```
NPAR TESTS
  /M-W= Sentiment BY Year(2009 2011)
  /MISSING ANALYSIS.
```

NPar Tests

Notes

Output Created		20-JAN-2025 00:49:42
Comments		
Input	Data	C:\Users\User\Desktop\data_bases\final.csv
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	Topic
	N of Rows in Working Data File	3803
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the variable(s) used in that test.
Syntax		NPAR TESTS /M-W= Sentiment BY Year(2009 2011) /MISSING ANALYSIS.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.01
	Number of Cases Allowed[a]	449389

a. Based on availability of workspace memory.

```
[DataSet1]
```

Topic = apple

Mann-Whitney Test

Ranks[a]

	Year	N	Mean Rank	Sum of Ranks
Sentiment	2009	70	444.20	31094.00
	2011	1003	543.48	545107.00
	Total	1073		

a. Topic = apple

Test Statistics[a,b]

	Sentiment
Mann-Whitney U	28609.000
Wilcoxon W	31094.000
Z	-2.827
Asymp. Sig. (2-tailed)	.005

a. Topic = apple

b. Grouping Variable: Year

Topic = google

Mann-Whitney Test

Ranks[a]

	Year	N	Mean Rank	Sum of Ranks
Sentiment	2009	69	525.57	36264.00
	2011	838	448.11	375514.00
	Total	907		

a. Topic = google

Test Statistics[a,b]

	Sentiment
Mann-Whitney U	23973.000
Wilcoxon W	375514.000
Z	-2.784
Asymp. Sig. (2-tailed)	.005

a. Topic = google

b. Grouping Variable: Year

Topic = microsoft

Mann-Whitney Test

Ranks[a]

	Year	N	Mean Rank	Sum of Ranks
Sentiment	2009	90	412.50	37125.00
	2011	864	484.27	418410.00
	Total	954		

a. Topic = microsoft

Test Statistics[a,b]

	Sentiment
Mann-Whitney U	33030.000
Wilcoxon W	37125.000
Z	-2.837
Asymp. Sig. (2-tailed)	.005

a. Topic = microsoft

b. Grouping Variable: Year

Topic = twitter

Mann-Whitney Test

Ranks[a]

	Year	N	Mean Rank	Sum of Ranks
Sentiment	2009	150	506.06	75909.50
	2011	719	420.17	302105.50
	Total	869		

a. Topic = twitter

Test Statistics[a,b]

	Sentiment
Mann-Whitney U	43265.500
Wilcoxon W	302105.500
Z	-4.628
Asymp. Sig. (2-tailed)	.000

a. Topic = twitter

b. Grouping Variable: Year

```
EXAMINE VARIABLES=Sentiment BY Year
  /PLOT BOXPLOT STEMLEAF HISTOGRAM
  /COMPARE GROUPS
  /STATISTICS DESCRIPTIVES
  /CINTERVAL 95
  /MISSING LISTWISE
  /NOTOTAL.
```

Explore

Notes

Output Created		20-JAN-2025 01:04:50
Comments		
Input	Data	C:\Users\User\Desktop\data_bases\final.csv
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	Topic
	N of Rows in Working Data File	3803
Missing Value Handling	Definition of Missing	User-defined missing values for dependent variables are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any dependent variable or factor used.
Syntax		EXAMINE VARIABLES=Sentiment BY Year /PLOT BOXPLOT STEMLEAF HISTOGRAM /COMPARE GROUPS /STATISTICS DESCRIPTIVES /CINTERVAL 95 /MISSING LISTWISE /NOTOTAL.
Resources	Processor Time	00:00:03.91
	Elapsed Time	00:00:02.50

Topic = apple

Year

Case Processing Summary[a]

