Honors Project

Data:

Professor Ratings

Ratings

	C1 Dept	C2 Number	C3 Interest	C4 Manner	C5 Course	C6 Instrucr	C7 Respo>>	C8 Size	C9 Year
1	ACC	221	2.07	2.67	2.27	2.73	15	41	Soph
2	ACC	221	2.40	3.07	2.75	3.38	15	41	Soph
3	ACC	321	2.64	3.36	3.00	3.45	11	31	Junior
4	ACC	344	3.42	3.67	3.42	3.67	12	36	Junior
5	AER	101	3.25	3.50	3.13	3.13	8	52	Freshman
6	ARC	426	3.29	3.12	3.35	3.41	15	15	Senior
7	ART	111	2.47	1.73	2.33	2.00	15	22	Freshman
8	ART	111	3.00	3.42	3.08	3.17	12	21	Freshman
9	ART	211	3.17	2.00	2.67	2.33	6	15	Soph
10	ART	485	3.60	3.90	3.50	3.70	10	15	Senior
11	ATH	155	2.50	2.64	2.79	3.00	14	49	Freshman
12	ATH	212	2.92	3.09	2.83	3.17	12	46	Soph
13	CHM	111	1.44	2.78	2.00	2.78	9	68	Freshman
14	CHM	141	2.17	3.42	2.75	3.17	12	114	Freshman
15	CHM	142	1.38	0.92	1.46	1.46	13	64	Freshman
16	COM	193	3.71	3.64	3.36	3.64	14	44	Freshman
17	COM	205	3.83	3.83	3.83	3.83	6	16	Soph
18	COM	231	3.13	3.73	3.20	3.67	15	27	Soph
19	COM	359	3.30	3.00	3.00	3.20	10	29	Junior
20	COM	431	3.00	3.44	2.78	3.33	10	72	Senior
21	COM	437	3.11	3.33	3.11	3.44	9	15	Senior
22	DSC	205	2.00	2.21	2.07	2.46	14	*	Soph
23	DSC	281	2.82	2.18	2.45	2.50	11	26	Soph
24	DSC	331	2.93	2.77	2.79	3.07	14	26	Junior
25	ECO	201	3.11	4.00	3.56	4.00	9	140	Soph
26	ECO	301	2.63	3.38	2.75	3.00	8	*	Junior
27	ECO	315	2.54	2.00	2.31	2.31	13	*	Junior
28	ECO	485	2.00	2.18	2.00	2.60	11	*	Senior
29	EDL	301	1.67	2.33	1.93	2.33	15	22	Junior
30	EDL	301	2.60	3.13	2.60	3.27	15	20	Junior
31	EDP	201	2.25	2.75	2.67	2.92	12	40	Soph
32	EDT	110	2.67	3.00	2.83	3.75	6	*	Freshman
33	EDT	315	2.78	2.44	2.56	2.50	9	*	Junior
34	EDT	446	3.27	3.27	3.20	3.13	15	17	Senior
35	EGR	212	1.71	2.00	2.38	2.25	14	19	Soph
36	EGR	223	3.33	3.08	3.00	3.50	12	*	Soph
37	ENG	131	2.79	2.57	2.86	2.71	14	54	Freshman
38	ENG	131	2.83	3.17	2.83	3.33	6	48	Freshman
39	ENG	142	2.60	2.60	2.60	2.70	10	43	Freshman
40	ENG	211	1.91	2.18	2.18	2.18	11	*	Soph
41	ENG	218	3.00	3.00	2.94	3.47	15	23	Soph
42	ENG	262	3.08	2.67	3.25	3.33	12	48	Soph
43	ENG	293	2.50	1.83	2.42	2.40	12	30	Soph
44	ENG	302	2.86	3.43	3.43	3.64	14	37	Junior
45	ENG	386	2.33	2.67	2.58	3.00	12	80	Junior
46	ENG	413	2.23	2.38	2.54	2.58	13	17	Senior
47	ENG	420	3.55	3.55	3.18	3.64	11	19	Senior
48	FIN	301	1.56	2.57	2.14	2.58	14	37	Junior
49	FIN	301	1.92	2.83	2.25	3.00	12	*	Junior

Professor Ratings

	C1 Dept	C2 Number	C3 Interest	C4 Manner	C5 Course	C6 Instrucr	C7 Respo>>	C8 Size	C9 Year
50	FIN	301	2.31	3.15	2.77	2.92	13	39	Junior
51	FIN	408	1.00	0.89	1.33	1.22	9	34	Senior
52	FRE	101	2.23	2.62	2.62	2.91	13	24	Freshman
53	FRE	101	3.17	3.67	3.00	3.83	6	11	Freshman
54	FRE	201	1.86	2.57	2.43	2.43	7	*	Soph
55	FRE	361	1.93	2.08	1.92	2.36	13	26	Junior
56	FRE	466	3.67	3.50	3.50	3.42	12	18	Senior
57	FST	201	2.78	2.00	2.56	2.63	9	57	Soph
58	GEO	275	4.00	3.43	3.86	3.67	7	64	Soph
59	GEO	301	3.45	2.82	3.09	3.00	11	15	Junior
60	GER	101	2.18	2.36	2.27	2.20	11	24	Freshman
61	GER	202	2.42	3.08	2.67	3.08	12	22	Soph
62	GER	322	2.57	2.86	2.43	3.14	7	14	Junior
63	GER	371	2.00	2.88	2.63	3.13	8	16	Junior
64	HST	111	3.14	3.29	3.14	3.50	14	55	Freshman
65	HST	221	3.47	2.80	2.87	2.79	15	43	Soph
66	HST	261	3.00	2.92	2.42	3.33	12	55	Soph
67	HST	401	3.45	3.27	3.18	3.45	11	24	Senior
68	HST	434	2.58	2.00	2.33	2.50	12	23	Senior
69	ITS	201	2.53	2.27	2.00	2.43	15	53	Soph
70	JPN	201	2.73	2.00	2.27	2.09	11	28	Soph
71	LAT	101	3.13	3.47	3.27	3.67	15	26	Freshman
72	LAT	121	2.57	3.00	2.86	3.00	7	20	Freshman
73	MBI	121	1.57	1.92	2.14	2.36	14	32	Freshman
74	MGT	111	3.13	2.38	2.88	3.25	8	74	Freshman
75	MGT	301	2.33	2.58	2.25	2.40	12	38	Junior
76	MGT	401	2.36	2.29	2.29	2.29	14	15	Senior
77	MGT	451	3.07	2.57	3.00	3.00	14	22	Senior
78	MGT	453	2.50	2.17	2.58	2.25	12	21	Senior
79	MKT	301	2.75	3.17	2.92	3.00	12	44	Junior
80	MKT	306	2.22	2.67	2.67	2.78	9	34	Junior
81	MKT	371	3.13	2.27	2.87	2.93	15	20	Junior
82	MKT	421	3.29	3.43	3.21	3.64	14	22	Senior
83	MKT	441	3.15	3.23	3.23	2.92	13	*	Senior
84	MTH	115	2.82	3.64	2.82	3.55	11	36	Freshman
85	MTH	116	2.00	2.50	2.36	2.79	14	22	Freshman
86	MTH	123	1.54	2.00	1.77	1.77	13	33	Freshman
87	MTH	123	1.67	1.44	2.00	1.75	9	36	Freshman
88	MTH	123	2.08	3.58	2.83	3.17	12	*	Freshman
89	MTH	123	2.17	3.25	2.75	3.00	12	41	Freshman
90	MTH	151	1.10	2.00	2.40	2.30	10	32	Freshman
91	MTH	151	2.38	3.31	2.92	3.08	12	27	Freshman
92	MTH	151	2.40	3.67	2.93	3.53	15	42	Freshman
93	MTH	153	2.00	2.54	2.67	3.00	13	32	Freshman
94	MTH	222	1.46	2.38	1.92	2.62	13	36	Soph
95	MTH	222	1.93	1.80	2.14	2.14	15	27	Soph
96	MTH	249	2.53	2.80	3.00	3.07	15	36	Soph
97	MTH	249	2.79	3.29	3.07	3.14	14	38	Soph
98	MTH	251	1.80	1.10	1.56	1.33	11	33	Soph

