

The SAS System

Obs	X1	X19	X20	X21
1	2	8.2	8.0	8.4
2	3	5.7	6.5	7.5
3	3	8.9	8.4	9.0
4	1	4.8	6.0	7.2
5	2	7.1	6.6	9.0
6	1	4.7	6.3	6.1
7	1	5.7	7.8	7.2
8	2	6.3	5.8	7.7
9	2	7.0	7.5	8.2
10	1	5.5	5.9	6.7
11	3	7.4	7.0	8.4
12	1	6.0	6.3	6.6
13	1	8.4	8.4	7.9
14	3	7.6	6.9	8.2
15	2	8.0	7.0	7.6
16	3	6.6	6.4	7.1
17	2	6.4	7.5	7.2
18	2	7.4	6.9	8.2
19	2	6.8	7.5	7.9
20	3	7.6	8.5	8.8
21	1	5.4	5.5	7.0
22	3	9.9	9.6	9.9
23	2	7.0	7.1	8.1
24	3	8.6	8.1	8.0
25	1	4.8	4.9	5.5
26	2	6.6	6.8	7.0
27	3	6.3	7.1	7.0
28	1	5.4	5.5	5.6
29	3	6.3	6.9	7.2
30	1	5.4	5.5	6.2
31	1	6.1	6.8	7.1
32	1	6.4	5.8	6.2
33	1	5.4	6.5	7.6
34	2	7.3	7.5	9.0
35	1	6.3	6.6	6.7
36	1	5.4	4.6	7.1
37	2	7.1	8.0	7.2
38	3	8.7	9.9	9.9
39	2	7.6	6.9	7.6
40	1	6.0	5.5	5.8
41	2	7.0	7.5	8.4

42	2	7.6	8.0	7.9
43	3	8.9	7.8	7.6
44	2	7.6	7.9	8.4
45	3	5.5	5.6	6.5
46	2	7.4	8.6	7.7
47	3	7.1	8.8	8.0
48	2	7.6	7.6	7.1
49	3	8.7	8.1	8.5
50	3	8.6	7.8	7.6
51	1	5.4	7.5	7.2
52	3	5.7	7.1	8.2
53	3	8.7	9.0	9.0
54	1	6.1	7.0	7.2
55	2	7.3	8.1	8.1
56	3	7.7	7.6	8.9
57	2	9.0	7.9	8.8
58	3	8.2	7.5	7.5
59	3	7.1	6.5	7.0
60	3	7.9	8.5	8.5
61	3	6.6	6.9	7.2
62	2	8.0	7.6	8.8
63	1	6.3	5.5	8.0
64	1	6.0	6.0	8.1
65	1	5.4	6.9	7.1
66	2	7.6	6.9	9.0
67	2	6.4	5.6	6.2
68	2	6.1	6.3	8.2
69	1	5.2	5.8	5.8
70	2	6.6	6.6	8.0
71	3	7.6	7.5	7.7
72	1	5.8	6.0	7.0
73	2	7.9	6.6	7.9
74	3	8.6	8.8	9.8
75	2	8.2	7.0	8.4
76	3	7.1	6.6	8.9
77	1	6.4	6.9	7.5
78	2	7.6	7.3	8.0
79	3	8.9	7.3	8.1
80	1	5.7	5.8	7.6
81	3	7.1	7.9	8.8
82	3	7.4	7.3	8.0
83	2	6.6	6.1	8.5
84	1	5.0	5.1	6.5
85	2	8.2	7.5	7.7

86	1	5.2	6.0	7.2
87	1	5.2	5.5	6.0
88	2	8.2	7.6	8.2
89	2	7.3	6.5	7.4
90	2	8.2	7.6	9.3
91	3	7.4	7.9	7.9
92	1	4.8	5.0	6.5
93	3	7.6	7.5	8.6
94	3	8.9	7.6	8.9
95	3	7.7	7.3	8.4
96	1	7.3	8.1	8.1
97	1	6.3	5.5	7.2
98	1	5.4	7.0	7.7
99	2	6.4	7.1	7.4
100	2	6.4	7.3	7.0
101	1	5.4	5.5	6.1
102	3	8.7	9.1	7.1
103	2	6.1	7.0	7.6
104	1	8.4	9.4	9.0
105	2	7.9	8.4	8.9
106	2	7.0	7.0	7.5
107	3	8.7	7.6	9.3
108	2	7.9	7.9	8.0
109	2	7.1	7.3	7.6
110	1	5.8	5.3	7.1
111	3	8.4	7.1	8.1
112	3	7.1	6.3	7.9
113	2	7.6	8.3	7.2
114	3	7.3	7.0	7.7
115	2	8.0	8.8	7.9
116	2	6.1	6.9	6.9
117	3	8.7	8.0	9.5
118	1	5.8	6.4	7.5
119	1	6.4	8.5	8.0
120	1	6.4	5.9	7.1
121	2	9.0	7.5	8.8
122	2	6.4	6.5	8.0
123	1	6.0	6.4	7.7
124	3	8.7	7.9	8.2
125	1	5.0	6.1	6.5
126	2	7.4	8.0	8.1
127	3	8.6	6.5	8.1
128	1	5.8	6.0	6.9
129	3	9.8	8.1	9.3

130	1	4.8	5.0	6.2
131	2	7.0	6.9	8.0
132	3	5.5	5.6	7.1
133	1	5.0	5.1	6.5
134	1	6.0	6.9	7.1
135	2	8.0	7.5	8.2
136	3	7.9	7.1	7.0
137	1	4.8	5.8	6.7
138	2	6.4	6.6	7.5
139	1	4.8	6.1	7.4
140	1	6.4	6.8	7.4
141	2	6.8	6.5	7.9
142	3	7.9	8.3	8.0
143	3	8.9	9.4	8.0
144	3	7.4	6.6	8.4
145	3	7.0	7.6	8.8
146	3	7.0	7.8	7.9
147	1	6.0	6.0	6.0
148	3	7.4	6.0	8.2
149	2	7.6	9.1	8.4
150	1	4.8	5.0	7.4
151	3	7.3	5.8	8.0
152	2	6.3	5.9	6.6
153	1	5.0	5.3	7.6
154	3	7.1	6.8	7.5
155	1	6.3	6.1	7.1
156	3	6.8	5.9	7.9
157	1	5.2	5.3	7.6
158	1	6.3	5.6	7.1
159	2	6.1	6.1	7.6
160	2	7.3	7.4	8.2
161	1	5.4	5.3	6.9
162	2	8.0	7.0	8.1
163	2	7.4	7.0	7.6
164	2	7.3	7.1	8.4
165	2	7.3	6.8	7.4
166	1	6.4	5.9	7.9
167	1	5.7	6.1	7.2
168	1	5.7	6.6	7.6
169	2	6.6	6.5	6.7
170	1	6.3	7.1	7.4
171	1	5.4	7.0	6.2
172	3	7.4	7.0	7.5
173	3	8.6	7.3	7.4

174	1	7.3	6.4	7.9
175	1	6.3	5.8	6.5
176	3	8.7	8.5	8.6
177	3	8.6	8.0	8.6
178	3	8.4	7.8	8.0
179	3	7.4	6.0	8.1
180	3	9.9	8.1	8.2
181	2	8.0	7.1	7.2
182	3	7.9	8.1	8.4
183	3	9.8	9.0	9.4
184	3	8.9	8.0	9.4
185	3	6.8	6.3	7.5
186	3	7.4	6.9	6.6
187	1	4.7	4.0	4.3
188	1	5.4	7.4	6.6
189	2	7.0	6.6	7.4
190	2	7.1	6.5	7.1
191	1	6.3	7.9	6.7
192	1	5.5	5.6	6.7
193	1	5.4	4.5	7.2
194	1	5.4	6.5	7.1
195	1	4.8	5.5	6.0
196	3	8.2	6.9	8.4
197	2	7.9	7.8	8.6
198	3	8.6	8.8	7.9
199	2	8.2	7.1	7.6
200	3	8.6	8.1	8.5

The SAS System

The MEANS Procedure

Variable	Label	N	Mean	Std Dev	Minimum	Maximum
X19	X19 - Satisfaction	200	6.9520000	1.2411277	4.7000000	9.9000000
X20	X20 - Likely to Recommend	200	6.9525000	1.0828929	4.0000000	9.9000000
X21	X21 - Likely to Purchase	200	7.6650000	0.8932325	4.3000000	9.9000000

The SAS System

The MEANS Procedure

X1 - Customer Type=1

Variable	Label	N	Mean	Std Dev	Minimum	Maximum
X19	X19 - Satisfaction	68	5.7294118	0.7643276	4.7000000	8.4000000
X20	X20 - Likely to Recommend	68	6.1411765	0.9949477	4.0000000	9.4000000
X21	X21 - Likely to Purchase	68	6.9617647	0.7598172	4.3000000	9.0000000

X1 - Customer Type=2

Variable	Label	N	Mean	Std Dev	Minimum	Maximum
X19	X19 - Satisfaction	64	7.2937500	0.7077519	6.1000000	9.0000000
X20	X20 - Likely to Recommend	64	7.2093750	0.7144137	5.6000000	9.1000000
X21	X21 - Likely to Purchase	64	7.8828125	0.6430470	6.2000000	9.3000000

X1 - Customer Type=3

Variable	Label	N	Mean	Std Dev	Minimum	Maximum
X19	X19 - Satisfaction	68	7.8529412	1.0332488	5.5000000	9.9000000
X20	X20 - Likely to Recommend	68	7.5220588	0.9761095	5.6000000	9.9000000
X21	X21 - Likely to Purchase	68	8.1632353	0.7774632	6.5000000	9.9000000

The SAS System

The UNIVARIATE Procedure  
Variable: X19 (X19 - Satisfaction)

Moments			
N	200	Sum Weights	200
Mean	6.952	Sum Observations	1390.4
Std Deviation	1.24112771	Variance	1.54039799
Skewness	0.08959986	Kurtosis	-0.7692524
Uncorrected SS	9972.6	Corrected SS	306.5392
Coeff Variation	17.8528151	Std Error Mean	0.08776098

Basic Statistical Measures			
Location		Variability	
Mean	6.952000	Std Deviation	1.24113
Median	7.050000	Variance	1.54040
Mode	5.400000	Range	5.20000
		Interquartile Range	1.90000

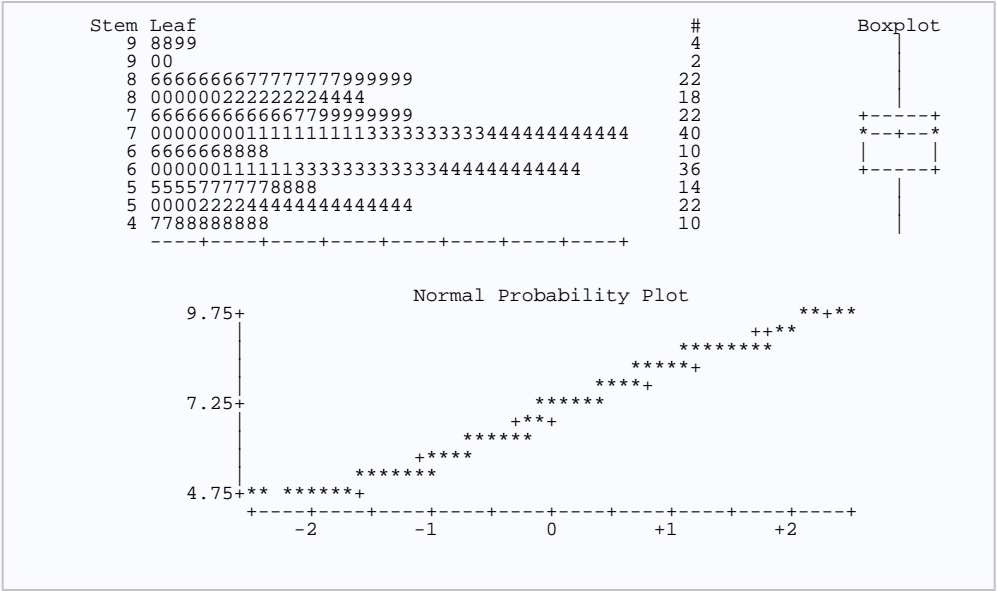
Tests for Location: Mu0=0				
Test	Statistic		p Value	
Student's t	t	79.21516	Pr >  t	<.0001
Sign	M	100	Pr >=  M	<.0001
Signed Rank	S	10050	Pr >=  S	<.0001

Tests for Normality				
Test	Statistic		p Value	
Shapiro-Wilk	W	0.975647	Pr < W	0.0015
Kolmogorov-Smirnov	D	0.081752	Pr > D	<0.0100
Cramer-von Mises	W-Sq	0.175319	Pr > W-Sq	0.0111
Anderson-Darling	A-Sq	1.208312	Pr > A-Sq	<0.0050

Quantiles (Definition 5)	
Quantile	Estimate
100% Max	9.90
99%	9.85

<b>95%</b>	8.90
<b>90%</b>	8.65
<b>75% Q3</b>	7.90
<b>50% Median</b>	7.05
<b>25% Q1</b>	6.00
<b>10%</b>	5.40
<b>5%</b>	4.90
<b>1%</b>	4.75
<b>0% Min</b>	4.70

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
4.7	62	9.0	112
4.7	2	9.8	174
4.8	68	9.8	194
4.8	49	9.9	139
4.8	46	9.9	192



# The SAS System

### The UNIVARIATE Procedure

Variable: X20 (X20 - Likely to Recommend)

Moments			
N	200	Sum Weights	200
Mean	6.9525	Sum Observations	1390.5
Std Deviation	1.0828929	Variance	1.17265704
Skewness	0.07027089	Kurtosis	-0.2255278
Uncorrected SS	9900.81	Corrected SS	233.35875
Coeff Variation	15.5755901	Std Error Mean	0.07657209

Basic Statistical Measures			
Location		Variability	
Mean	6.952500	Std Deviation	1.08289
Median	7.000000	Variance	1.17266
Mode	6.900000	Range	5.90000
		Interquartile Range	1.60000

Tests for Location: Mu0=0				
Test		Statistic		p Value
Student's t	t	90.79679	Pr >  t	<.0001
Sign	M	100	Pr >=  M	<.0001
Signed Rank	S	10050	Pr >=  S	<.0001

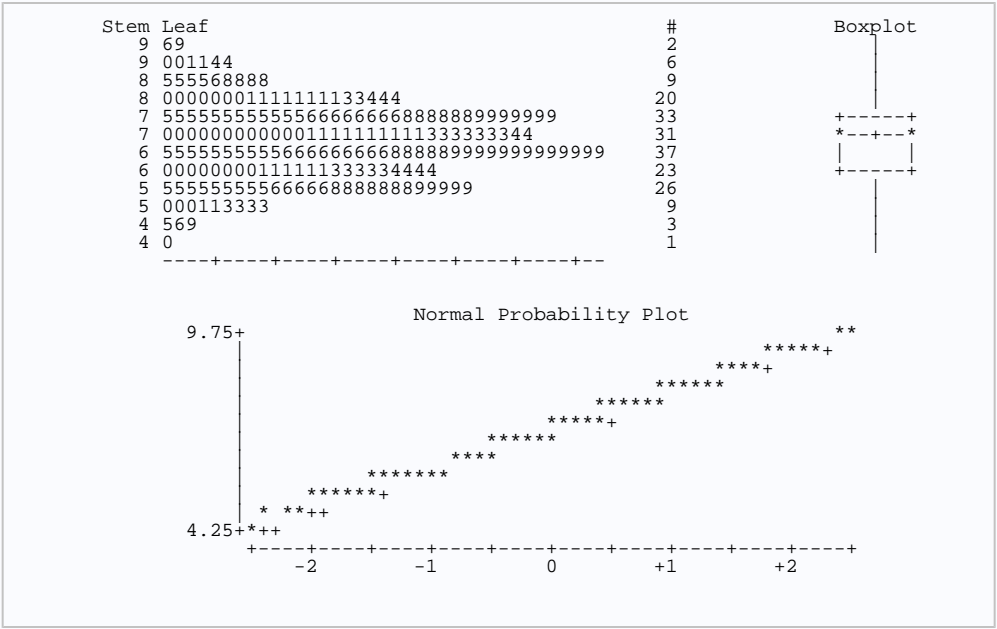
Tests for Normality				
Test		Statistic		p Value
Shapiro-Wilk	W	0.99473	Pr < W	0.7100
Kolmogorov-Smirnov	D	0.050828	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.068293	Pr > W-Sq	>0.2500
Anderson-Darling	A-Sq	0.402035	Pr > A-Sq	>0.2500

Quantiles (Definition 5)	
Quantile	Estimate
100% Max	9.90
99%	9.50
95%	8.80
90%	8.35
75% Q3	7.70
50% Median	7.00
25% Q1	6.10
10%	5.50
5%	5.30
1%	4.55
0% Min	4.00

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
4.0	62	9.1	166
4.5	66	9.4	34
4.6	15	9.4	178
4.9	8	9.6	139
5.0	49	9.9	143



The UNIVARIATE Procedure  
Variable: X20 (X20 - Likely to Recommend)



The SAS System

The UNIVARIATE Procedure  
Variable: X21 (X21 - Likely to Purchase)

Moments			
N	200	Sum Weights	200
Mean	7.665	Sum Observations	1533
Std Deviation	0.89323251	Variance	0.79786432
Skewness	-0.2063466	Kurtosis	0.58403771
Uncorrected SS	11909.22	Corrected SS	158.775
Coeff Variation	11.6533922	Std Error Mean	0.06316108

Basic Statistical Measures			
Location		Variability	
Mean	7.665000	Std Deviation	0.89323
Median	7.600000	Variance	0.79786
Mode	7.100000	Range	5.60000
		Interquartile Range	1.10000

Note: The mode displayed is the smallest of 4 modes with a count of 14.