		Cases					
		Valid		Missing		Total	
	Year	N	Percent	N	Percent	N	Percent
Sentiment	2009	70	100.0%	0	0.0%	70	100.0%
	2011	1003	100.0%	0	0.0%	1003	100.0%

a. Topic = apple

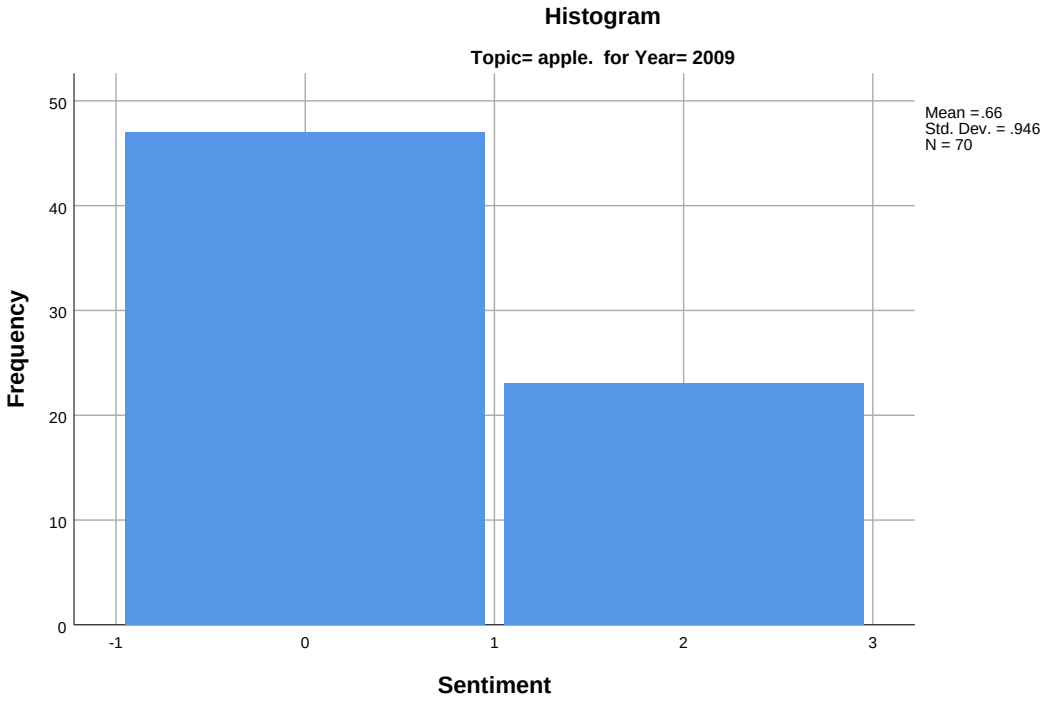
Descriptives[a]

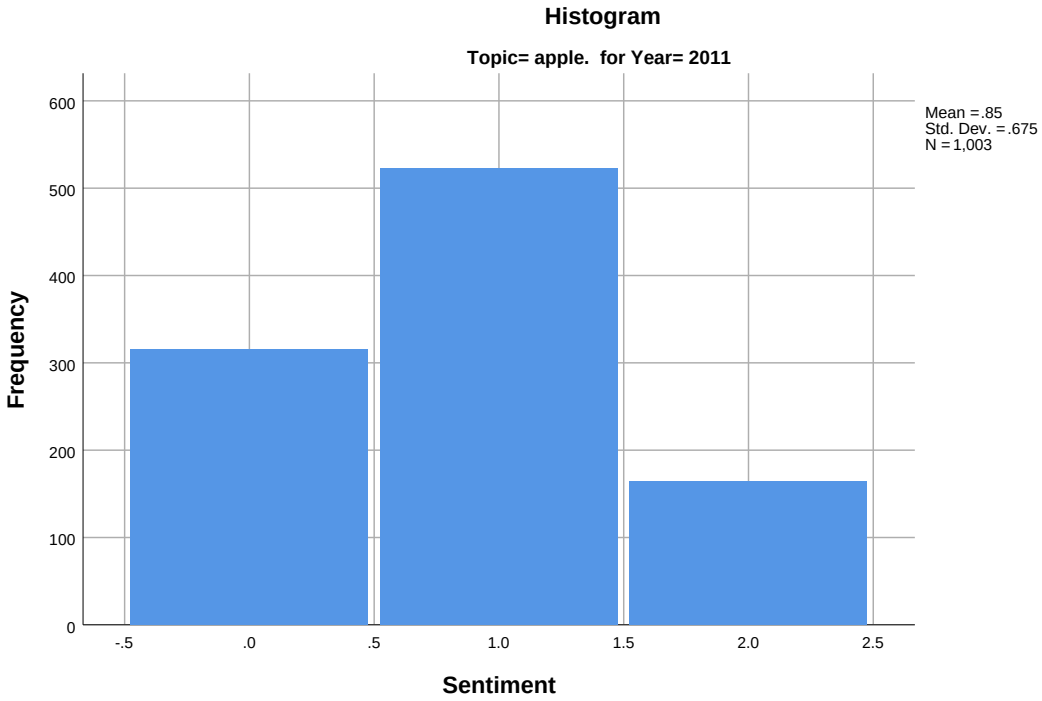
	Year			Statistic	Std. Error
Sentiment	2009	Mean		.66	.113
		95% Confidence Interval for Mean	Lower Bound	.43	
			Upper Bound	.88	
		5% Trimmed Mean		.62	
		Median		.00	
		Variance		.895	
		Std. Deviation		.946	
		Minimum		0	
		Maximum		2	
		Range		2	
		Interquartile Range		2	
		Skewness		.746	.287
		Kurtosis		-1.487	.566
	2011	Mean		.85	.021
		95% Confidence Interval for Mean	Lower Bound	.81	
			Upper Bound	.89	
		5% Trimmed Mean		.83	
		Median		1.00	
		Variance		.456	
		Std. Deviation		.675	
		Minimum		0	
		Maximum		2	
		Range		2	
		Interquartile Range		1	
		Skewness		.192	.077
		Kurtosis		-.825	.154