Professor Ratings

	C1	C2	C3	C4	C5	C6	C7	C8	C9
	Dept	Number	Interest	Manner	Course	Instrucr	Respo>>	Size	Year
99	MTH	347	1.80	1.80	1.80	1.80	5	18	Junior
100	MUS	101	2.13	1.60	2.27	1.87	15	24	Freshman
101	MUS	101	2.83	3.67	3.33	3.75	12	26	Freshman
102	MUS	101	3.38	3.85	3.23	3.85	13	22	Freshman
103	MUS	201	3.71	4.00	3.71	4.00	7	*	Soph
104	PHL	111	2.69	2.38	2.69	2.62	12	44	Freshman
105	PHL	263	3.20	3.27	3.27	3.36	15	38	Soph
106	PHS	206	3.07	2.93	3.00	2.93	15	27	Soph
107	PHS	242	2.93	3.67	2.93	3.57	15	37	Soph
108	PHS	271	2.88	2.75	2.75	2.57	8	24	Soph
109	PHY	118	1.87	1.33	1.93	1.87	15	28	Freshman
110	PHY	141	2.20	2.20	1.70	1.90	10	113	Freshman
111	PHY	381	2.77	3.15	2.77	3.67	13	30	Junior
112	POL	141	2.38	1.77	2.46	2.31	13	55	Freshman
113	POL	141	2.80	3.00	3.20	3.30	10	48	Freshman
114	POL	261	2.07	2.93	2.29	3.29	14	28	Soph
115	POL	271	3.57	3.71	3.36	3.71	14	80	Soph
116	POL	302	2.78	2.33	2.89	3.13	9	26	Junior
117	POL	336	3.45	3.09	3.18	3.64	11	29	Junior
118	POL	346	3.43	3.43	3.21	3.57	14	30	Junior
119	POL	354	2.43	2.43	2.21	2.17	14	51	Junior
120	POL	355	3.19	3.31	3.13	3.50	16	42	Junior
121	PPS	101	2.64	2.09	2.55	2.00	11	50	Freshman
122	PPS	402	2.93	3.79	3.36	3.85	14	19	Senior
123	PPS	405	2.18	2.45	2.45	2.27	11	20	Senior
124	PSY	232	3.00	2.33	2.56	2.33	9	39	Soph
125	PSY	321	2.46	1.85	2.08	2.08	13	43	Junior
126	PSY	321	3.40	1.30	3.40	3.00	10	42	Junior
127	RUS	201	2.50	3.25	3.00	3.25	8	18	Soph
128	SAN	278	2.43	2.00	2.29	2.38	14	25	Soph
129	SAN	284	2.43	2.07	2.43	2.57	14	35	Soph
130	SOC	154	2.80	2.67	2.67	2.93	15	45	Freshman
131	SOC	262	2.00	2.43	2.21	2.29	14	27	Soph
132	SOC	306	3.93	3.53	3.64	4.00	15	19	Junior
133	SOC	466	1.86	2.00	1.69	2.00	14	14	Senior
134	SPN	101	2.18	2.45	2.60	2.40	11	28	Freshman
135	SPN	101	2.18	2.73	2.45	2.50	11	27	Freshman
136	SPN	101	2.50	3.70	3.00	3.70	10	28	Freshman
137	SPN	111	3.67	4.00	3.58	4.00	12	*	Freshman
138	SPN	201	2.62	3.69	3.23	3.92	13	24	Soph
139	SPN	202	2.07	3.20	3.07	3.53	15	*	Soph
140	SPN	321	2.56	3.11	2.89	3.25	9	23	Junior
141	STA	261	2.00	3.22	2.56	3.11	9	31	Soph
142	STA	368	1.56	1.22	1.89	1.56	9	29	Junior
143	STA	461	2.42	2.75	2.67	3.00	12	*	Senior
144	WMS	201	3.67	3.00	3.20	3.40	15	35	Soph
145	ZOO	113	3.23	3.46	3.31	3.38	13	22	Freshman
146	ZOO	161	3.14	3.64	3.29	3.50	14	43	Freshman

- **Frequency Distribution Table of years**

| Years	Count	Percent
Freshman	46	31.51
Junior	34	23.29
Senior	21	14.38
Soph	45	30.82
N=	146	

Analysis:

This table details the number of Freshman, Juniors, Seniors, and Sophomores that participated in this instructor rating activity. Most students that participated in the survey were freshman (31%). I believe that this high student engagement for freshman is due to several factors. For starters, many professors require that students take the survey or offer extra credit. Also, many freshmen are paying more attention to the environment of the campus and are more likely to express their initial impressions.