Tests for Location: Mu0=0				
Test		Statistic		p Value
Student's t	t	121.3564	Pr >  t	<.0001
Sign	M	100	Pr >=  M	<.0001
Signed Rank	S	10050	Pr >=  S	<.0001

Tests for Normality		
Test	Statistic	p Value

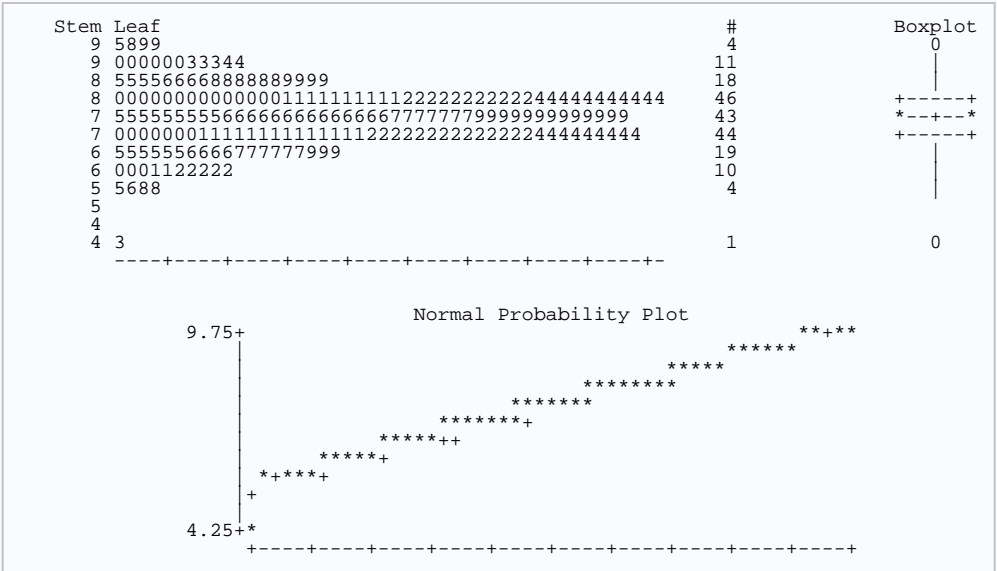
Shapiro-Wilk	W	0.989873	Pr < W	0.1712
Kolmogorov-Smirnov	D	0.063759	Pr > D	0.0459
Cramer-von Mises	W-Sq	0.099504	Pr > W-Sq	0.1163
Anderson-Darling	A-Sq	0.563396	Pr > A-Sq	0.1468

Quantiles (Definition 5)	
Quantile	Estimate
100% Max	9.90
99%	9.85
95%	9.00
90%	8.80
75% Q3	8.20
50% Median	7.60
25% Q1	7.10
10%	6.50
5%	6.15
1%	5.55
0% Min	4.30

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
4.3	62	9.4	195
5.5	8	9.5	171
5.6	9	9.8	157
5.8	22	9.9	139
5.8	16	9.9	143

The SAS System

The UNIVARIATE Procedure  
Variable: X21 (X21 - Likely to Purchase)



-2	-1	0	+1	+2
----	----	---	----	----

The SAS System

The UNIVARIATE Procedure  
Variable: X19 (X19 - Satisfaction)

X1 - Customer Type=1

Moments			
N	68	Sum Weights	68
Mean	5.72941176	Sum Observations	389.6
Std Deviation	0.76432759	Variance	0.58419666
Skewness	1.31159992	Kurtosis	2.88106678
Uncorrected SS	2271.32	Corrected SS	39.1411765
Coeff Variation	13.3404199	Std Error Mean	0.09268833

Basic Statistical Measures			
Location		Variability	
Mean	5.729412	Std Deviation	0.76433
Median	5.600000	Variance	0.58420
Mode	5.400000	Range	3.70000
		Interquartile Range	1.10000

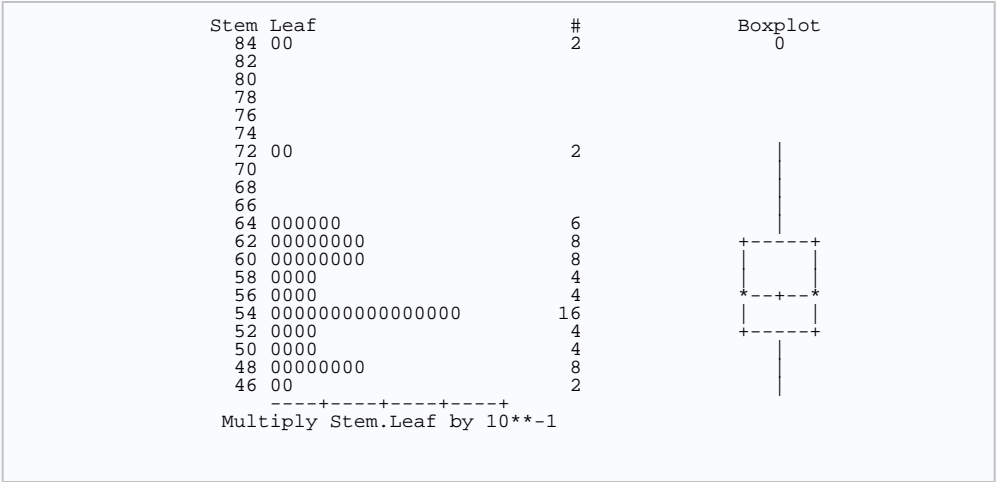
Tests for Location: Mu0=0				
Test		Statistic		p Value
Student's t	t	61.81373	Pr >  t	<.0001
Sign	M	34	Pr >=  M	<.0001
Signed Rank	S	1173	Pr >=  S	<.0001

Tests for Normality				
Test		Statistic		p Value
Shapiro-Wilk	W	0.885645	Pr < W	<0.0001
Kolmogorov-Smirnov	D	0.137348	Pr > D	<0.0100
Cramer-von Mises	W-Sq	0.210263	Pr > W-Sq	<0.0050
Anderson-Darling	A-Sq	1.614139	Pr > A-Sq	<0.0050

Quantiles (Definition 5)	
Quantile	Estimate
100% Max	8.4
99%	8.4
95%	7.3
90%	6.4
75% Q3	6.3
50% Median	5.6
25% Q1	5.2
10%	4.8

5%	4.8
1%	4.7
0% Min	4.7

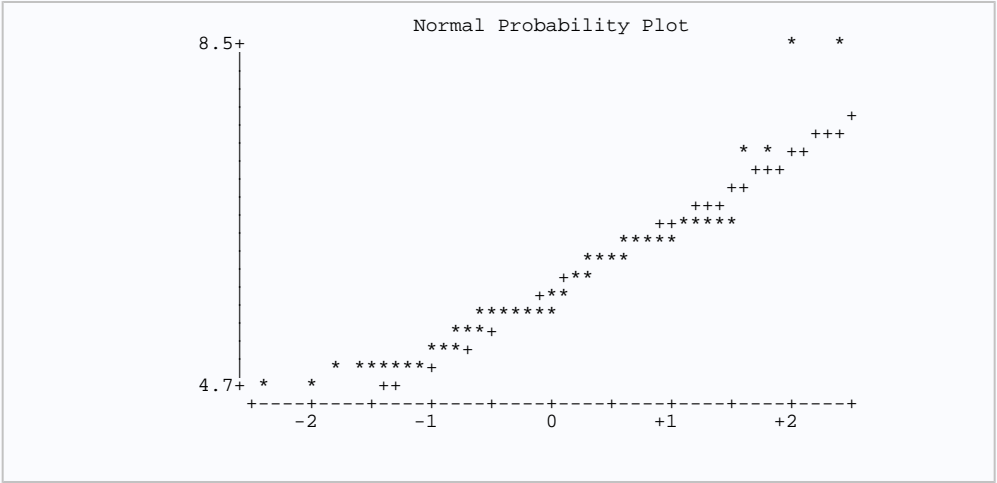
Extreme Observations					
Lowest			Highest		
Value	X1	Obs	Value	X1	Obs
4.7	1	62	6.4	1	55
4.7	1	2	7.3	1	30
4.8	1	68	7.3	1	60
4.8	1	49	8.4	1	6
4.8	1	46	8.4	1	34



# The SAS System

### The UNIVARIATE Procedure

### X1 - Customer Type=1



# The SAS System

### The UNIVARIATE Procedure

Variable: X20 (X20 - Likely to Recommend)

X1 - Customer Type=1

Moments			
N	68	Sum Weights	68
Mean	6.14117647	Sum Observations	417.6
Std Deviation	0.99494773	Variance	0.98992098
Skewness	0.84998076	Kurtosis	1.17605489
Uncorrected SS	2630.88	Corrected SS	66.3247059
Coeff Variation	16.2012561	Std Error Mean	0.12065513

Basic Statistical Measures			
Location		Variability	
Mean	6.141176	Std Deviation	0.99495
Median	6.000000	Variance	0.98992
Mode	5.500000	Range	5.40000
		Interquartile Range	1.20000

Tests for Location: Mu0=0				
Test	Statistic		p Value	
Student's t	t	50.89859	Pr >  t	<.0001
Sign	M	34	Pr >=  M	<.0001
Signed Rank	S	1173	Pr >=  S	<.0001

Tests for Normality				
Test	Statistic		p Value	
Shapiro-Wilk	W	0.953896	Pr < W	0.0134
Kolmogorov-Smirnov	D	0.134153	Pr > D	<0.0100
Cramer-von Mises	W-Sq	0.180382	Pr > W-Sq	0.0092
Anderson-Darling	A-Sq	1.044713	Pr > A-Sq	0.0091

Quantiles (Definition 5)	
Quantile	Estimate
100% Max	9.4
99%	9.4
95%	8.1
90%	7.5
75% Q3	6.7
50% Median	6.0
25% Q1	5.5
10%	5.0
5%	4.9
1%	4.0
0% Min	4.0

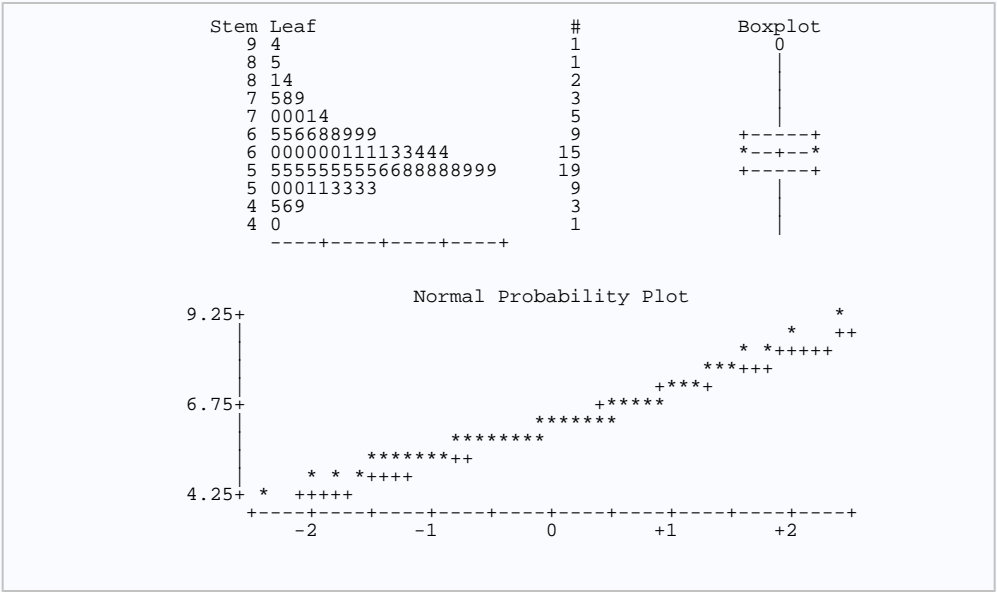
Extreme Observations					
Lowest			Highest		
Value	X1	Obs	Value	X1	Obs

4.0	1	62	7.9	1	64
4.5	1	66	8.1	1	30
4.6	1	15	8.4	1	6
4.9	1	8	8.5	1	37
5.0	1	49	9.4	1	34

The SAS System

The UNIVARIATE Procedure  
Variable: X20 (X20 - Likely to Recommend)

X1 - Customer Type=1



The SAS System

The UNIVARIATE Procedure  
Variable: X21 (X21 - Likely to Purchase)

X1 - Customer Type=1

Moments			
N	68	Sum Weights	68
Mean	6.96176471	Sum Observations	473.4
Std Deviation	0.75981722	Variance	0.57732221
Skewness	-0.5265174	Kurtosis	1.47344815
Uncorrected SS	3334.38	Corrected SS	38.6805882
Coeff Variation	10.9141468	Std Error Mean	0.09214137

Basic Statistical Measures			
Location		Variability	
Mean	6.961765	Std Deviation	0.75982
Median	7.100000	Variance	0.57732
Mode	7.100000	Range	4.70000
		Interquartile Range	0.95000

Tests for Location: Mu0=0				
Test	Statistic		p Value	
Student's t	t	75.55525	Pr >  t	<.0001
Sign	M	34	Pr >=  M	<.0001
Signed Rank	S	1173	Pr >=  S	<.0001

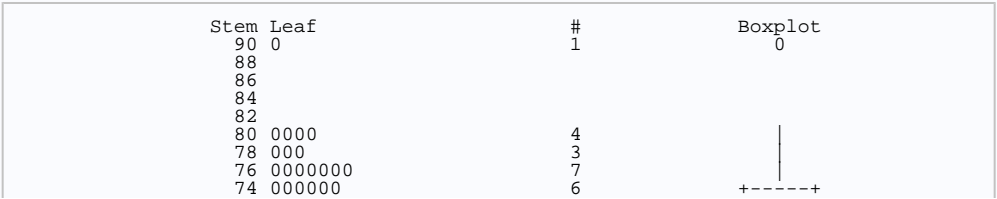
Tests for Normality				
Test	Statistic		p Value	
Shapiro-Wilk	W	0.968421	Pr < W	0.0820
Kolmogorov-Smirnov	D	0.131006	Pr > D	<0.0100
Cramer-von Mises	W-Sq	0.117085	Pr > W-Sq	0.0683
Anderson-Darling	A-Sq	0.641295	Pr > A-Sq	0.0927

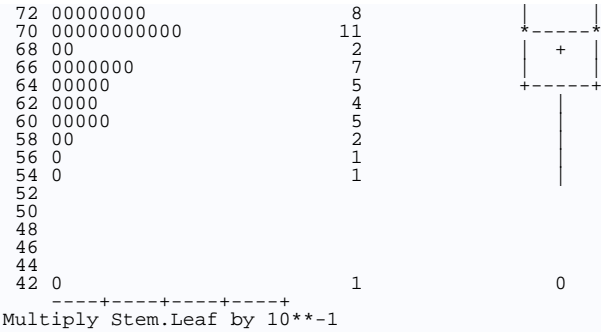
Quantiles (Definition 5)	
Quantile	Estimate
100% Max	9.00
99%	9.00
95%	8.00
90%	7.90
75% Q3	7.45
50% Median	7.10
25% Q1	6.50
10%	6.00
5%	5.80
1%	4.30
0% Min	4.30

Extreme Observations					
Lowest			Highest		
Value	X1	Obs	Value	X1	Obs
4.3	1	62	8.0	1	19
5.5	1	8	8.0	1	37
5.6	1	9	8.1	1	20
5.8	1	22	8.1	1	30
5.8	1	16	9.0	1	34