a. Topic = apple

Sentiment

Histograms

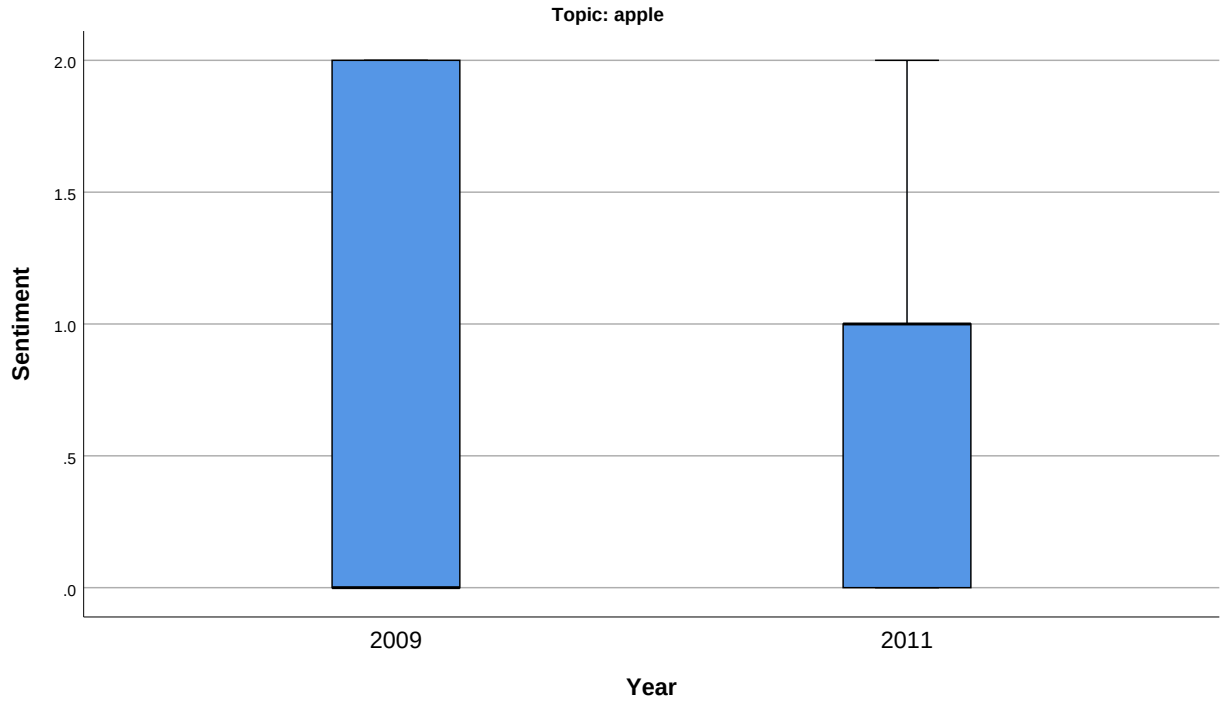




Stem-and-Leaf Plots

```
Sentiment Stem-and-Leaf Plot for
Year= 2009
Topic= apple

 Frequency    Stem &  Leaf

    47.00        0 .  00000000000000000000000000000000000000000000000
      .00        0 .
      .00        1 .
      .00        1 .
    23.00        2 .  00000000000000000000000

 Stem width:  1
 Each leaf:        1 case(s)


Sentiment Stem-and-Leaf Plot for
Year= 2011
Topic= apple
```

```
 Frequency    Stem &  Leaf

   316.00        0 .  00000000000000000000000000000000000000000000000000000000
      .00        1 .
      .00        2 .
      .00        3 .
      .00        4 .
      .00        5 .
      .00        6 .
      .00        7 .