- **Bar Chart of years**
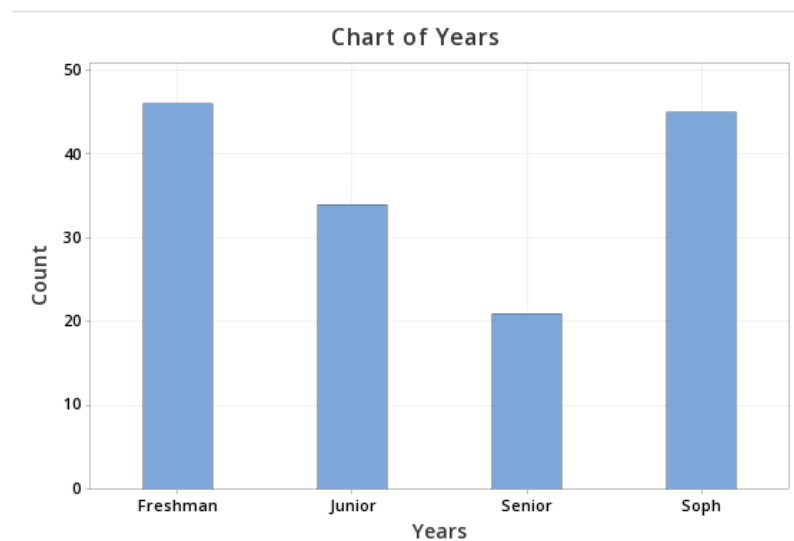
Analysis:

This bar chart details the number of Freshman, Juniors, Seniors, and Sophomores that participated in this instructor rating activity. The freshman category is slightly higher than the sophomore category. It is interesting that student engagement falls as the grade level increases. This reflects student engagement in opinion being higher when they first join the college. Later on, many students accept the environment and focus on graduating.

- **Pie Chart of Years**
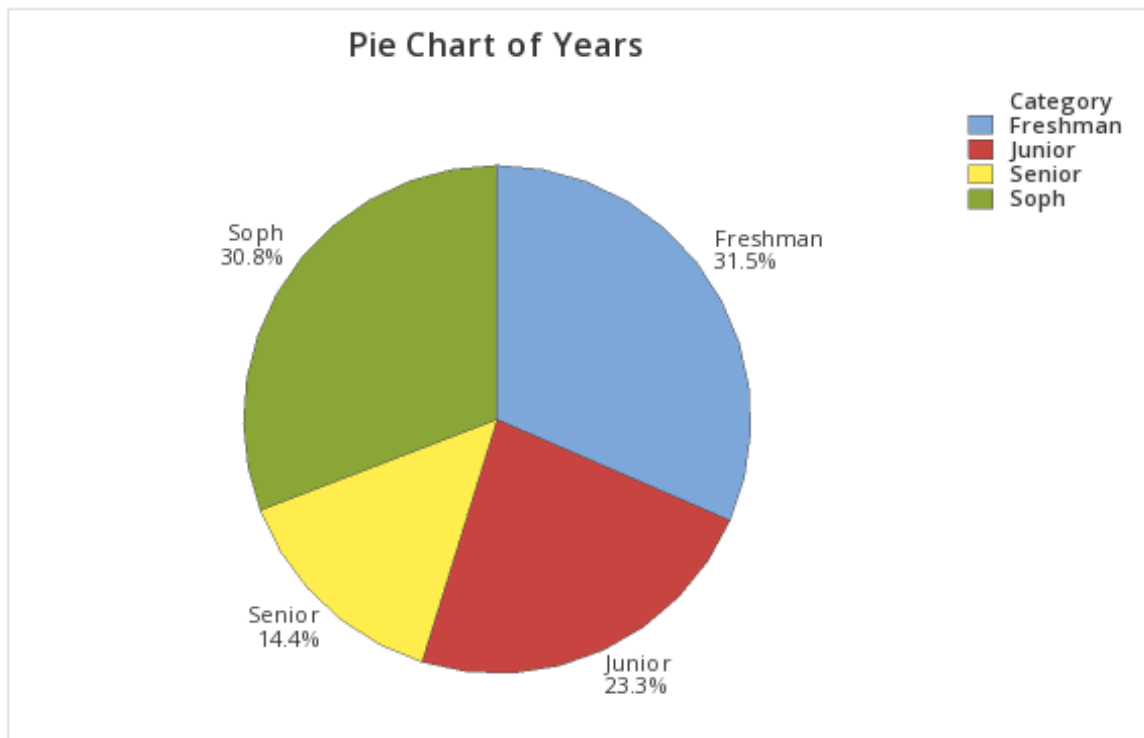
Analysis:

This pie chart details the number of Freshman, Juniors, Seniors, and Sophomores that participated in this instructor rating activity. This pie chart displays the data in a visual manner. The results of the pie chart are display that participation in the survey decreases with grade level.

- <mark>**Descriptive Statistics of Ratings**</mark>

Statistics

Variable	N	N*	Mean	StDev	Variance	Minimum	Q1	Median	Q3	Maximum	Range	IQR	Mode	N for Mode
Ratings	146	0	2.9325	0.6264	0.3923	1.2200	2.4225	3.0000	3.4425	4.0000	2.7800	1.0200	3	12

Analysis:

These descriptive statistics detail the instructor ratings from the survey. The average instructor rating is 2.9325 out of a potential 4. This is an acceptable average for the entire school, coming in at approximately 75% satisfaction for all instructors. The minimum rating is a 1.22 and the highest is the max of 4.0. Considering the variety of subjects and potential student bias, these ratings reflect an overall positive environment for the school.