The SAS System

The UNIVARIATE Procedure  
Variable: X21 (X21 - Likely to Purchase)  
X1 - Customer Type=1

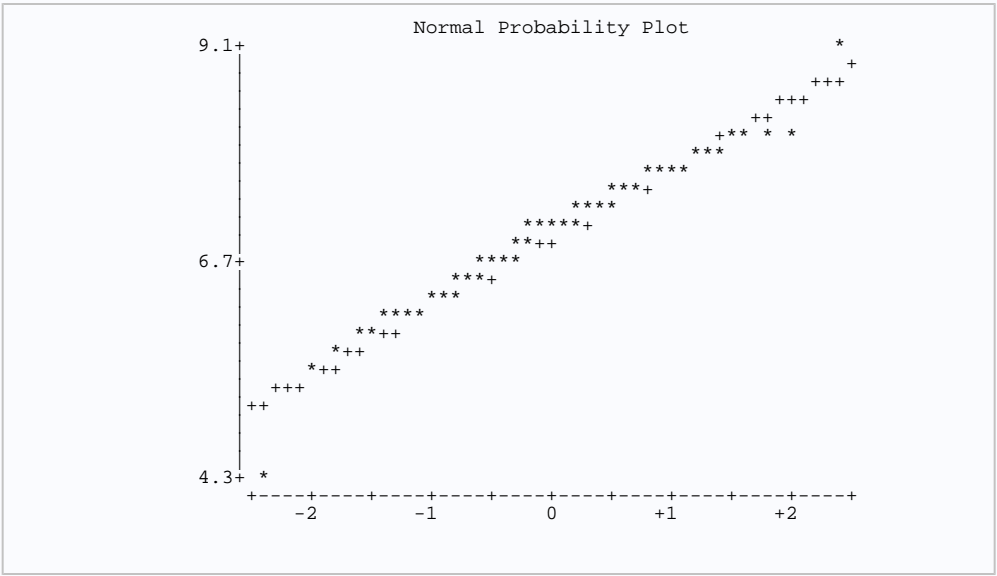




The SAS System

The UNIVARIATE Procedure  
Variable: X21 (X21 - Likely to Purchase)

X1 - Customer Type=1



The SAS System

The UNIVARIATE Procedure  
Variable: X19 (X19 - Satisfaction)

X1 - Customer Type=2

Moments			
N	64	Sum Weights	64
Mean	7.29375	Sum Observations	466.8
Std Deviation	0.70775186	Variance	0.5009127
Skewness	0.13087443	Kurtosis	-0.4972115
Uncorrected SS	3436.28	Corrected SS	31.5575
Coeff Variation	9.70353881	Std Error Mean	0.08846898

Basic Statistical Measures			
Location		Variability	
Mean	7.293750	Std Deviation	0.70775



Median	7.300000	Variance	0.50091
Mode	7.600000	Range	2.90000
		Interquartile Range	1.20000

Tests for Location: Mu0=0				
Test	Statistic		p Value	
Student's t	t	82.44415	Pr >  t	<.0001
Sign	M	32	Pr >=  M	<.0001
Signed Rank	S	1040	Pr >=  S	<.0001

Tests for Normality				
Test	Statistic		p Value	
Shapiro-Wilk	W	0.963593	Pr < W	0.0560
Kolmogorov-Smirnov	D	0.08651	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.082337	Pr > W-Sq	0.1972
Anderson-Darling	A-Sq	0.640467	Pr > A-Sq	0.0928

Quantiles (Definition 5)	
Quantile	Estimate
100% Max	9.0
99%	9.0
95%	8.2
90%	8.2
75% Q3	7.9
50% Median	7.3
25% Q1	6.7
10%	6.4
5%	6.1
1%	6.1
0% Min	6.1

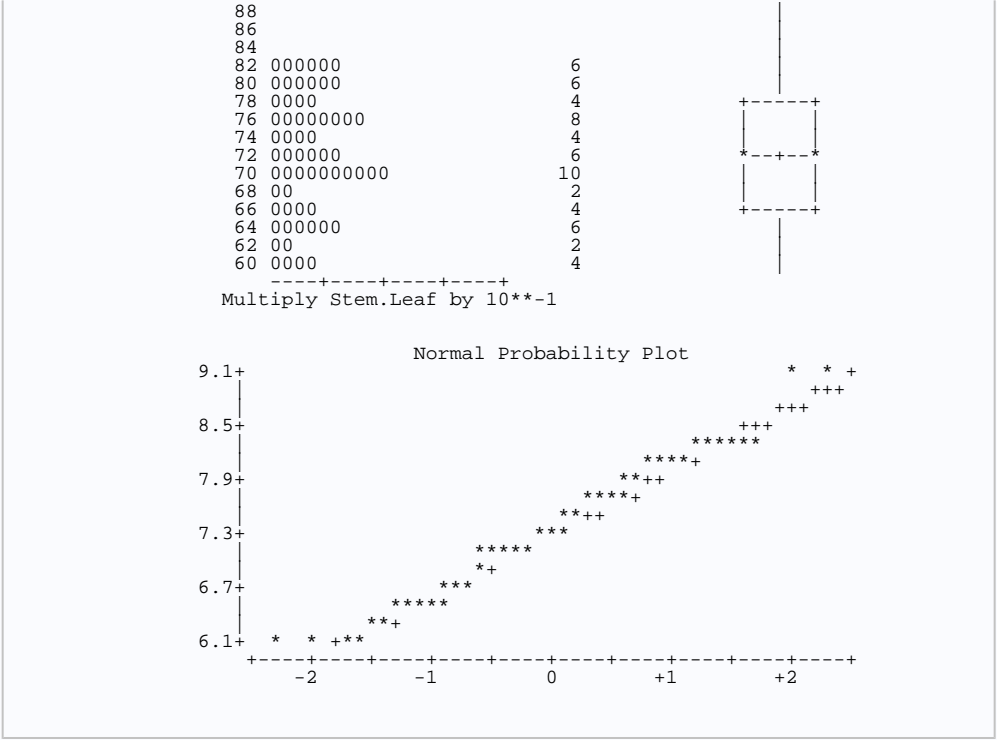
Extreme Observations					
Lowest			Highest		
Value	X1	Obs	Value	X1	Obs
6.1	2	121	8.2	2	99
6.1	2	111	8.2	2	101
6.1	2	104	8.2	2	132
6.1	2	92	9.0	2	88
6.3	2	120	9.0	2	112

The SAS System

The UNIVARIATE Procedure  
Variable: X19 (X19 - Satisfaction)

X1 - Customer Type=2





The SAS System

The UNIVARIATE Procedure  
Variable: X20 (X20 - Likely to Recommend)

X1 - Customer Type=2

Moments			
N	64	Sum Weights	64
Mean	7.209375	Sum Observations	461.4
Std Deviation	0.71441368	Variance	0.5103869
Skewness	0.21657581	Kurtosis	0.1269221
Uncorrected SS	3358.56	Corrected SS	32.154375
Coeff Variation	9.9095092	Std Error Mean	0.08930171

Basic Statistical Measures			
Location		Variability	
Mean	7.209375	Std Deviation	0.71441
Median	7.100000	Variance	0.51039
Mode	7.500000	Range	3.50000
		Interquartile Range	0.90000

Tests for Location: Mu0=0				
Test		Statistic	p Value	
Student's t	t	80.73054	Pr >  t	<.0001
Sign	M	32	Pr >=  M	<.0001
Signed Rank	S	1040	Pr >=  S	<.0001

Tests for Normality		
Test	Statistic	p Value

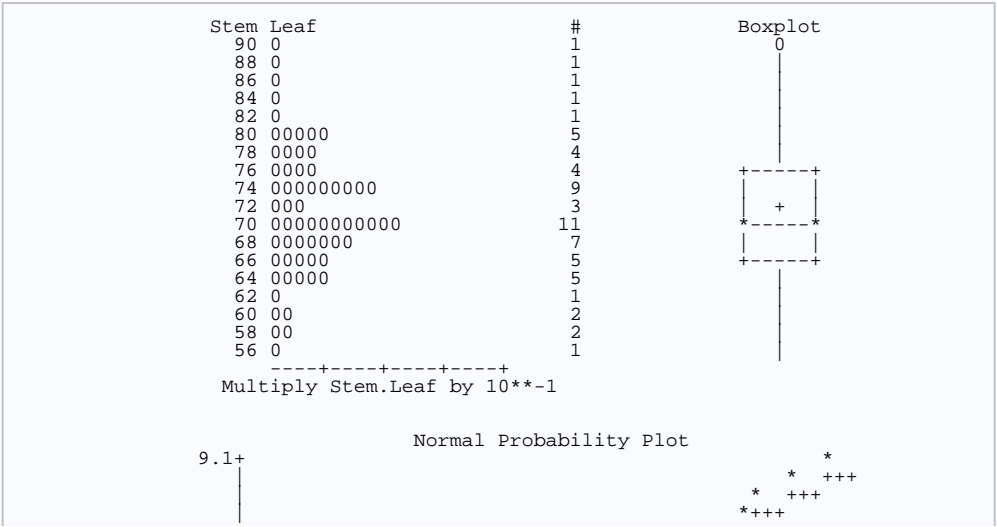
<b>Shapiro-Wilk</b>	<b>W</b>	0.987265	<b>Pr &lt; W</b>	0.7529
<b>Kolmogorov-Smirnov</b>	<b>D</b>	0.092089	<b>Pr &gt; D</b>	>0.1500
<b>Cramer-von Mises</b>	<b>W-Sq</b>	0.061835	<b>Pr &gt; W-Sq</b>	>0.2500
<b>Anderson-Darling</b>	<b>A-Sq</b>	0.345545	<b>Pr &gt; A-Sq</b>	>0.2500

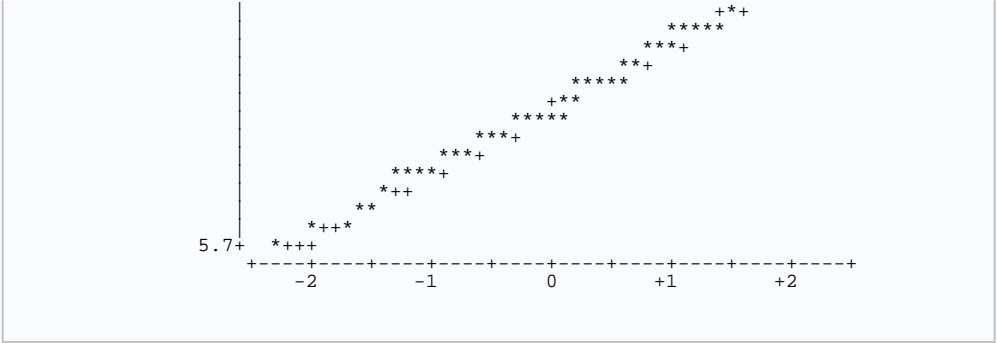
Quantiles (Definition 5)	
Quantile	Estimate
100% Max	9.1
99%	9.1
95%	8.4
90%	8.0
75% Q3	7.6
50% Median	7.1
25% Q1	6.7
10%	6.5
5%	6.1
1%	5.6
0% Min	5.6

Extreme Observations					
Lowest			Highest		
Value	X1	Obs	Value	X1	Obs
5.6	2	91	8.3	2	109
5.8	2	71	8.4	2	105
5.9	2	120	8.6	2	85
6.1	2	121	8.8	2	110
6.1	2	97	9.1	2	119

# The SAS System

The UNIVARIATE Procedure  
Variable: X20 (X20 - Likely to Recommend)  
X1 - Customer Type=2





The SAS System

The UNIVARIATE Procedure  
Variable: X21 (X21 - Likely to Purchase)

X1 - Customer Type=2

Moments			
N	64	Sum Weights	64
Mean	7.8828125	Sum Observations	504.5
Std Deviation	0.64304698	Variance	0.41350942
Skewness	-0.1082914	Kurtosis	-0.1288227
Uncorrected SS	4002.93	Corrected SS	26.0510937
Coeff Variation	8.15758316	Std Error Mean	0.08038087

Basic Statistical Measures			
Location		Variability	
Mean	7.882813	Std Deviation	0.64305
Median	7.900000	Variance	0.41351
Mode	7.600000	Range	3.10000
		Interquartile Range	0.85000

Tests for Location: Mu0=0				
Test	Statistic		p Value	
Student's t	t	98.06826	Pr >  t	<.0001
Sign	M	32	Pr >=  M	<.0001
Signed Rank	S	1040	Pr >=  S	<.0001

Tests for Normality				
Test	Statistic		p Value	
Shapiro-Wilk	W	0.989589	Pr < W	0.8685
Kolmogorov-Smirnov	D	0.073162	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.042132	Pr > W-Sq	>0.2500
Anderson-Darling	A-Sq	0.2538	Pr > A-Sq	>0.2500

Quantiles (Definition 5)	
Quantile	Estimate
100% Max	9.30
99%	9.30

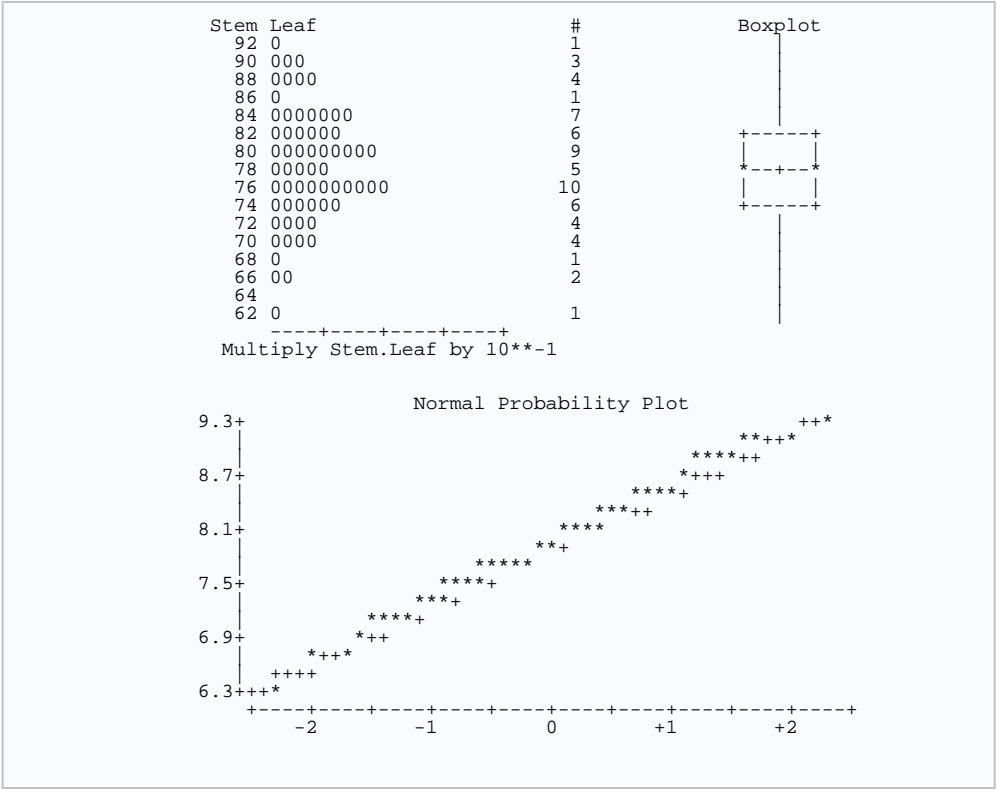
95%	9.00
90%	8.80
75% Q3	8.30
50% Median	7.90
25% Q1	7.45
10%	7.10
5%	6.90
1%	6.20
0% Min	6.20

Extreme Observations					
Lowest			Highest		
Value	X1	Obs	Value	X1	Obs
6.2	2	91	8.9	2	105
6.6	2	120	9.0	2	70
6.7	2	127	9.0	2	79
6.9	2	111	9.0	2	90
7.0	2	103	9.3	2	101

The SAS System

The UNIVARIATE Procedure  
Variable: X21 (X21 - Likely to Purchase)

X1 - Customer Type=2



The UNIVARIATE Procedure  
Variable: X19 (X19 - Satisfaction)

X1 - Customer Type=3

Moments			
N	68	Sum Weights	68
Mean	7.85294118	Sum Observations	534
Std Deviation	1.03324884	Variance	1.06760316
Skewness	-0.2413174	Kurtosis	-0.2072532
Uncorrected SS	4265	Corrected SS	71.5294118
Coeff Variation	13.1574758	Std Error Mean	0.12529983

Basic Statistical Measures			
Location		Variability	
Mean	7.852941	Std Deviation	1.03325
Median	7.800000	Variance	1.06760
Mode	7.400000	Range	4.40000
		Interquartile Range	1.60000

Note: The mode displayed is the smallest of 3 modes with a count of 8.