      .00        8 .
      .00        9 .
   523.00       10 .  00000000000000000000000000000000000000000000000000000000000000000
0000000000000000000000000000000
      .00       11 .
      .00       12 .
      .00       13 .
      .00       14 .
      .00       15 .
      .00       16 .
      .00       17 .
      .00       18 .
      .00       19 .
   164.00       20 .  00000000000000000000000000

 Stem width:  0
 Each leaf:        6 case(s)
```



Topic = google

Year

Case Processing Summary[a]

		Cases					
		Valid		Missing		Total	
	Year	N	Percent	N	Percent	N	Percent
Sentiment	2009	69	100.0%	0	0.0%	69	100.0%
	2011	838	100.0%	0	0.0%	838	100.0%

a. Topic = google

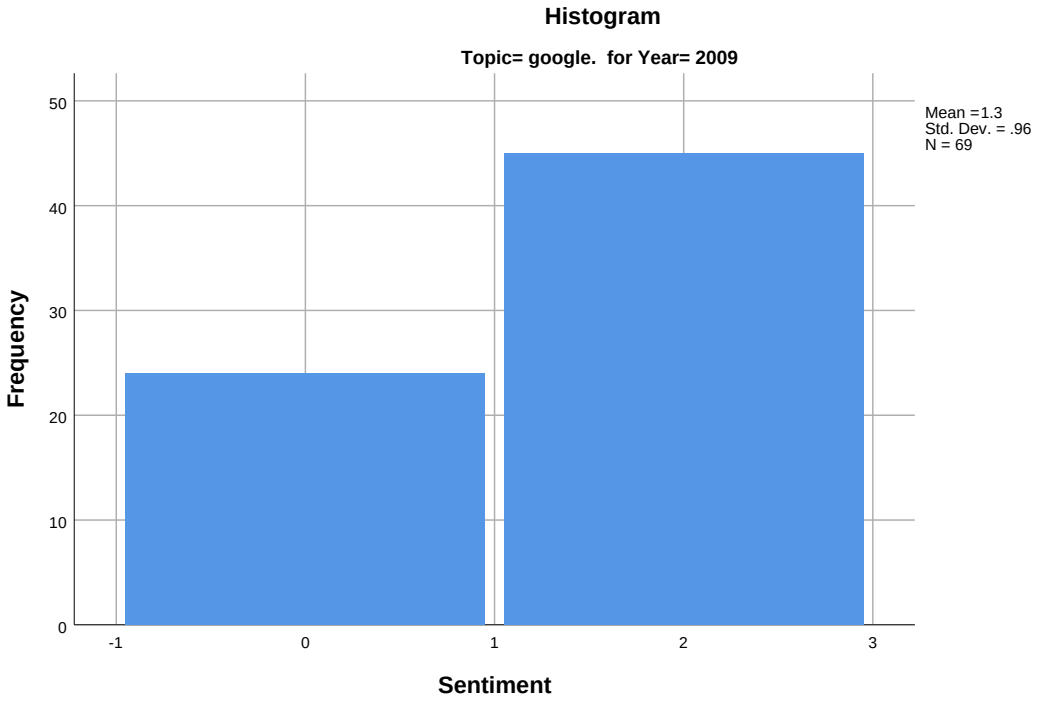
Descriptives[a]