- <mark>**Dotplot of Ratings**</mark>
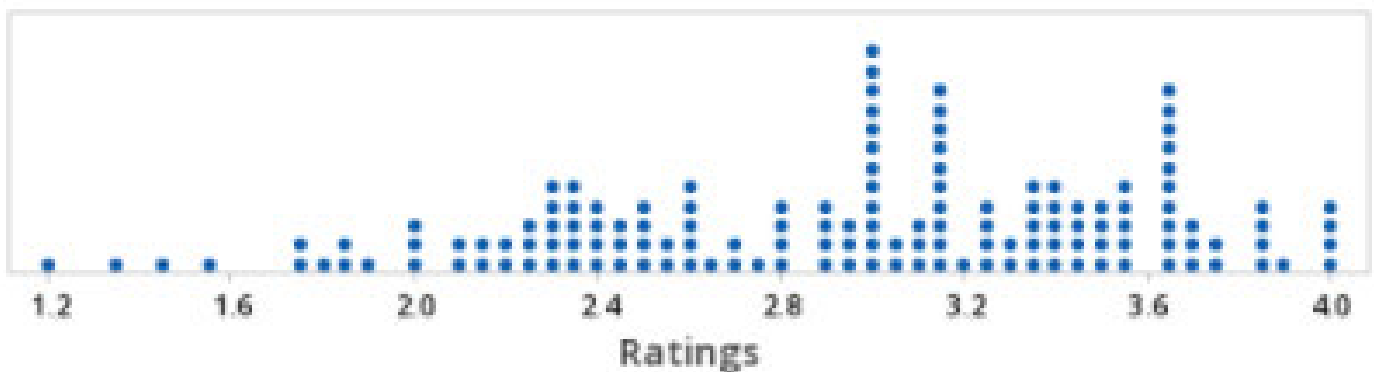
Analysis:

This dotplot details the instructor ratings in a visual manner and reveals the same information as provided in the descriptive statistics, therefore the dot plot is a useful tool for seeing how exactly the ratings are distributed. This dotplot shows that the highest density of ratings is in the middle to right side. This shows that more professors receive mid-high ratings, rather than low.

- <mark>**Histogram of Ratings**</mark>
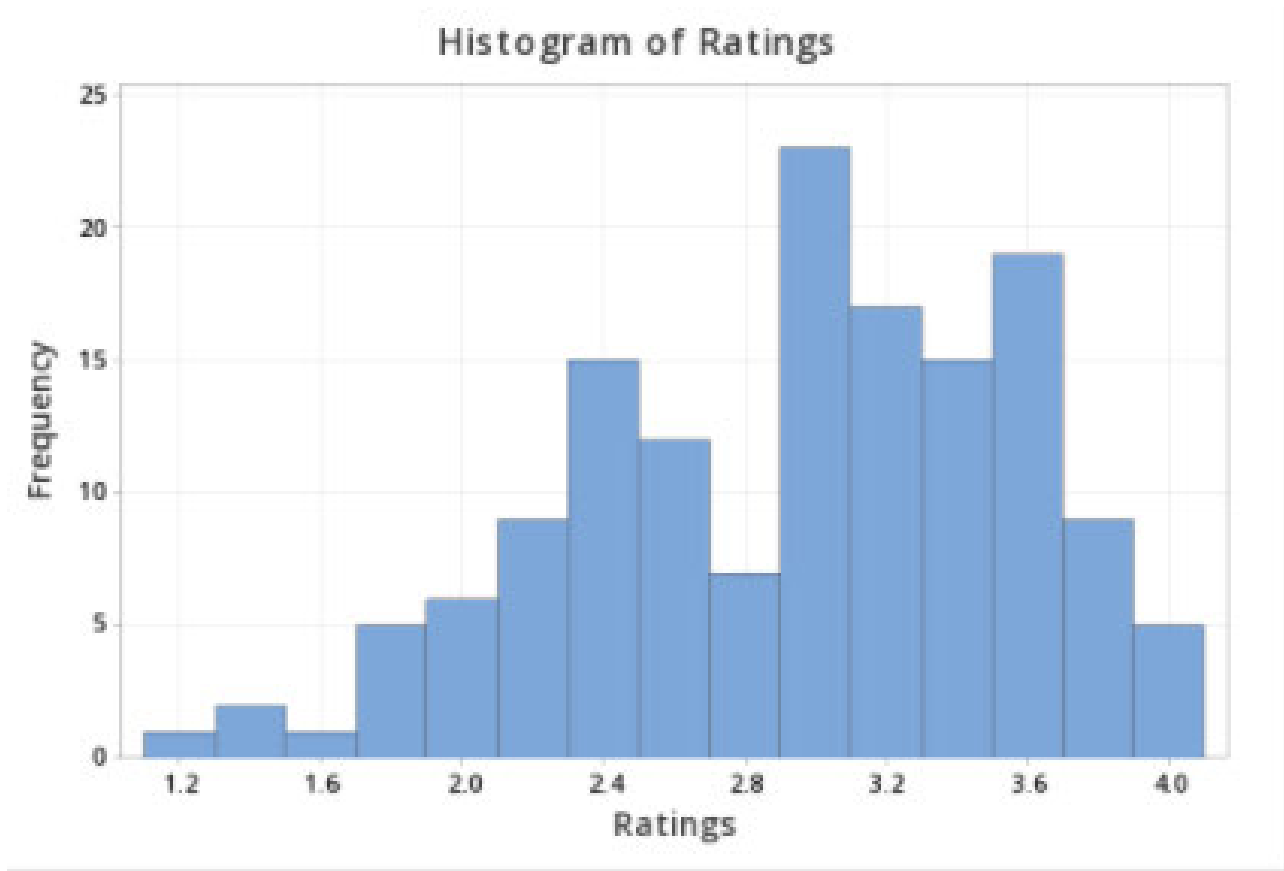
Analysis:

This histogram provides another visual representation of the professor ratings. This histogram is skewed to the right, showing that most instructors have a mid-high rating. It is interesting that there is a dip in the middle at 2.8. It seems that most ratings lie either in the 2.4 range or the 3.0 range. This could mean that most students would rather provide the instructors with a more decidedly lower or higher score within the 2-3 range.