Tests for Location: Mu0=0				
Test	Statistic		p Value	
Student's t	t	62.6732	Pr >  t	<.0001
Sign	M	34	Pr >=  M	<.0001
Signed Rank	S	1173	Pr >=  S	<.0001

Tests for Normality				
Test	Statistic		p Value	
Shapiro-Wilk	W	0.960159	Pr < W	0.0289
Kolmogorov-Smirnov	D	0.147519	Pr > D	<0.0100
Cramer-von Mises	W-Sq	0.167681	Pr > W-Sq	0.0145
Anderson-Darling	A-Sq	1.011379	Pr > A-Sq	0.0111

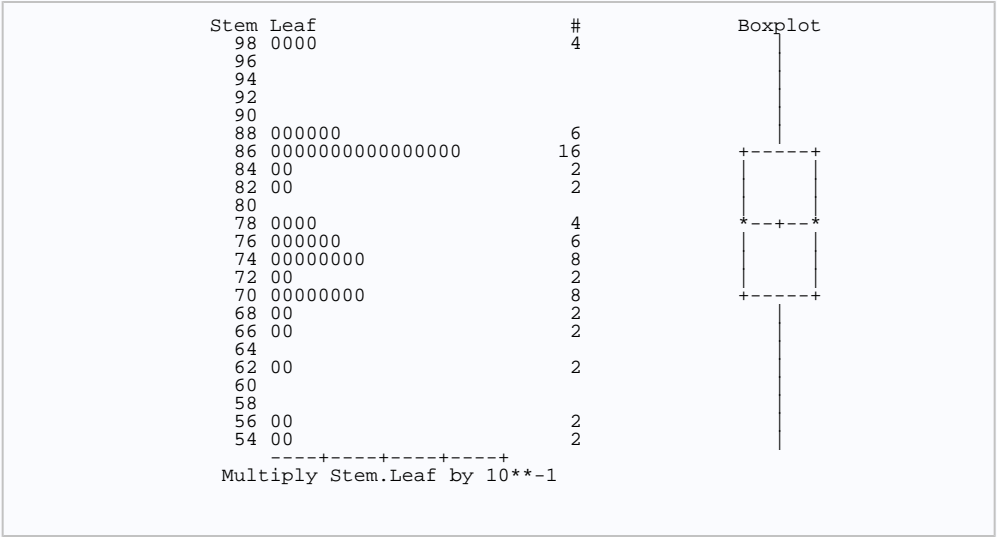
Quantiles (Definition 5)	
Quantile	Estimate
100% Max	9.9
99%	9.9
95%	9.8
90%	8.9
75% Q3	8.7
50% Median	7.8
25% Q1	7.1
10%	6.6
5%	5.7
1%	5.5
0% Min	5.5

Extreme Observations					
Lowest			Highest		
Value	X1	Obs	Value	X1	Obs
5.5	3	175	8.9	3	195
5.5	3	145	9.8	3	174
5.7	3	149	9.8	3	194
5.7	3	133	9.9	3	139
6.3	3	142	9.9	3	192

The SAS System

The UNIVARIATE Procedure  
Variable: X19 (X19 - Satisfaction)

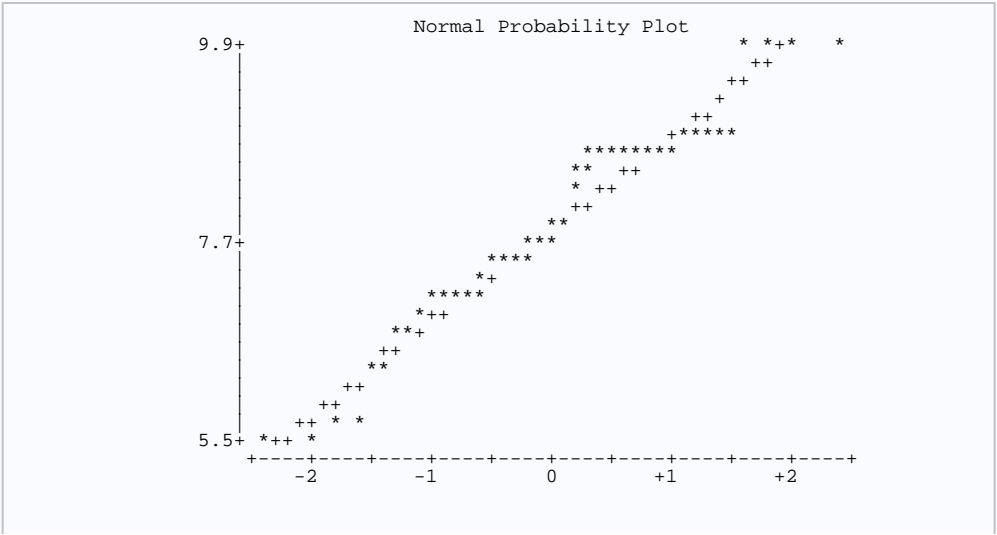
X1 - Customer Type=3



The SAS System

The UNIVARIATE Procedure  
Variable: X19 (X19 - Satisfaction)

X1 - Customer Type=3



The SAS System

The UNIVARIATE Procedure  
Variable: X20 (X20 - Likely to Recommend)

X1 - Customer Type=3

Moments			
N	68	Sum Weights	68
Mean	7.52205882	Sum Observations	511.5
Std Deviation	0.97610949	Variance	0.95278973
Skewness	0.14159878	Kurtosis	-0.310527
Uncorrected SS	3911.37	Corrected SS	63.8369118
Coeff Variation	12.9766266	Std Error Mean	0.11837066

Basic Statistical Measures			
Location		Variability	
Mean	7.522059	Std Deviation	0.97611
Median	7.550000	Variance	0.95279
Mode	8.100000	Range	4.30000
		Interquartile Range	1.20000

Tests for Location: Mu0=0				
Test	Statistic		p Value	
Student's t	t	63.54665	Pr >  t	<.0001
Sign	M	34	Pr >=  M	<.0001
Signed Rank	S	1173	Pr >=  S	<.0001

Tests for Normality				
Test	Statistic		p Value	
Shapiro-Wilk	W	0.988443	Pr < W	0.7853
Kolmogorov-Smirnov	D	0.071014	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.03279	Pr > W-Sq	>0.2500
Anderson-Darling	A-Sq	0.204766	Pr > A-Sq	>0.2500

Quantiles (Definition 5)	
Quantile	Estimate
100% Max	9.90
99%	9.90
95%	9.10
90%	8.80
75% Q3	8.10
50% Median	7.55
25% Q1	6.90
10%	6.30
5%	5.90
1%	5.60

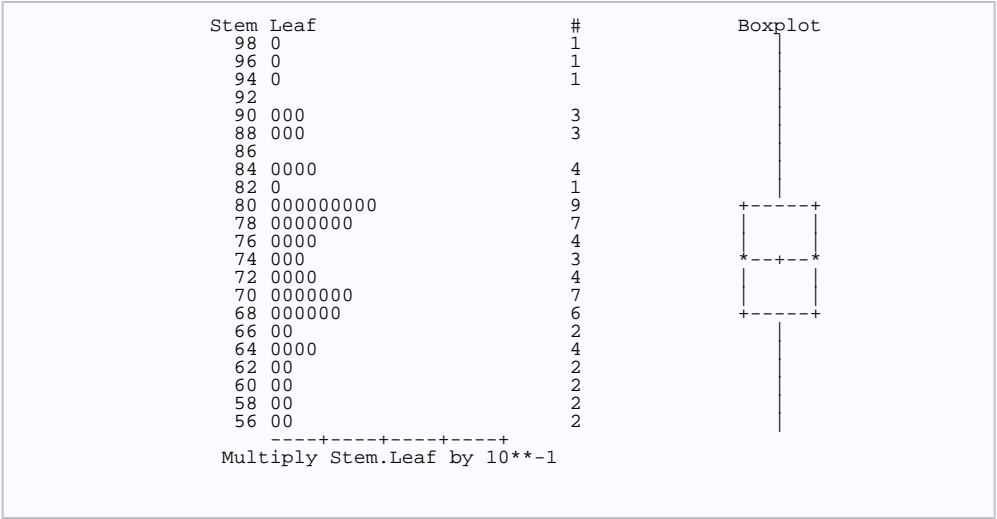


0% Min	5.60
--------	------

Extreme Observations					
Lowest			Highest		
Value	X1	Obs	Value	X1	Obs
5.6	3	175	9.0	3	194
5.6	3	145	9.1	3	166
5.8	3	183	9.4	3	178
5.9	3	185	9.6	3	139
6.0	3	191	9.9	3	143

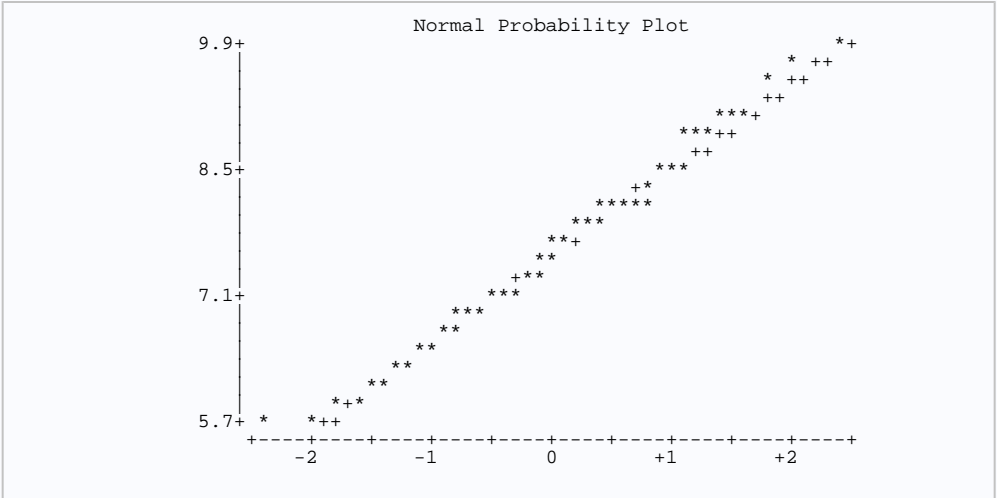
The SAS System

The UNIVARIATE Procedure  
Variable: X20 (X20 - Likely to Recommend)  
X1 - Customer Type=3



The SAS System

The UNIVARIATE Procedure  
Variable: X20 (X20 - Likely to Recommend)  
X1 - Customer Type=3



The SAS System

The UNIVARIATE Procedure  
Variable: X21 (X21 - Likely to Purchase)

X1 - Customer Type=3

Moments			
N	68	Sum Weights	68
Mean	8.16323529	Sum Observations	555.1
Std Deviation	0.77746323	Variance	0.60444908
Skewness	0.21044301	Kurtosis	-0.2167278
Uncorrected SS	4571.91	Corrected SS	40.4980882
Coeff Variation	9.52395961	Std Error Mean	0.09428127

Basic Statistical Measures			
Location		Variability	
Mean	8.163235	Std Deviation	0.77746
Median	8.100000	Variance	0.60445
Mode	8.000000	Range	3.40000
		Interquartile Range	1.00000

Tests for Location: Mu0=0				
Test	Statistic		p Value	
Student's t	t	86.58385	Pr >  t	<.0001
Sign	M	34	Pr >=  M	<.0001
Signed Rank	S	1173	Pr >=  S	<.0001

Tests for Normality				
Test	Statistic		p Value	
Shapiro-Wilk	W	0.983129	Pr < W	0.4877
Kolmogorov-Smirnov	D	0.084083	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.056302	Pr > W-Sq	>0.2500
Anderson-Darling	A-Sq	0.346096	Pr > A-Sq	>0.2500

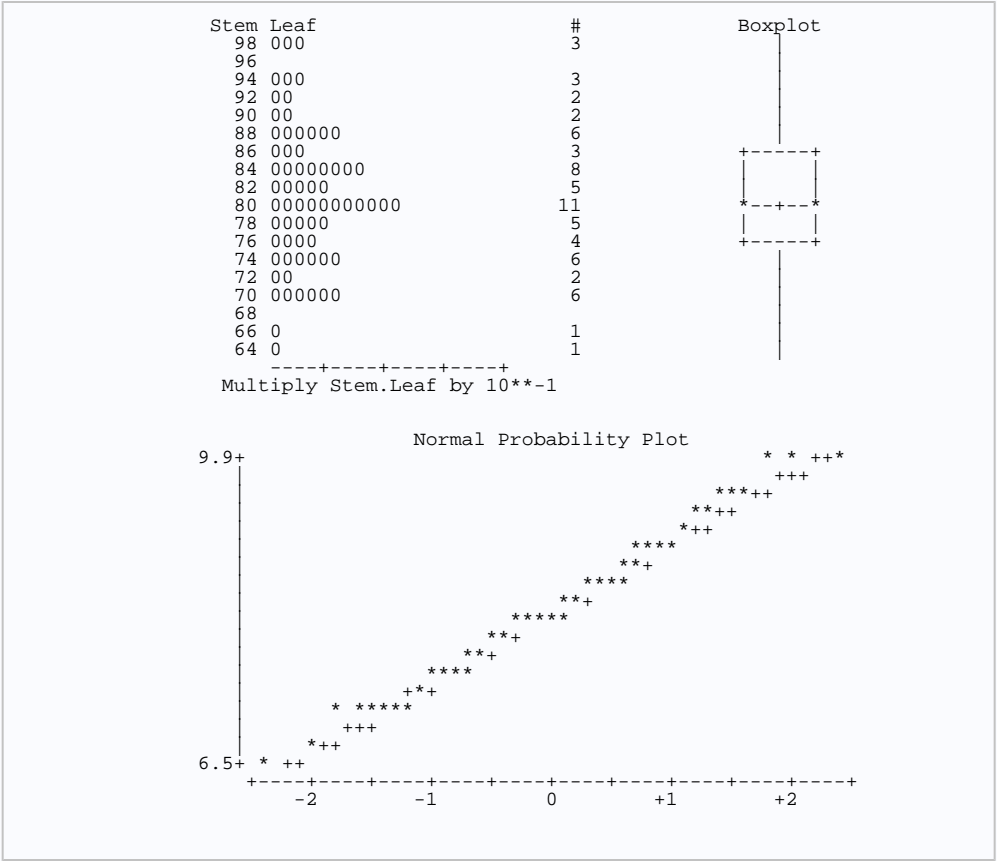
Quantiles (Definition 5)	
Quantile	Estimate
100% Max	9.9
99%	9.9
95%	9.5
90%	9.3
75% Q3	8.6
50% Median	8.1
25% Q1	7.6
10%	7.1
5%	7.0

1%	6.5
0% Min	6.5

Extreme Observations					
Lowest			Highest		
Value	X1	Obs	Value	X1	Obs
6.5	3	145	9.4	3	195
6.6	3	197	9.5	3	171
7.0	3	176	9.8	3	157
7.0	3	153	9.9	3	139
7.0	3	141	9.9	3	143

The SAS System

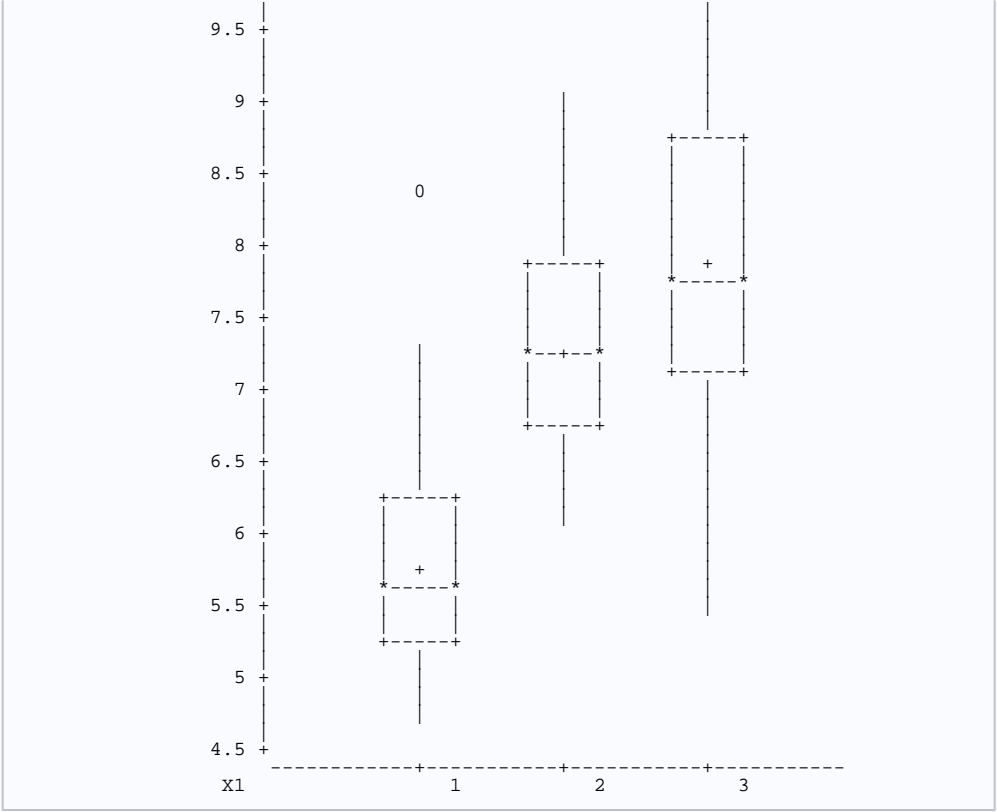
The UNIVARIATE Procedure  
Variable: X21 (X21 - Likely to Purchase)  
X1 - Customer Type=3