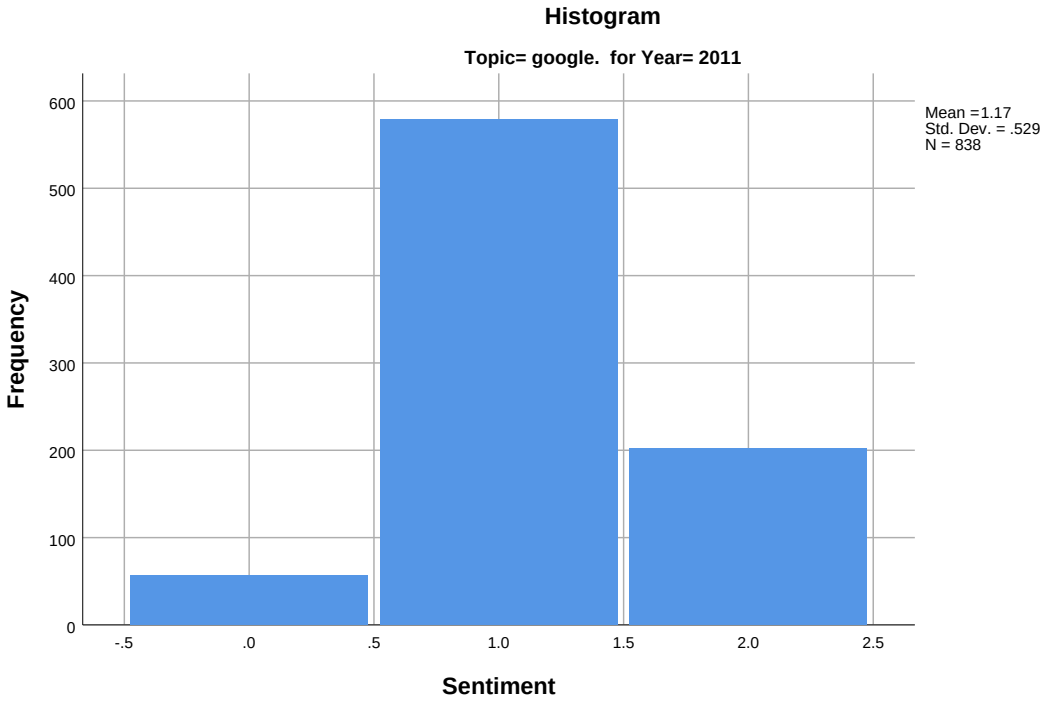
	Year			Statistic	Std. Error
Sentiment	2009	Mean		1.30	.116
		95% Confidence Interval for Mean	Lower Bound	1.07	
			Upper Bound	1.53	
		5% Trimmed Mean		1.34	
		Median		2.00	
		Variance		.921	
		Std. Deviation		.960	
		Minimum		0	
		Maximum		2	
		Range		2	
		Interquartile Range		2	
		Skewness		-.653	.289
		Kurtosis		-1.621	.570
	2011	Mean		1.17	.018
		95% Confidence Interval for Mean	Lower Bound	1.14	
			Upper Bound	1.21	
		5% Trimmed Mean		1.19	
		Median		1.00	
		Variance		.279	
		Std. Deviation		.529	
		Minimum		0	
		Maximum		2	
		Range		2	
		Interquartile Range		0	
		Skewness		.156	.084
		Kurtosis		.116	.169