- **Boxplot of Ratings**
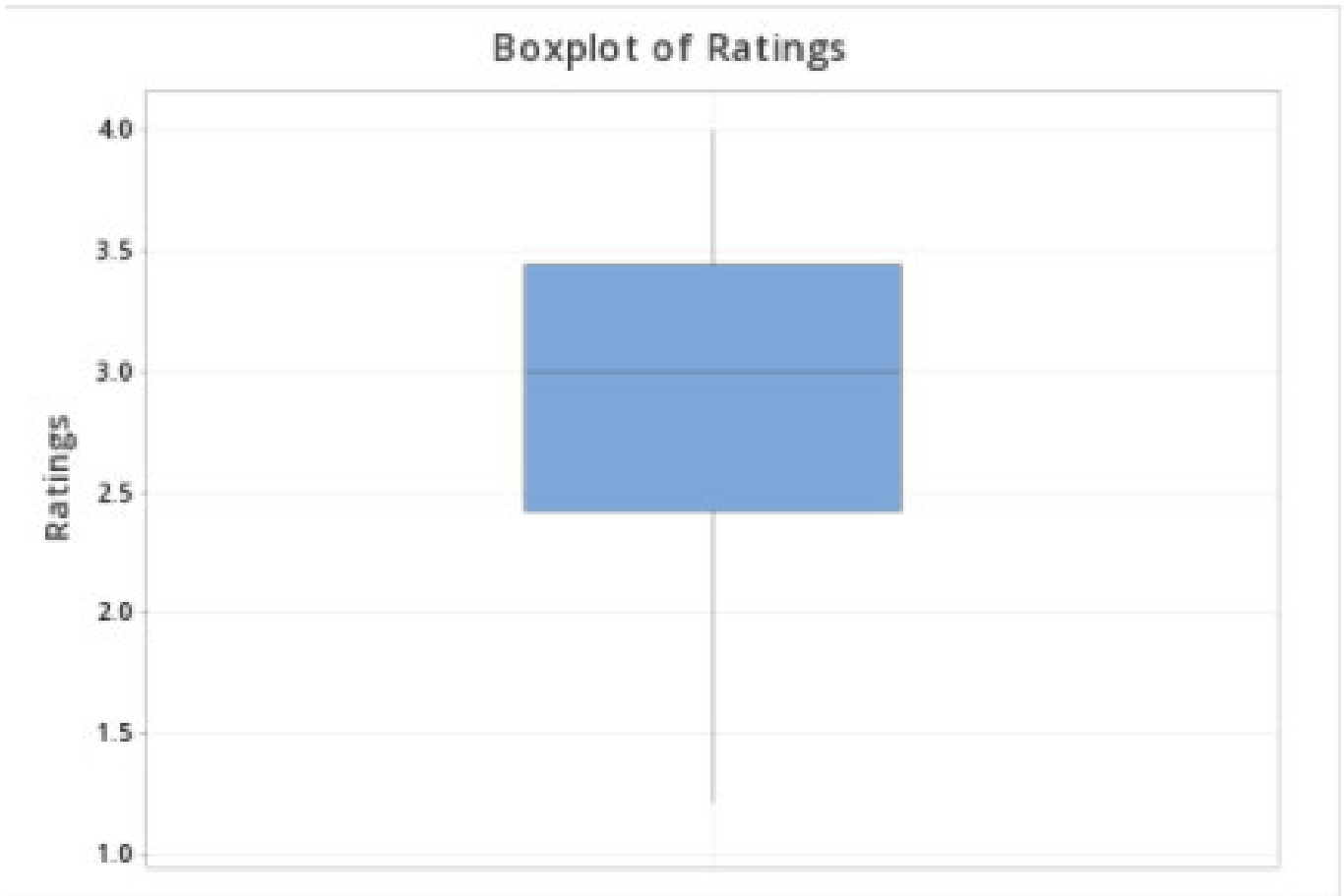
Boxplot of Ratings

Analysis:

This boxplot offers another visual representation of the instructor ratings. This boxplot shows the minimum, max/ outlier, Q1, Q3, and the median very clearly. The IQR also contains the middle 50% of the data. The boxplot is a useful graph to obtain information at a glance. The minimum is 1.22, the maximum is 4.0, Q1 is 2.4225, Q3 us 3.4425, and the median is roughly 3.

- <mark>One- Sample T of Instructor ratings</mark>

One-Sample T: Instructer

Descriptive Statistics

| N	Mean	StDev	SE Mean	95% CI for μ
146	2.9325	0.6264	0.0518	(2.8301, 3.0350)

μ: population mean of instructer

Conclusion:

We can say with 95% confidence that the true population mean of instructor ratings is between 2.8301 and 3.0350

Analysis:

This one sample t confidence interval was performed at the 95% confidence level and displays the true population mean of instructor ratings. As the mean ratings lie between 2.8301 and 3.0350, the ratings for instructors are mostly positive.

- **One Sample T of Manner Ratings**

One-Sample T: Manner

Descriptive Statistics

N	Mean	StDev	SE Mean	95% CI for μ
146	2.7799	0.6955	0.0576	(2.6662, 2.8937)

μ: population mean of Manner

Conclusion:

We can say with 95% confidence that the true population mean of manner ratings is between 2.6662 and 2.8937.

Analysis:

This one sample t confidence interval was performed at the 95% confidence level and displays the true population mean of instructor manner. The mean of manner ratings is lower than the overall instructor rating means. The lower bound (LB) of manner is 2.6662, whereas the LB of ratings is 2.8301. Likewise, the Upper Bound (UB) of the manner is 2.8937, whereas the UB of ratings is 3.0350. This shows that manner ratings are one of the lower scores for all the instructors.