The SAS System

The UNIVARIATE Procedure  
Variable: X19 (X19 - Satisfaction)  
Schematic Plots

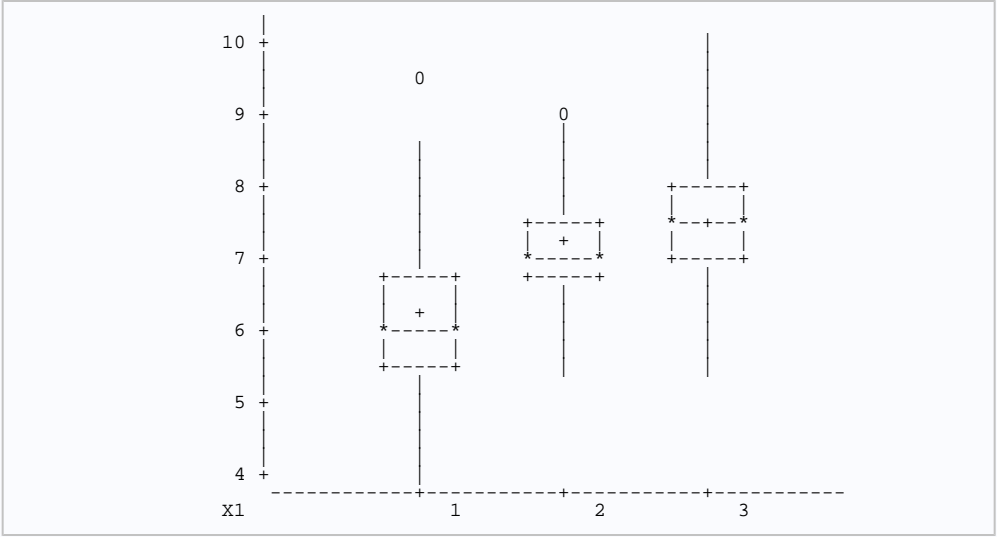




The SAS System

The UNIVARIATE Procedure  
Variable: X20 (X20 - Likely to Recommend)

Schematic Plots

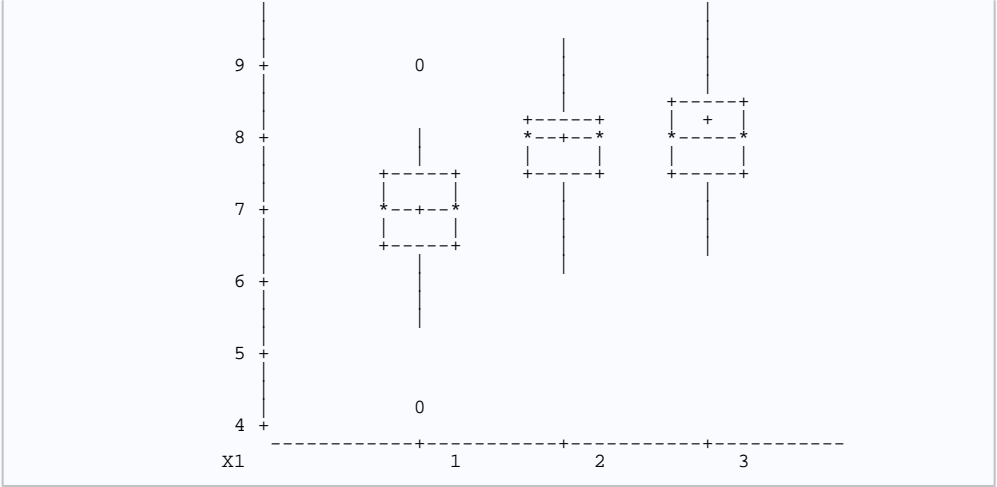


The SAS System

The UNIVARIATE Procedure  
Variable: X21 (X21 - Likely to Purchase)

Schematic Plots





The SAS System

The GLM Procedure

Class Level Information		
Class	Levels	Values
X1	3	1 2 3

Number of Observations Read	200
Number of Observations Used	200

The SAS System

The GLM Procedure

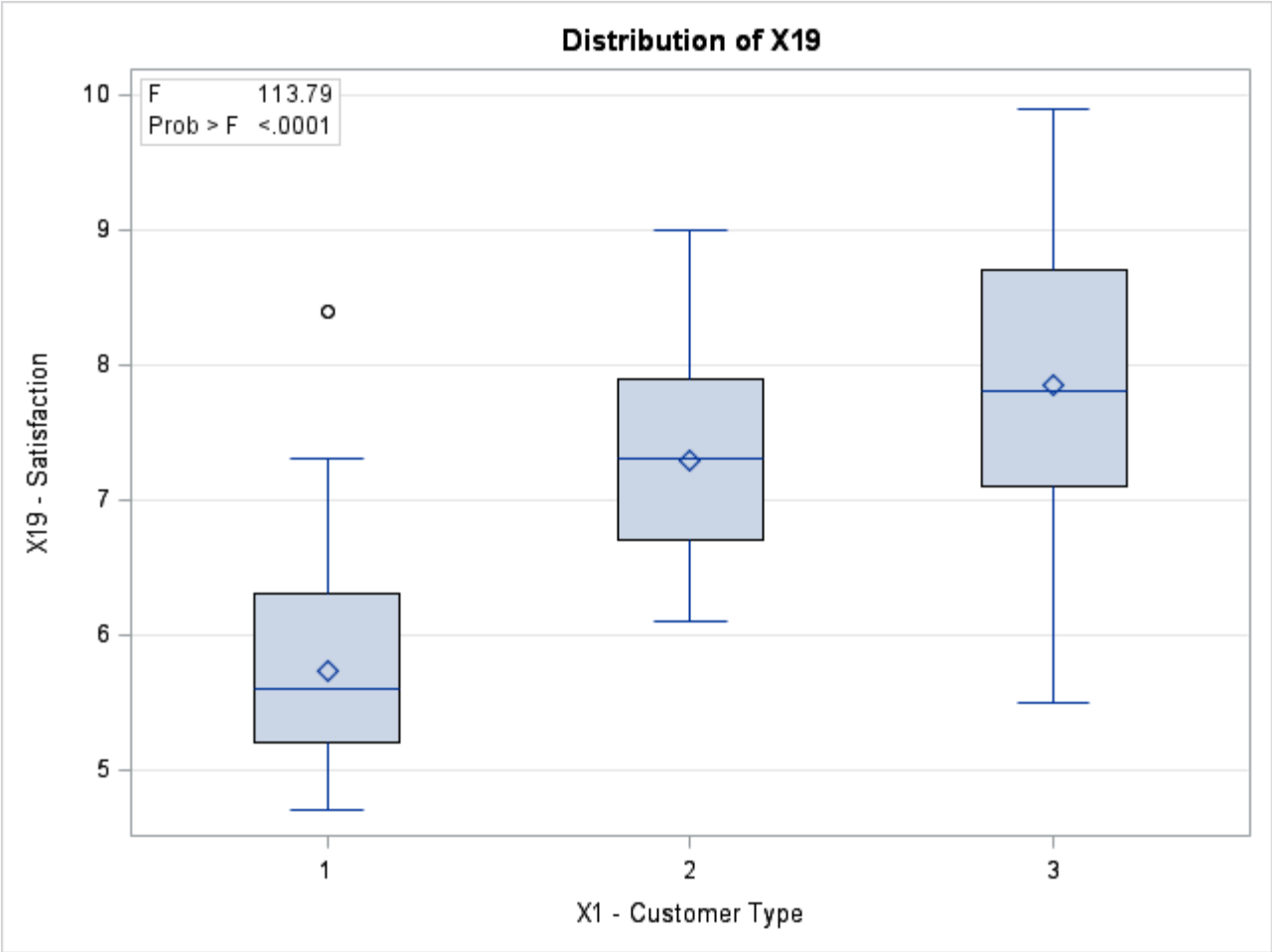
Dependent Variable: X19 X19 - Satisfaction

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	164.3111118	82.1555559	113.79	<.0001
Error	197	142.2280882	0.7219700		
Corrected Total	199	306.5392000			

R-Square	Coeff Var	Root MSE	X19 Mean
0.536020	12.22221	0.849688	6.952000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
X1	2	164.3111118	82.1555559	113.79	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
X1	2	164.3111118	82.1555559	113.79	<.0001



The SAS System

The GLM Procedure

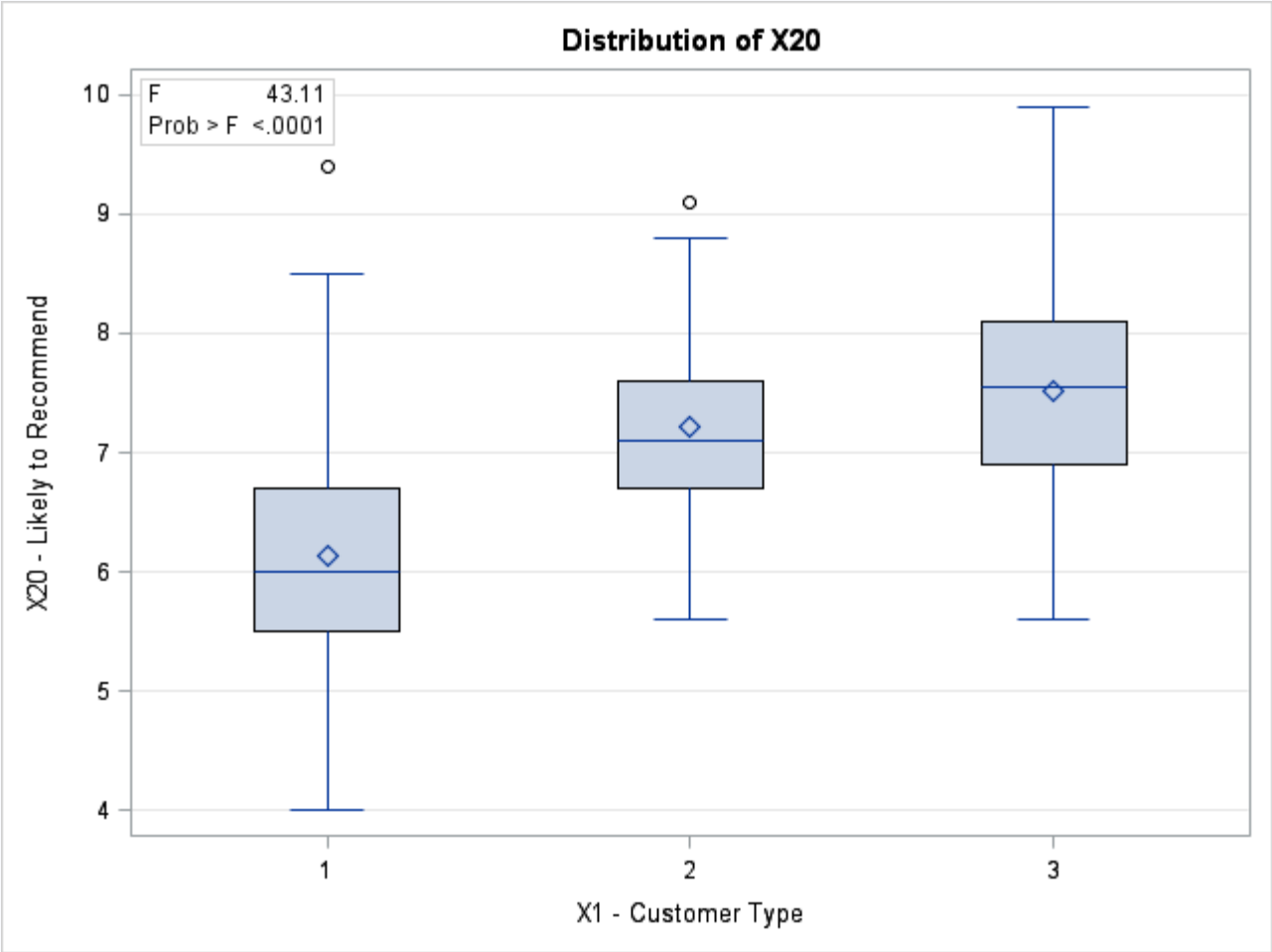
Dependent Variable: X20 X20 - Likely to Recommend

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	71.0427574	35.5213787	43.11	<.0001
Error	197	162.3159926	0.8239390		
Corrected Total	199	233.3587500			

R-Square	Coeff Var	Root MSE	X20 Mean
0.304436	13.05589	0.907711	6.952500

Source	DF	Type I SS	Mean Square	F Value	Pr > F
X1	2	71.04275735	35.52137868	43.11	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
X1	2	71.04275735	35.52137868	43.11	<.0001



The SAS System

The GLM Procedure

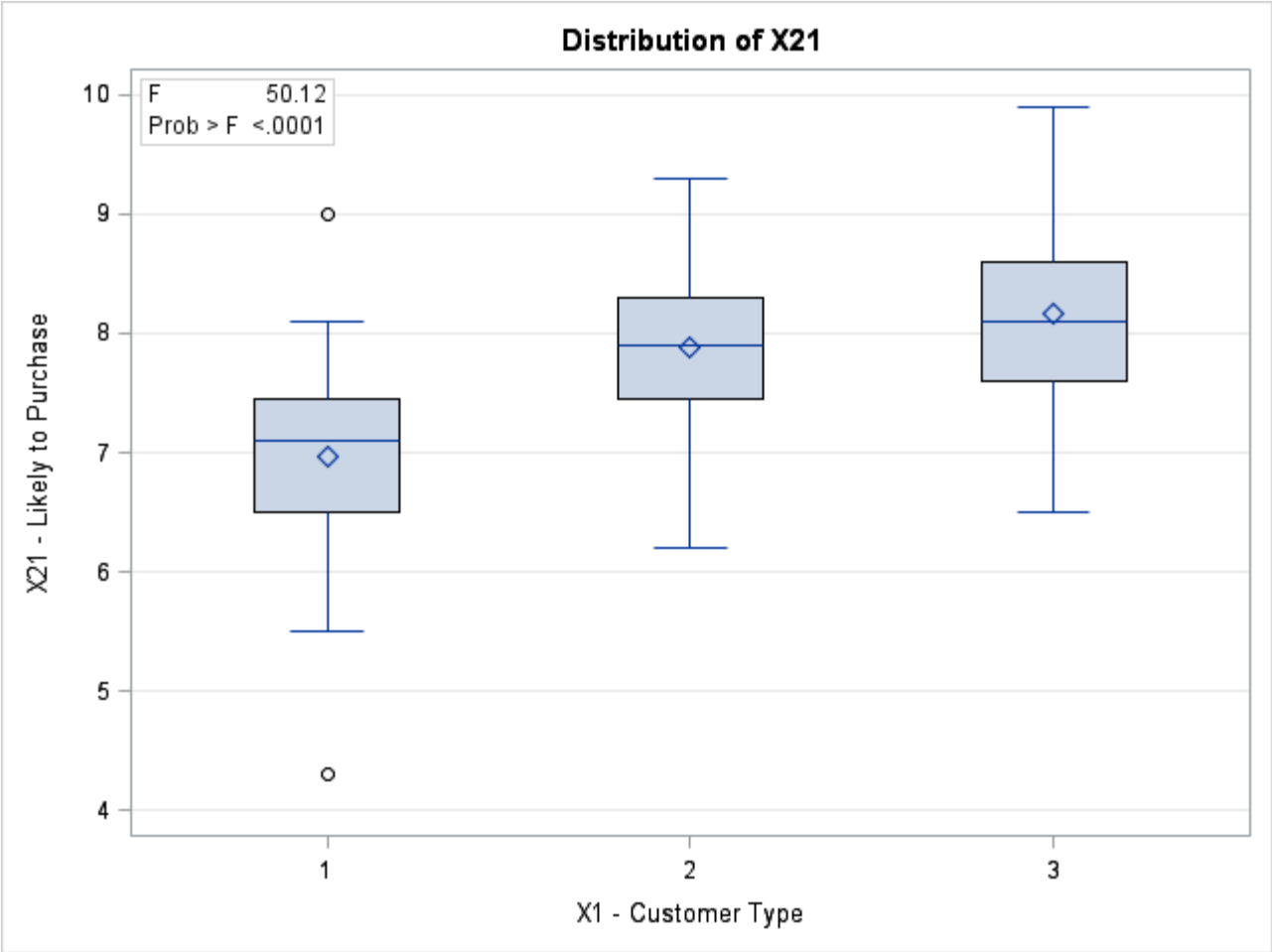
Dependent Variable: X21 X21 - Likely to Purchase

