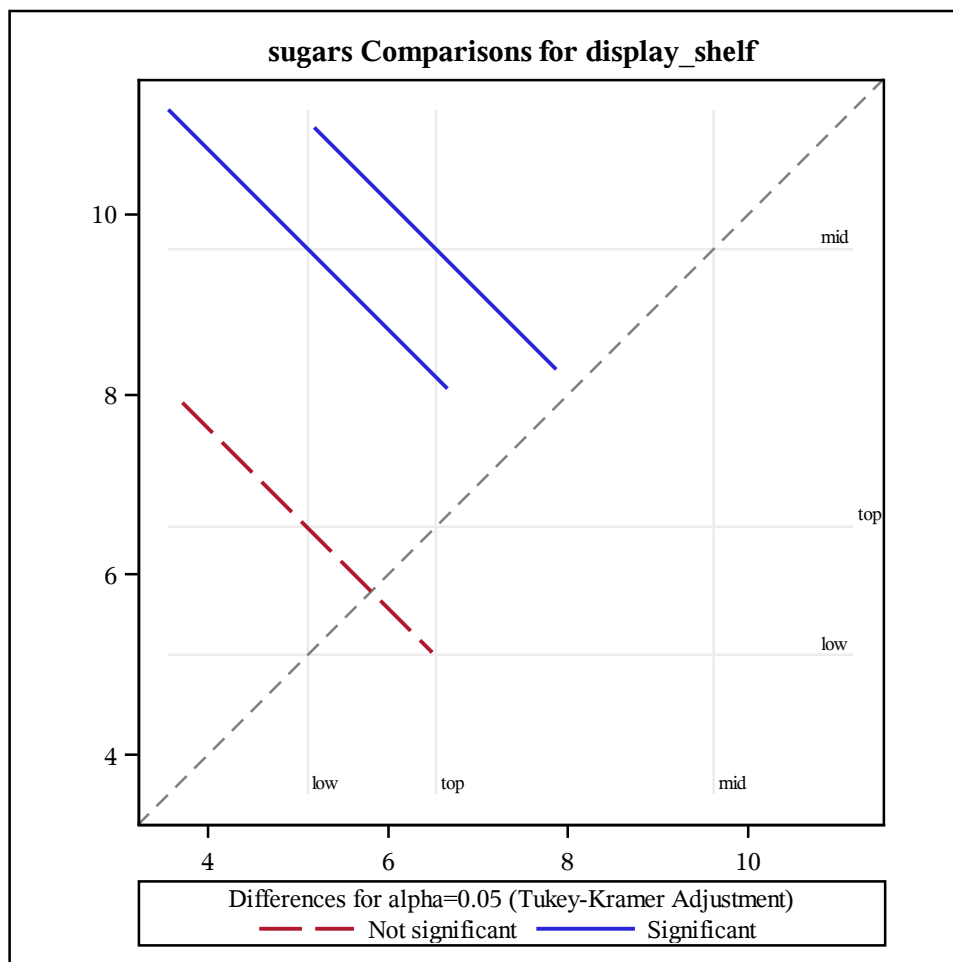
Cereal Analysis

does shelf height affect MEAN amount of sugar per serving

The GLM Procedure

Least Squares Means

Adjustment for Multiple Comparisons: Tukey-Kramer



Tukey-Kramer Comparison Lines for Least Squares Means of display_shelf			
LS-means with the same letter are not significantly different.			
	sugars LSMEAN	display_shelf	LSMEAN Number
A	9.6190476	mid	2
B	6.5277778	top	3
B			
B	5.1052632	low	1

Yang, Kun 301178299**Assignment 2 Part 1 - Cereal****Cereal Analysis****raw table**

Obs	Effect	Dependent	display_shelf	LowerCL	LSMean	UpperCL
1	display_shelf	sugars	low	3.237847	5.105263	6.972679
2	display_shelf	sugars	mid	7.842781	9.619048	11.395315
3	display_shelf	sugars	top	5.171131	6.527778	7.884424

Yang, Kun 301178299**Assignment 2 Part 1 - Cereal****Cereal Analysis*****Estimated mean amount of sugar/serving by shelf location along with 95% CI***

Obs	shelf	95% CI lower bound	Estimated mean amount	95% CI Upper bound
1	low	3.2	5.1	7.0
2	mid	7.8	9.6	11.4
3	top	5.2	6.5	7.9

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Assignment 2 Part 1 - Cereal

Cereal Analysis

Estimated mean amount of sugar/serving by shelf location along with 95% CI