- <u>Scatter plot of Manner and Instructor</u>

Correlation: Manner, Instructer
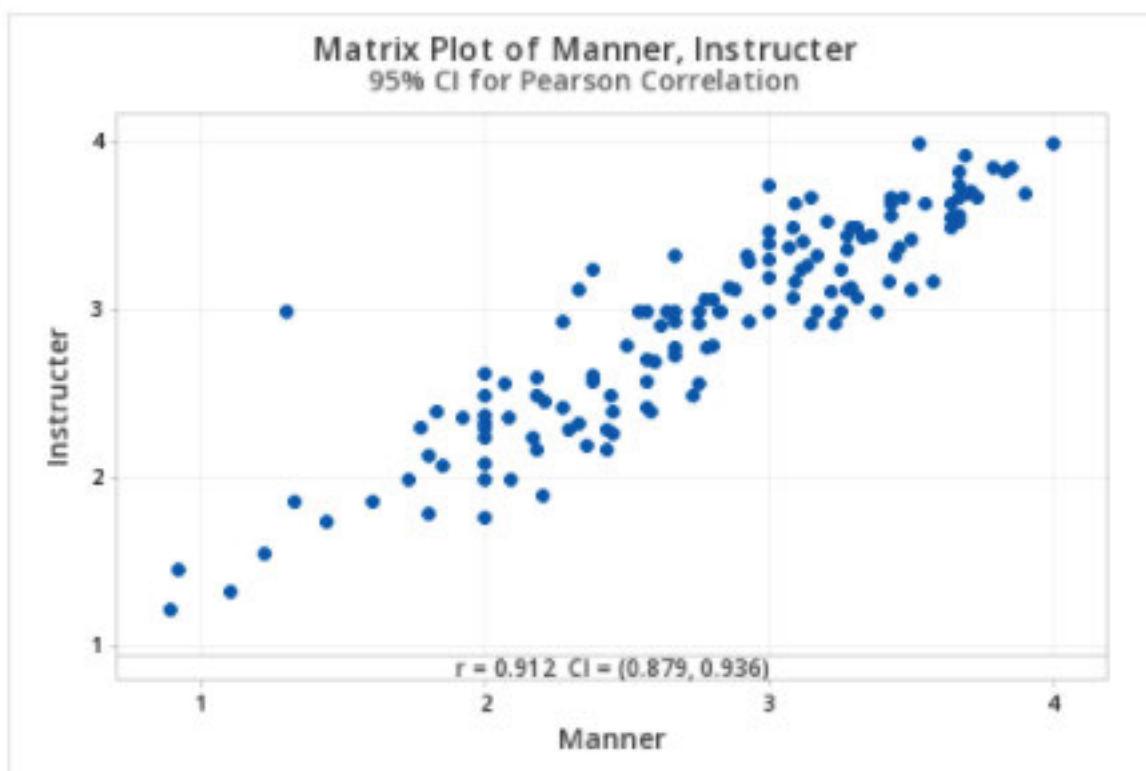
Method

Correlation type	Pearson
Number of rows used	146

p: pairwise Pearson correlation

Correlations

	Manner
Instructer	0.912

Pairwise Pearson Correlations

Sample 1	Sample 2	N	Correlation	95% CI for p	P-Value
Instructer	Manner	146	0.912	(0.879, 0.936)	0.000

Ho: There is no correlation between instructor ratings and manner ratings

Ha: There is significant correlation between instructor ratings and manner ratings

P Value 0.000 < .05? yes. Reject the null hypothesis.

Conclusion:

At the 5% significance level, there is a significant correlation between instructor ratings and manner ratings

Analysis:

This scatter plot shows a fairly strong positive correlation between instructor ratings and manner ratings. From this, we can infer that manner ratings will increase as instructor ratings increase. This makes sense, as an instructor with terrible manner ratings would not have a good overall rating.

- **Linear Regression for Manner and Instructor**

- **Regression Equation:**

Instructor= 0.6502 + 0.8210 Manner

Y= 0.6502 + 0.8210x

Y= .8210x + .6502

- **Hypothesis Test:**

Ho: There is no correlation between ratings of instructor and ratings of manner

Ha: There is significant correlation between ratings of instructor and ratings of manner

P value =0.000 < .05? Yes. Reject the Null Hyp

Conclusion:

At the 5% significance level, we can say that there is significant correlation between ratings of manner and ratings of instructor

- **Predictions**

If the Manner rating was 1.5 what would the instructor rating be?

Y= .8210 (1.5) + .6502 = 1.8817

Can we trust this prediction?

Yes, because the correlation is significant

Coefficient of Correlation: r= 0.912

Regression Analysis: Instructer versus Manner

Regression Equation

Instructer = 0.6502 + 0.8210 Manner

Coefficients

Term	Coef	SE Coef	T-Value	P-Value	VIF
Constant	0.6502	0.0884	7.36	0.000	
Manner	0.8210	0.0308	26.62	0.000	1.00

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
0.258338	83.11%	82.99%	82.55%

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Regression	1	47.279	47.2791	708.42	0.000
Manner	1	47.279	47.2791	708.42	0.000
Error	144	9.610	0.0667		
Lack-of-Fit	86	6.198	0.0721	1.22	0.206
Pure Error	58	3.413	0.0588		
Total	145	56.889			

Fits and Diagnostics for Unusual Observations

Obs	Instructer	Fit	Resid	Std Resid	
15	1.4600	1.4055	0.0545	0.22	X
32	3.7500	3.1132	0.6368	2.47	R
51	1.2200	1.3809	-0.1609	-0.64	X
74	3.2500	2.6042	0.6458	2.51	R
86	1.7700	2.2922	-0.5222	-2.04	R
98	1.3300	1.5533	-0.2233	-0.89	X
110	1.9000	2.4564	-0.5564	-2.17	R
116	3.1300	2.5631	0.5669	2.21	R
126	3.0000	1.7175	1.2825	5.06	R
142	1.5600	1.6518	-0.0918	-0.36	X