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	53.5452298	26.7726149	50.12	<.0001
Error	197	105.2297702	0.5341613		
Corrected Total	199	158.7750000			

R-Square	Coeff Var	Root MSE	X21 Mean
0.337240	9.535073	0.730863	7.665000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
X1	2	53.54522978	26.77261489	50.12	<.0001

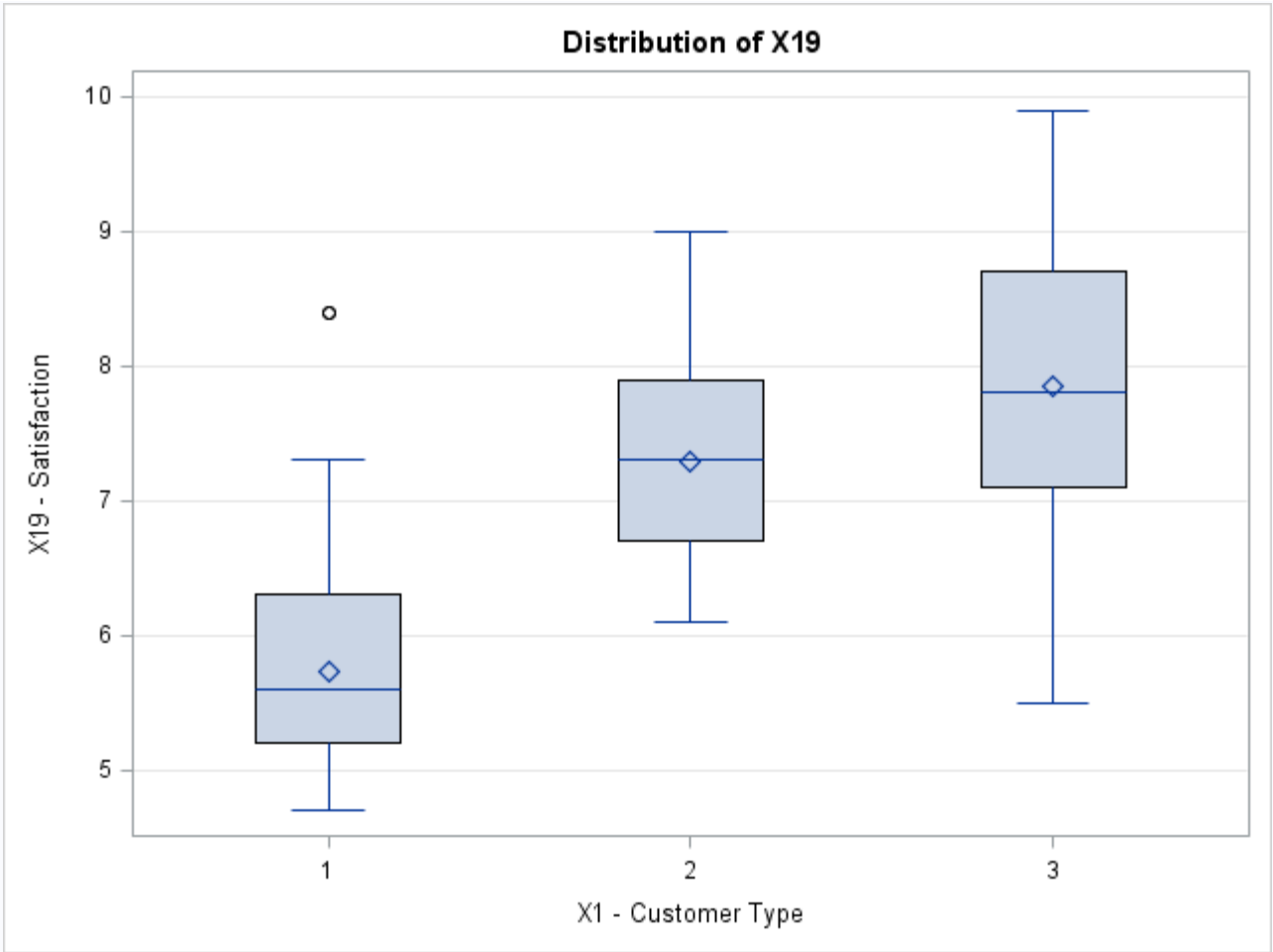
Source	DF	Type III SS	Mean Square	F Value	Pr > F
X1	2	53.54522978	26.77261489	50.12	<.0001



The SAS System

The GLM Procedure





**The SAS System**

**The GLM Procedure**

**t Tests (LSD) for X19**

**Note:** This test controls the Type I comparisonwise error rate, not the experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	197
Error Mean Square	0.72197
Critical Value of t	1.97208
Least Significant Difference	0.2904
Harmonic Mean of Cell Sizes	66.61224

**Note:** Cell sizes are not equal.

Means with the same letter are not significantly different.			
t Grouping	Mean	N	X1
A	7.8529	68	3
B	7.2938	64	2

C	5.7294	68	1

The SAS System

The GLM Procedure

Duncan's Multiple Range Test for X19

**Note:** This test controls the Type I comparisonwise error rate, not the experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	197
Error Mean Square	0.72197
Harmonic Mean of Cell Sizes	66.61224

**Note:** Cell sizes are not equal.

Number of Means	2	3
Critical Range	.2904	.3056

Means with the same letter are not significantly different.			
Duncan Grouping	Mean	N	X1
A	7.8529	68	3
B	7.2938	64	2
C	5.7294	68	1

The SAS System

The GLM Procedure

Student-Newman-Keuls Test for X19

**Note:** This test controls the Type I experimentwise error rate under the complete null hypothesis but not under partial null hypotheses.

Alpha	0.05
Error Degrees of Freedom	197
Error Mean Square	0.72197
Harmonic Mean of Cell Sizes	66.61224

**Note:** Cell sizes are not equal.

Number of Means	2	3
Critical Range	0.29035	0.3476943

Means with the same letter are not significantly different.			
SNK Grouping	Mean	N	X1
A	7.8529	68	3
B	7.2938	64	2
C	5.7294	68	1

The SAS System

The GLM Procedure

Tukey's Studentized Range (HSD) Test for X19

**Note:** This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than REGWQ.

Alpha	0.05
Error Degrees of Freedom	197
Error Mean Square	0.72197
Critical Value of Studentized Range	3.33976
Minimum Significant Difference	0.3477
Harmonic Mean of Cell Sizes	66.61224

**Note:** Cell sizes are not equal.

Means with the same letter are not significantly different.			
Tukey Grouping	Mean	N	X1
A	7.8529	68	3
B	7.2938	64	2
C	5.7294	68	1

The SAS System

The GLM Procedure

Scheffe's Test for X19

**Note:** This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	197
Error Mean Square	0.72197
Critical Value of F	3.04175

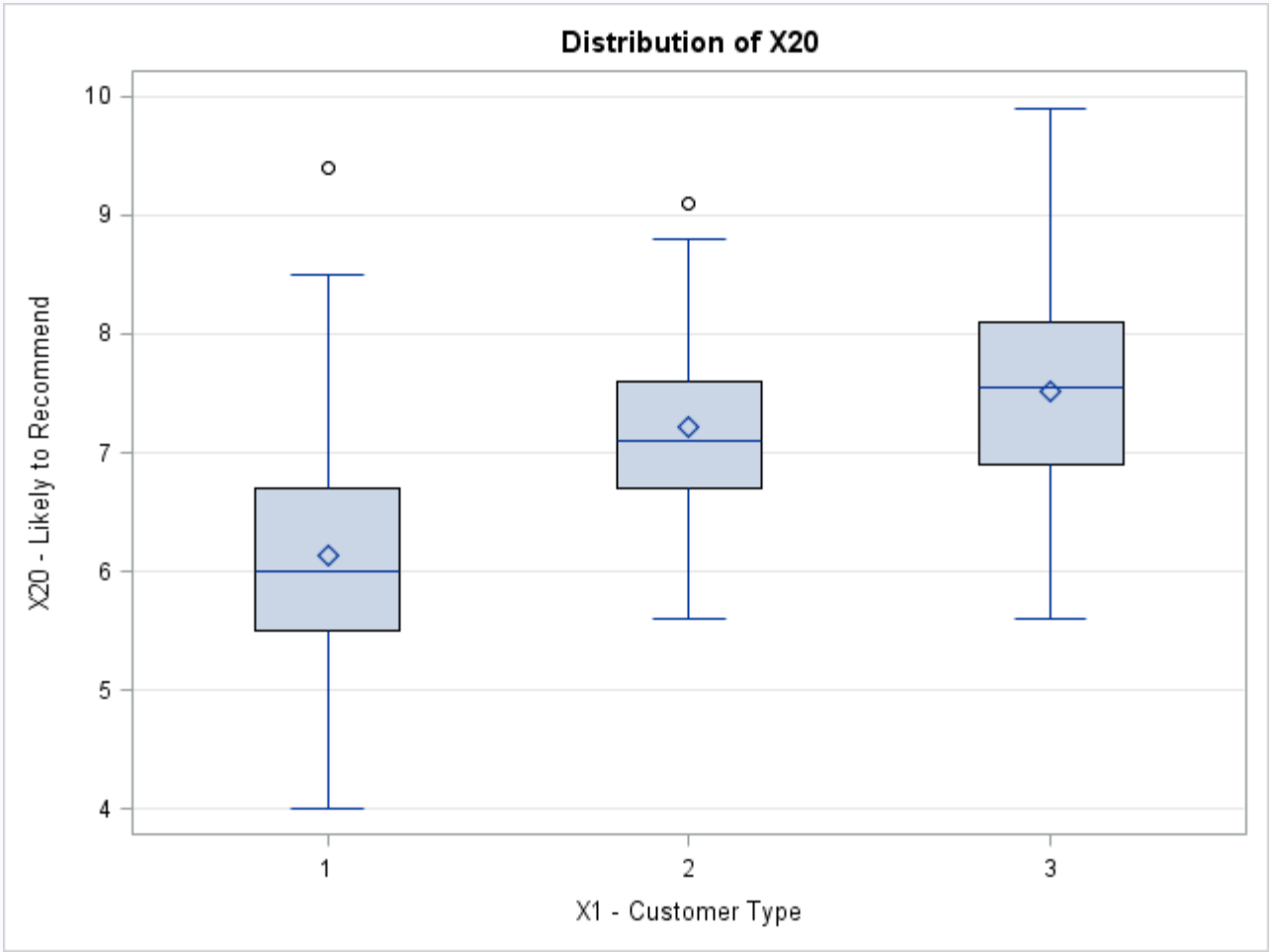
Minimum Significant Difference	0.3631
Harmonic Mean of Cell Sizes	66.61224

**Note:** Cell sizes are not equal.

Means with the same letter are not significantly different.			
Scheffe Grouping	Mean	N	X1
A	7.8529	68	3
B	7.2938	64	2
C	5.7294	68	1

The SAS System

The GLM Procedure



The SAS System

The GLM Procedure

t Tests (LSD) for X20

**Note:** This test controls the Type I comparisonwise error rate, not the experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	197
Error Mean Square	0.823939
Critical Value of t	1.97208
Least Significant Difference	0.3102
Harmonic Mean of Cell Sizes	66.61224

**Note:** Cell sizes are not equal.

Means with the same letter are not significantly different.			
t Grouping	Mean	N	X1
A	7.5221	68	3
B	7.2094	64	2
C	6.1412	68	1

The SAS System

The GLM Procedure

Duncan's Multiple Range Test for X20

**Note:** This test controls the Type I comparisonwise error rate, not the experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	197
Error Mean Square	0.823939
Harmonic Mean of Cell Sizes	66.61224

**Note:** Cell sizes are not equal.

Number of Means	2	3
Critical Range	.3102	.3265

Means with the same letter are not significantly different.			
Duncan Grouping	Mean	N	X1
A	7.5221	68	3
B	7.2094	64	2

C	6.1412	68	1
---	--------	----	---

The SAS System

The GLM Procedure

Student-Newman-Keuls Test for X20

**Note:** This test controls the Type I experimentwise error rate under the complete null hypothesis but not under partial null hypotheses.

Alpha	0.05
Error Degrees of Freedom	197
Error Mean Square	0.823939
Harmonic Mean of Cell Sizes	66.61224

**Note:** Cell sizes are not equal.

Number of Means	2	3
Critical Range	0.3101772	0.3714373

Means with the same letter are not significantly different.			
SNK Grouping	Mean	N	X1
A	7.5221	68	3
B	7.2094	64	2
C	6.1412	68	1

The SAS System

The GLM Procedure

Tukey's Studentized Range (HSD) Test for X20

**Note:** This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than REGWQ.

Alpha	0.05
Error Degrees of Freedom	197
Error Mean Square	0.823939
Critical Value of Studentized Range	3.33976
Minimum Significant Difference	0.3714
Harmonic Mean of Cell Sizes	66.61224

**Note:** Cell sizes are not equal.

Means with the same letter are not significantly different.
--

Tukey Grouping	Mean	N	X1
A	7.5221	68	3
A			
A	7.2094	64	2
B	6.1412	68	1

The SAS System

The GLM Procedure

Scheffe's Test for X20

**Note:** This test controls the Type I experimentwise error rate.

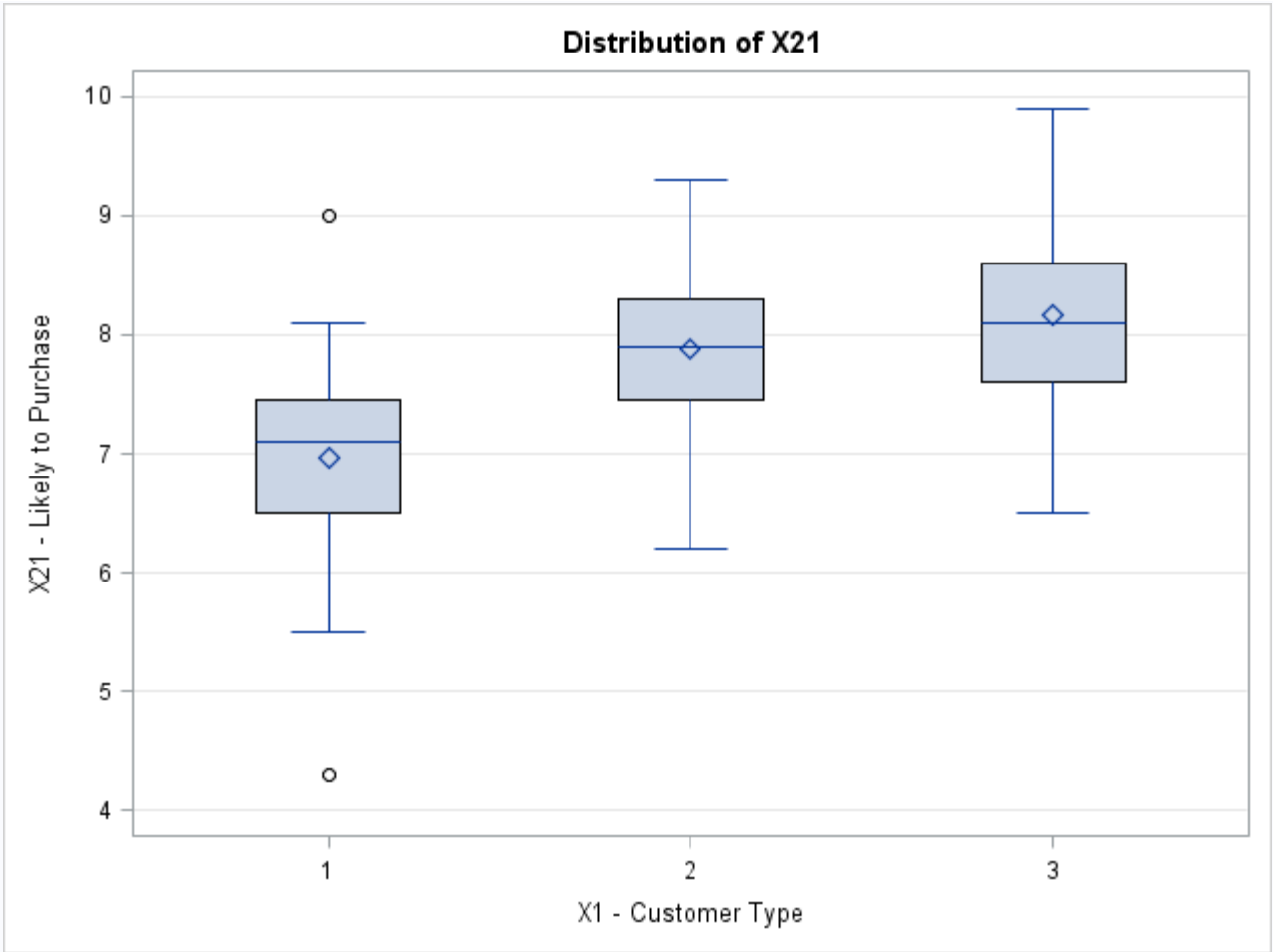
Alpha	0.05
Error Degrees of Freedom	197
Error Mean Square	0.823939
Critical Value of F	3.04175
Minimum Significant Difference	0.3879
Harmonic Mean of Cell Sizes	66.61224