a. Topic = google

Sentiment

Histograms

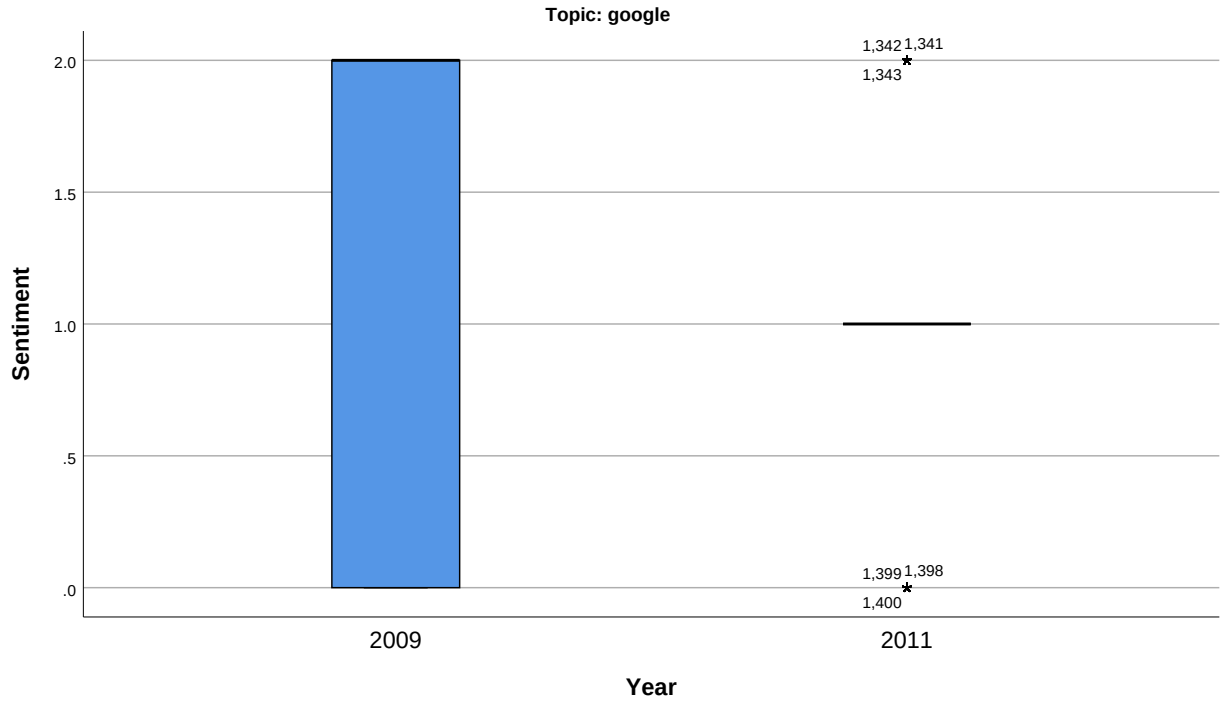




Stem-and-Leaf Plots

```
Sentiment Stem-and-Leaf Plot for
Year= 2009
```

```
Topic= google

 Frequency    Stem &  Leaf

    24.00        0 .  000000000000000000000000
      .00        0 .
      .00        1 .
      .00        1 .
    45.00        2 .  000000000000000000000000000000000000000000000

 Stem width:  1
 Each leaf:        1 case(s)



Sentiment Stem-and-Leaf Plot for
Year= 2011
Topic= google

 Frequency    Stem &  Leaf

    57.00 Extremes    (=<.0)
   579.00        1 .  00000000000000000000000000000000000000000000000000000000
0000000000000000000000000000000000000000
   202.00 Extremes    (>=2)

 Stem width:  1
 Each leaf:        6 case(s)
```



Topic = microsoft

Year

Case Processing Summary[a]

		Cases					
		Valid		Missing		Total	
	Year	N	Percent	N	Percent	N	Percent
Sentiment	2009	90	100.0%	0	0.0%	90	100.0%
	2011	864	100.0%	0	0.0%	864	100.0%

a. Topic = microsoft

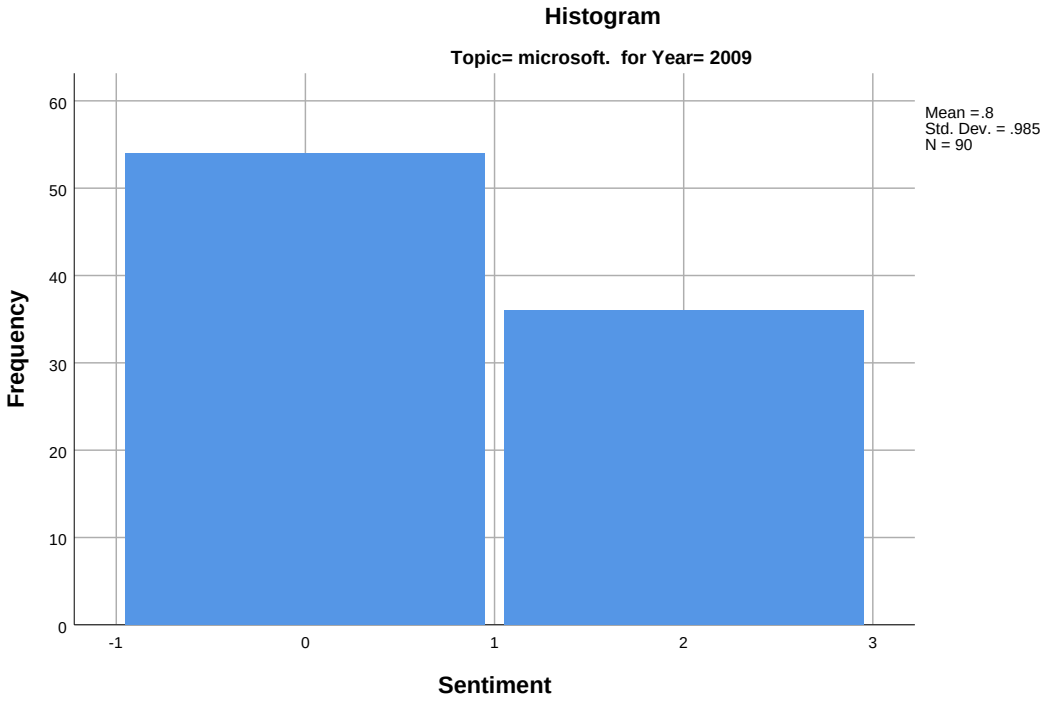
Descriptives[a]