R Large residual
X Unusual X

Regression Analysis: Instructer versus Manner

The regression equation is
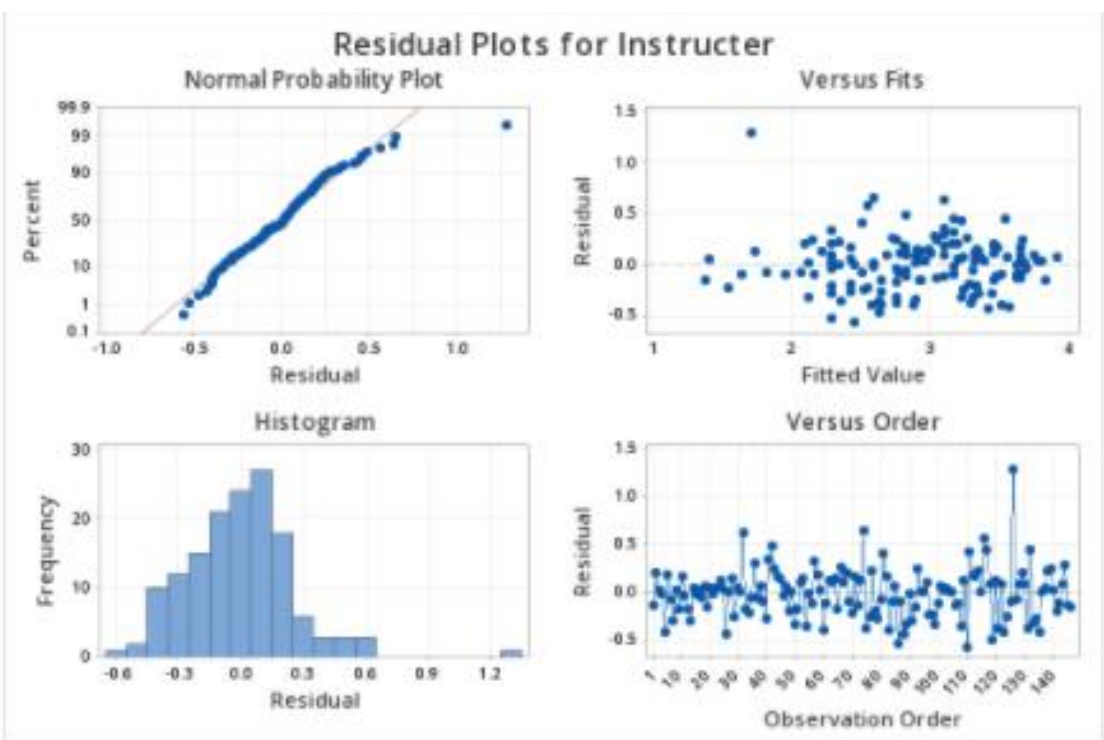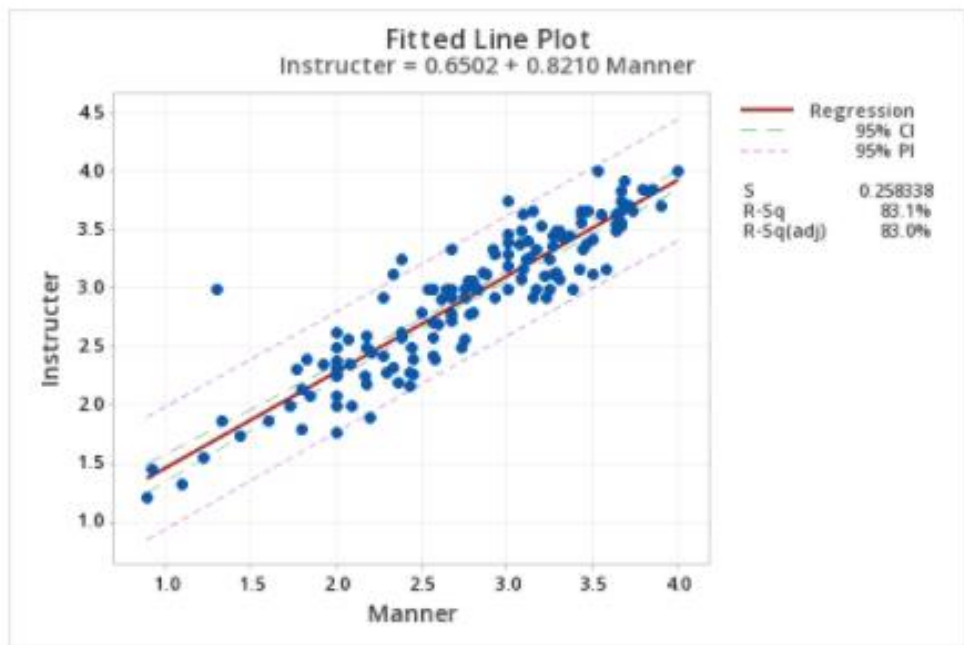Instructer = 0.6502 + 0.8210 Manner

Model Summary

S	R-sq	R-sq(adj)
0.258338	83.11%	82.99%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	1	47.2791	47.2791	708.42	0.000
Error	144	9.6103	0.0667		
Total	145	56.8894			

Regression Analysis: Instructer versus Manner

Analysis:

This information shows that there is a strong positive correlation between manner and instructor ratings. As previously stated with the scatter plot, this makes sense, as an instructor with terrible manner ratings would probably not have a good overall rating.

- **ANOVA Test of interest, manner, and instructor**

- **Hypothesis test:**

Ho: all the group population means are the same

Ho: at least one pair of means is different.

P = 0.000 < .05? Yes Reject the null hypothesis

Conclusion:

We can say at the 5% significance level that there is a difference in at least two means among interest, manner, and instructor.

One-way ANOVA: interest, Manner, Instructer

Method

Null hypothesis	All means are equal
Alternative hypothesis	Not all means are equal
Significance level	α = 0.05

Equal variances were assumed for the analysis.

Factor Information

Factor	Levels	Values
Factor	3	interest, Manner, Instructer

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Factor	2	6.818	3.4092	8.10	0.000
Error	435	183.067	0.4208		
Total	437	189.885			

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
0.648724	3.59%	3.15%	2.26%

Means

Factor	N	Mean	StDev	95% CI
interest	146	2.6269	0.6217	(2.5214, 2.7324)
Manner	146	2.7799	0.6955	(2.6744, 2.8855)
Instructer	146	2.9325	0.6264	(2.8270, 3.0381)