**Note:** Cell sizes are not equal.

Means with the same letter are not significantly different.			
Scheffe Grouping	Mean	N	X1
A	7.5221	68	3
A			
A	7.2094	64	2
B	6.1412	68	1

The SAS System

The GLM Procedure



The SAS System

The GLM Procedure

t Tests (LSD) for X21

**Note:** This test controls the Type I comparisonwise error rate, not the experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	197
Error Mean Square	0.534161
Critical Value of t	1.97208
Least Significant Difference	0.2497
Harmonic Mean of Cell Sizes	66.61224

**Note:** Cell sizes are not equal.

Means with the same letter are not significantly different.			
t Grouping	Mean	N	X1
A	8.1632	68	3
B	7.8828	64	2



C	6.9618	68	1

The SAS System

The GLM Procedure

Duncan's Multiple Range Test for X21

**Note:** This test controls the Type I comparisonwise error rate, not the experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	197
Error Mean Square	0.534161
Harmonic Mean of Cell Sizes	66.61224

**Note:** Cell sizes are not equal.

Number of Means	2	3
Critical Range	.2497	.2629

Means with the same letter are not significantly different.			
Duncan Grouping	Mean	N	X1
A	8.1632	68	3
B	7.8828	64	2
C	6.9618	68	1

The SAS System

The GLM Procedure

Student-Newman-Keuls Test for X21

**Note:** This test controls the Type I experimentwise error rate under the complete null hypothesis but not under partial null hypotheses.

Alpha	0.05
Error Degrees of Freedom	197
Error Mean Square	0.534161
Harmonic Mean of Cell Sizes	66.61224

**Note:** Cell sizes are not equal.

Number of Means	2	3
Critical Range	0.249746	0.2990709

Means with the same letter are not significantly different.			
SNK Grouping	Mean	N	X1
A	8.1632	68	3
B	7.8828	64	2
C	6.9618	68	1

The SAS System

The GLM Procedure

Tukey's Studentized Range (HSD) Test for X21

**Note:** This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than REGWQ.

Alpha	0.05
Error Degrees of Freedom	197
Error Mean Square	0.534161
Critical Value of Studentized Range	3.33976
Minimum Significant Difference	0.2991
Harmonic Mean of Cell Sizes	66.61224

**Note:** Cell sizes are not equal.

Means with the same letter are not significantly different.			
Tukey Grouping	Mean	N	X1
A	8.1632	68	3
A			
A	7.8828	64	2
B	6.9618	68	1

The SAS System

The GLM Procedure

Scheffe's Test for X21

**Note:** This test controls the Type I experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	197
Error Mean Square	0.534161
Critical Value of F	3.04175

Minimum Significant Difference	0.3124
Harmonic Mean of Cell Sizes	66.61224

**Note:** Cell sizes are not equal.

Means with the same letter are not significantly different.			
Scheffe Grouping	Mean	N	X1
A	8.1632	68	3
A			
A	7.8828	64	2
B	6.9618	68	1

The SAS System

The GLM Procedure

Levene's Test for Homogeneity of X19 Variance ANOVA of Squared Deviations from Group Means					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
X1	2	12.1883	6.0942	4.70	0.0101
Error	197	255.3	1.2962		

Brown and Forsythe's Test for Homogeneity of X19 Variance ANOVA of Absolute Deviations from Group Medians					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
X1	2	3.4482	1.7241	6.75	0.0015
Error	197	50.3318	0.2555		

Bartlett's Test for Homogeneity of X19 Variance			
Source	DF	Chi-Square	Pr > ChiSq
X1	2	10.9331	0.0042

Levene's Test for Homogeneity of X20 Variance ANOVA of Squared Deviations from Group Means					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
X1	2	9.0417	4.5209	2.75	0.0667
Error	197	324.4	1.6469		

Brown and Forsythe's Test for Homogeneity of X20 Variance ANOVA of Absolute Deviations from Group Medians					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
X1	2	1.8054	0.9027	2.72	0.0684
Error	197	65.3834	0.3319		

Bartlett's Test for Homogeneity of X20 Variance			
Source	DF	Chi-Square	Pr > ChiSq

X1	2	8.0863	0.0175
----	---	--------	--------

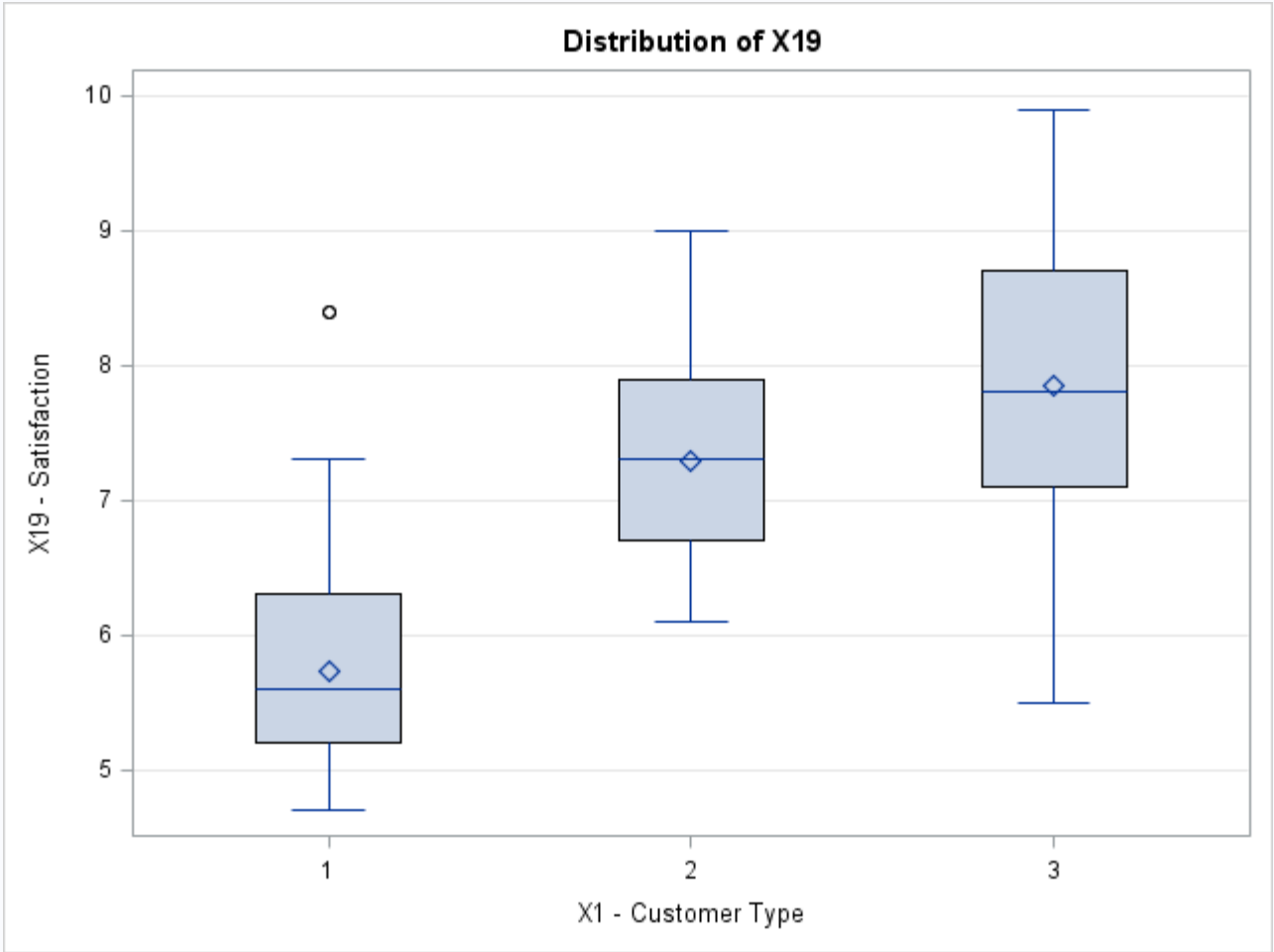
Levene's Test for Homogeneity of X21 Variance ANOVA of Squared Deviations from Group Means					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
X1	2	1.3593	0.6797	1.01	0.3657
Error	197	132.4	0.6723		

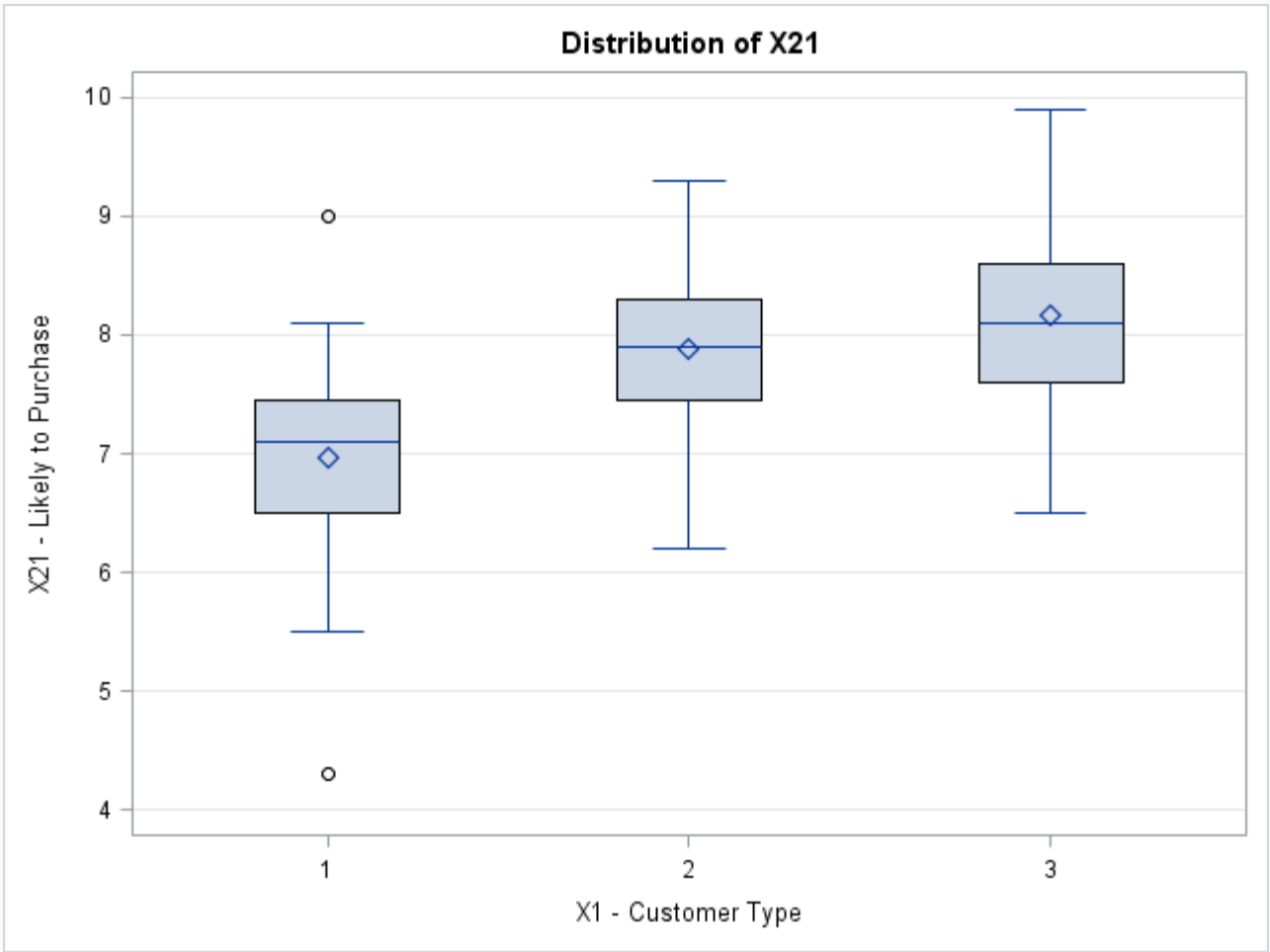
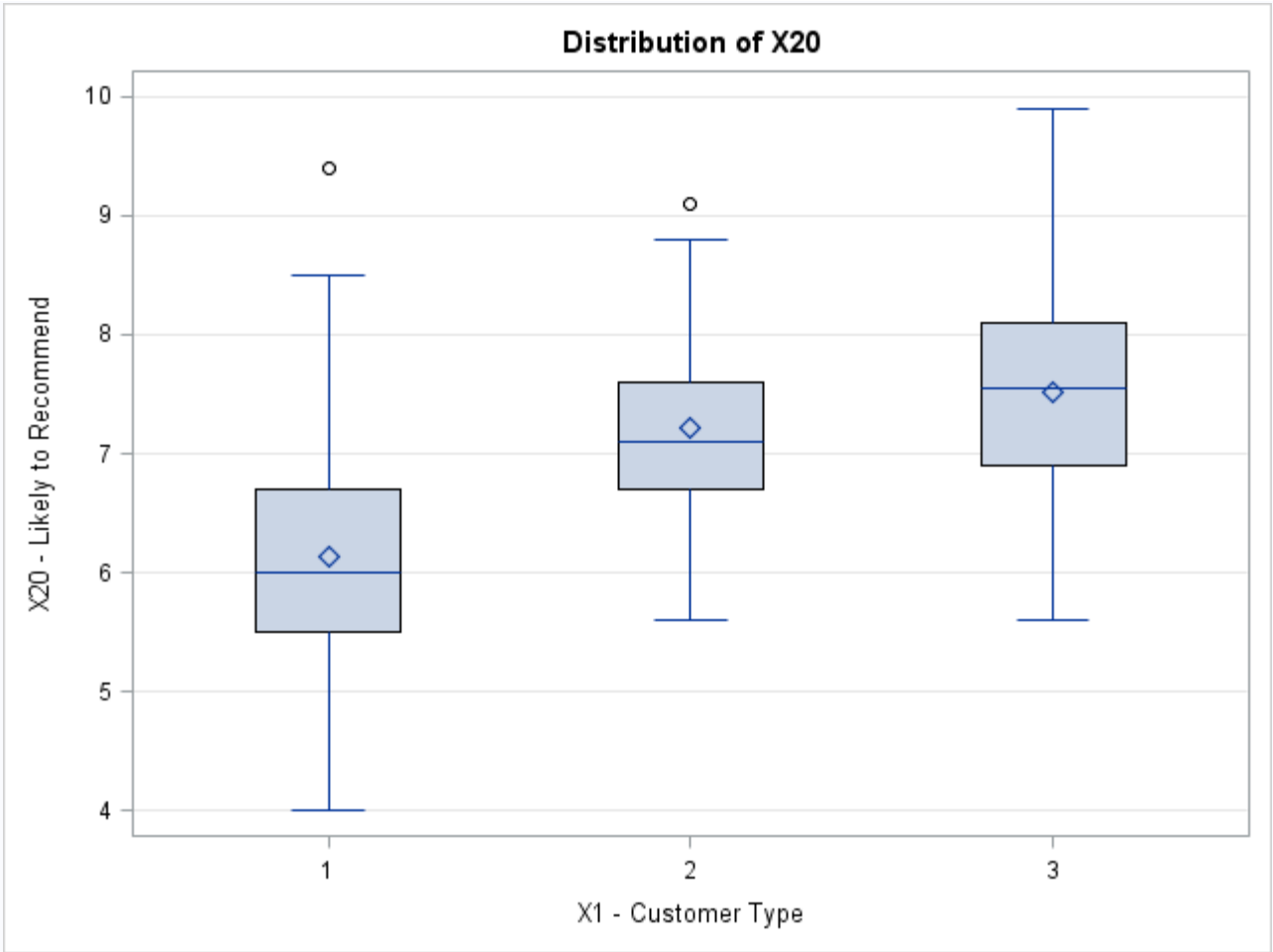
Brown and Forsythe's Test for Homogeneity of X21 Variance ANOVA of Absolute Deviations from Group Medians					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
X1	2	0.2914	0.1457	0.66	0.5170
Error	197	43.3598	0.2201		