Pooled StDev = 0.648724

Interval Plot of interest, Manner, ...
95% CI for the Mean

The pooled standard deviation is used to calculate the intervals.
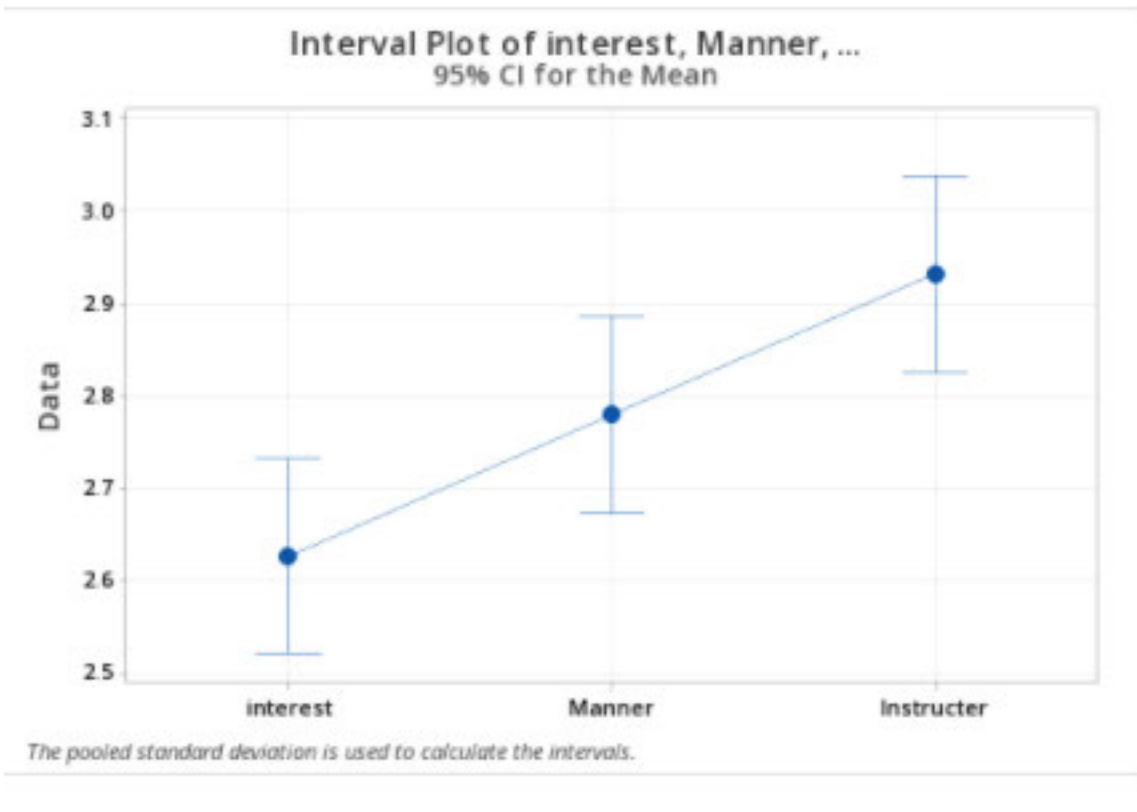
Analysis:

The ANOVA test of interest ratings, manner ratings, and instructor ratings demonstrates that at least one of the means is not equal. The Interval plot demonstrates that the interest has the lowest rating at approximately 2.6, manner has the middle rating at approximately 2.8, and the overall instructor ratings has the highest as about 2.9. It is interesting that the individual ratings have lower scores than the overall rating. I believe this is due to the fact that students tend to be more critical when thinking about specific quality, whereas a survey taker may have an overall positive opinion when not focusing on those little factors.

- **Chi – Square Goodness of for hypothesis test for years**

- **Hypothesis Test:**

Ho: The number of responses is equal for each group
Ha: The number of responses is not equal for each group

P= .011 < .05? Yes Reject Null Hyp

Conclusion:
At the 5% significance level, we can say that the year is not equal for each group

Chi-Square Goodness-of-Fit Test for Categorical Variable
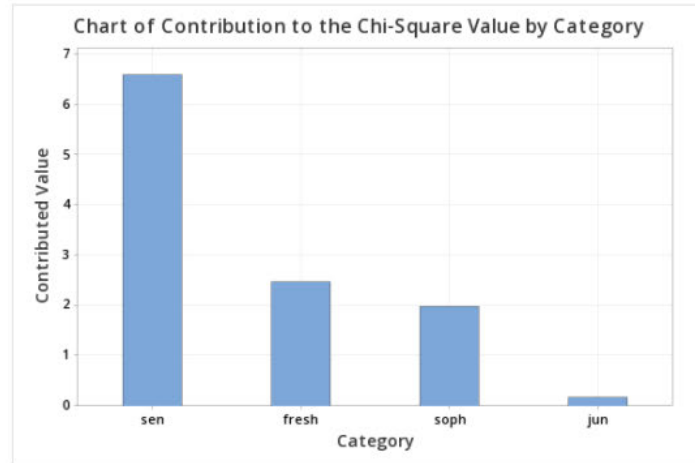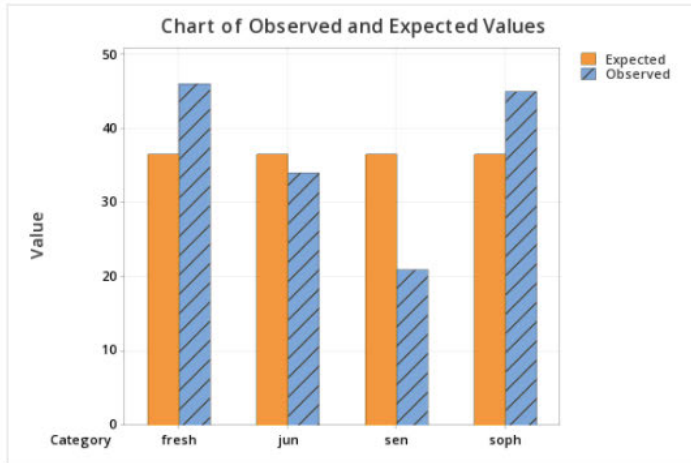
Observed and Expected Counts

Category	Observed	Test Proportion	Expected	Contribution to Chi-Square
fresh	46	0.25	36.5	2.47260
jun	34	0.25	36.5	0.17123
sen	21	0.25	36.5	6.58219
soph	45	0.25	36.5	1.97945

Chi-Square Test

N	N*	DF	Chi-Sq	P-Value
146	0	3	11.2055	0.011

Chi-Square Goodness-of-Fit Test for Categorical Variable: Years

Analysis:

This Chi Square test reveals that the number of responses is not equal for each group. The data shows that the highest participation in the survey was with the Freshman class and the lowest was in the senior class. As stated in the frequency diagram analysis, I believe that this high student engagement for freshman is due to several factors. For starters, many professors require that students take the survey or offer extra credit. Also, many freshmen are paying more attention to the environment of the campus and are more likely to express their initial impressions.