Bartlett's Test for Homogeneity of X21 Variance			
Source	DF	Chi-Square	Pr > ChiSq
X1	2	2.6227	0.2695

The SAS System

The GLM Procedure

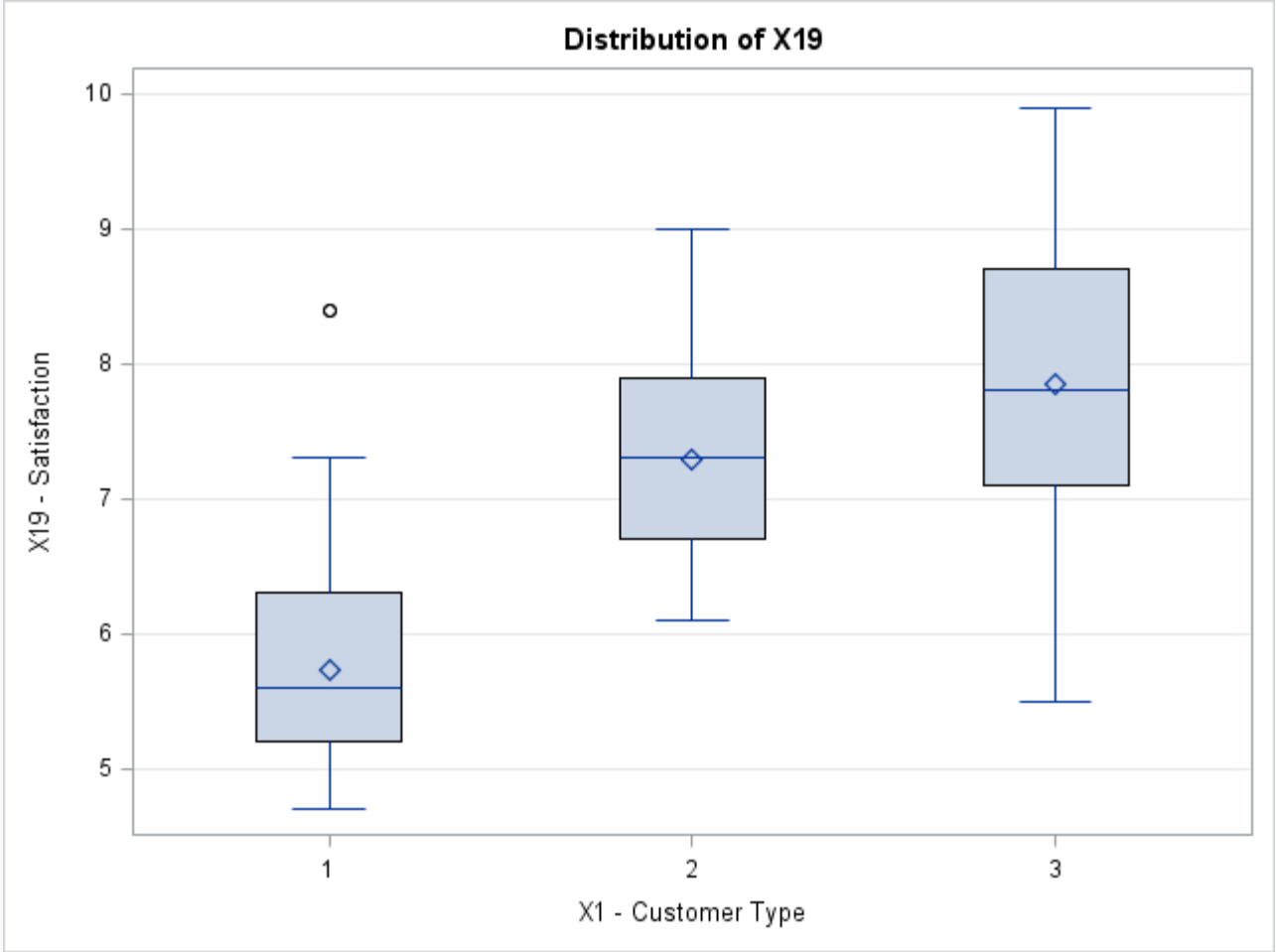


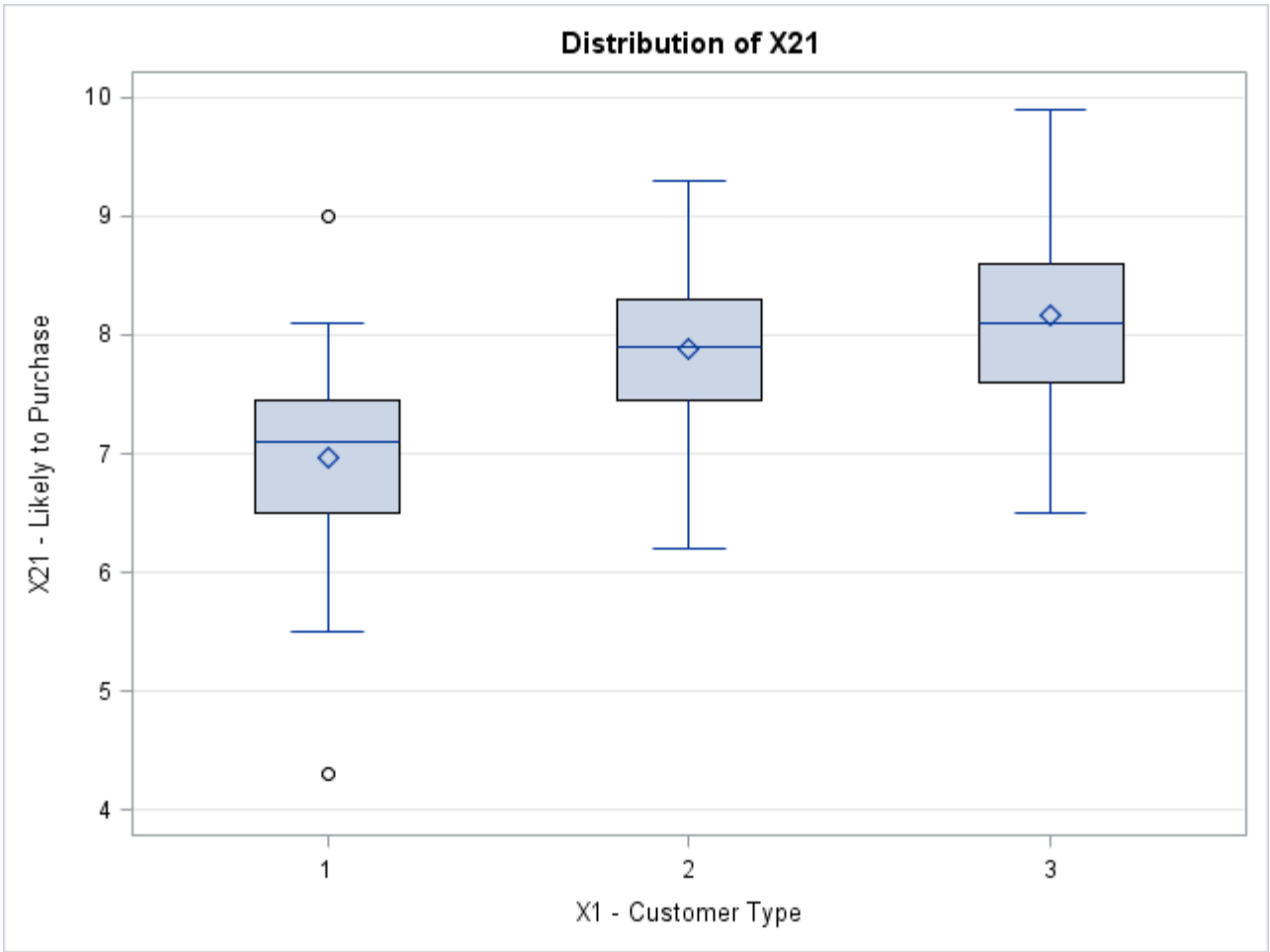
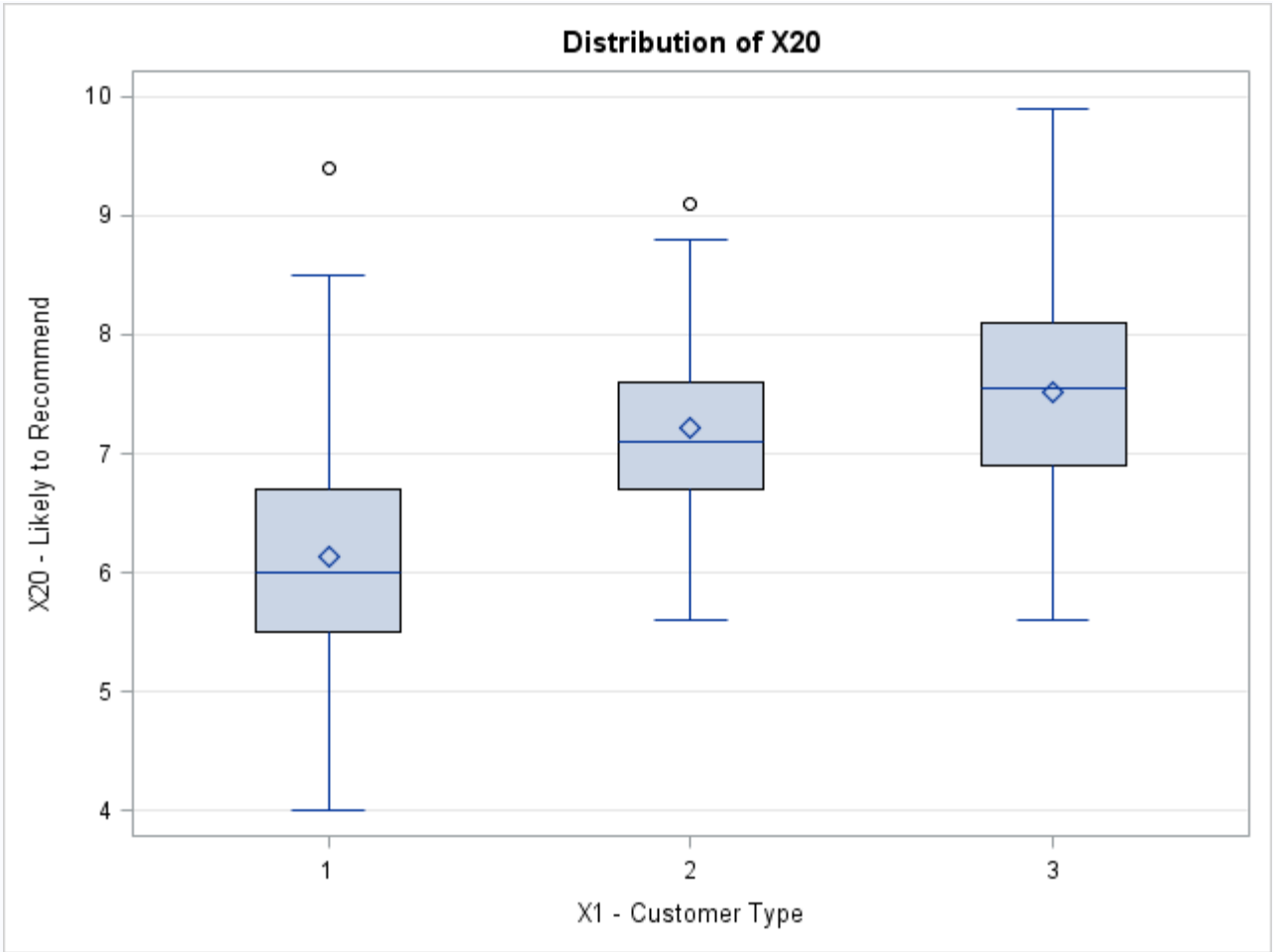


Level of X1	N	X19		X20		X21	
		Mean	Std Dev	Mean	Std Dev	Mean	Std Dev
1	68	5.72941176	0.76432759	6.14117647	0.99494773	6.96176471	0.75981722
2	64	7.29375000	0.70775186	7.20937500	0.71441368	7.88281250	0.64304698
3	68	7.85294118	1.03324884	7.52205882	0.97610949	8.16323529	0.77746323

The SAS System

The GLM Procedure





Level of X1	N	X19		X20		X21	
		Mean	Std Dev	Mean	Std Dev	Mean	Std Dev
1	68	5.72941176	0.76432759	6.14117647	0.99494773	6.96176471	0.75981722
2	64	7.29375000	0.70775186	7.20937500	0.71441368	7.88281250	0.64304698
3	68	7.85294118	1.03324884	7.52205882	0.97610949	8.16323529	0.77746323

The SAS System

The GLM Procedure  
Multivariate Analysis of Variance

Characteristic Roots and Vectors of: E Inverse * H, where H = Type III SSCP Matrix for X1 E = Error SSCP Matrix				
Characteristic Root	Percent	Characteristic Vector V'EV=1		
		X19	X20	X21
1.18285003	99.88	0.07830229	-0.00578970	0.01813551
0.00143810	0.12	-0.08309143	0.07493203	0.05932686
0.00000000	0.00	-0.01092698	-0.07224349	0.10234418

MANOVA Tests for the Hypothesis of No Overall X1 Effect H = Type III SSCP Matrix for X1 E = Error SSCP Matrix  S=2 M=0 N=96.5		
Statistic	Value	P-Value
Wilks' Lambda	0.45745880	<.0001
Pillai's Trace	0.54331936	<.0001
Hotelling-Lawley Trace	1.18428813	<.0001
Roy's Greatest Root	1.18285003	<.0001



## **Multivariate Statistical Testing**

The first step is to utilize the multivariate tests and assess whether the set of purchase outcomes, which each individually seem to follow a similar increasing pattern as time increases, does vary in a statistically significant manner (i.e., a significant main effect).

We see all four tests indicate a statistically significant difference of the collective set of dependent measures across the three groups. In addition to the multivariate tests, univariate tests for each dependent measure indicate that all three dependent measures, when considered individually, also have significant main effects. Thus, both collectively and individually, the three purchase outcomes (X19, X20, and X21) do vary at a statistically significant level across the three groups of X1.

**Assessing the Main Effect of X5:** All of the multivariate and univariate tests indicated a significant main effect of X1 (Customer Type) on each individual dependent variable as well as the set of the dependent variables when considered collectively. The significant main effect means that the dependent variable(s) do vary in significant amounts between the three customer groups based on length of customer relationship.

## **Making Post Hoc Comparisons**

The SAS results contain three post hoc comparison methods (Tukey HSD, Scheffé, and LSD) applied to all three purchase outcomes across the three groups of X1. When we examine X19 (Satisfaction), we first see that even though the overall main effect is significant, the differences between adjacent groups are not constant. The difference between customers of less than 1 year and those of 1 to 5 years is -1.564 (the minus sign indicates that customers of less than 1 year have the lower value). When we examine the group difference between customers of 1 to 5 years versus those of more than 5 years, however, the difference is reduced to -.559 (about one-third of the prior difference).

The researcher is thus interested in whether both of these differences are significant, or only significant between the first two groups. When we look to the last three columns in Table 7-11, we can see that all of the separate group differences for X19 are significant, indicating that the difference of -.559, even though much smaller than the other group difference, is still statistically significant.

When we examine the post hoc comparisons for the other two purchase outcomes (X20 and X21), a different pattern emerges. Again, the differences between the first two groups (less than 1 year and 1 to 5 years) are all statistically significant across all three post hoc tests. Yet when we examine the next comparison (customers of 1 to 5 years versus those of more than 5 years), two of the three tests indicate that the two groups are not different.

In these tests, the purchase outcomes of X20 and X21 for customers of 1 to 5 years are not significantly different from those of more than 5 years. This result is contrary to what was found for satisfaction, in which this difference was significant.