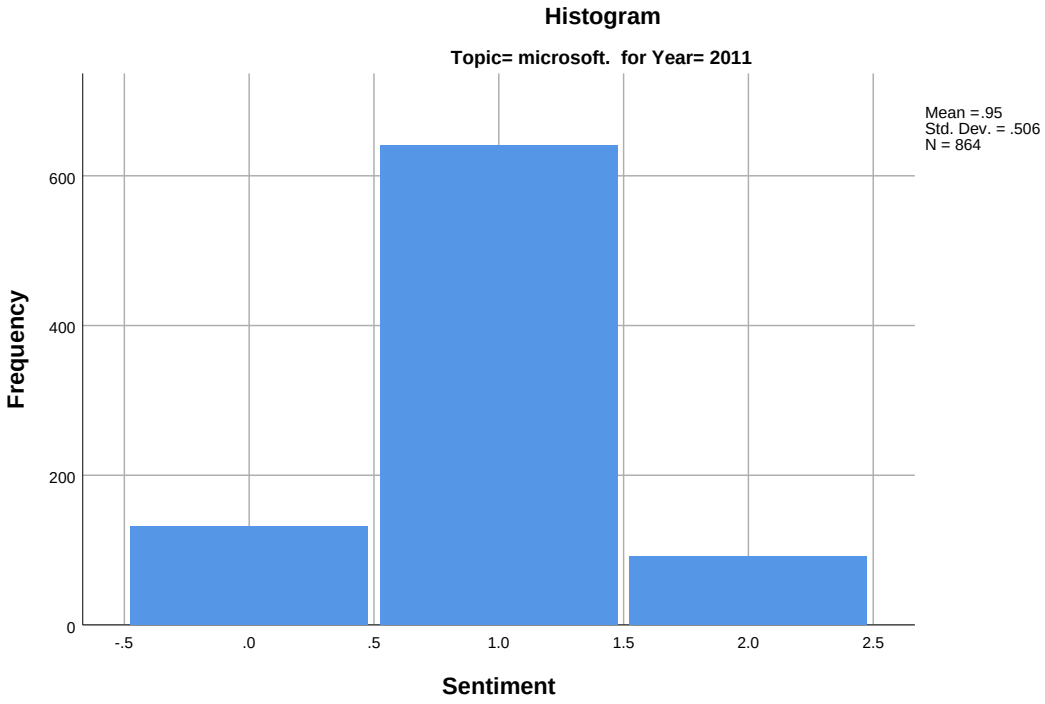
	Year			Statistic	Std. Error
Sentiment	2009	Mean		.80	.104
		95% Confidence Interval for Mean	Lower Bound	.59	
			Upper Bound	1.01	
		5% Trimmed Mean		.78	
		Median		.00	
		Variance		.971	
		Std. Deviation		.985	
		Minimum		0	
		Maximum		2	
		Range		2	
		Interquartile Range		2	
		Skewness		.415	.254
		Kurtosis		-1.870	.503
	2011	Mean		.95	.017
		95% Confidence Interval for Mean	Lower Bound	.92	
			Upper Bound	.99	
		5% Trimmed Mean		.95	
		Median		1.00	
		Variance		.256	
		Std. Deviation		.506	
		Minimum		0	
		Maximum		2	
		Range		2	
		Interquartile Range		0	
		Skewness		-.085	.083
		Kurtosis		.870	.166

a. Topic = microsoft

Sentiment

Histograms

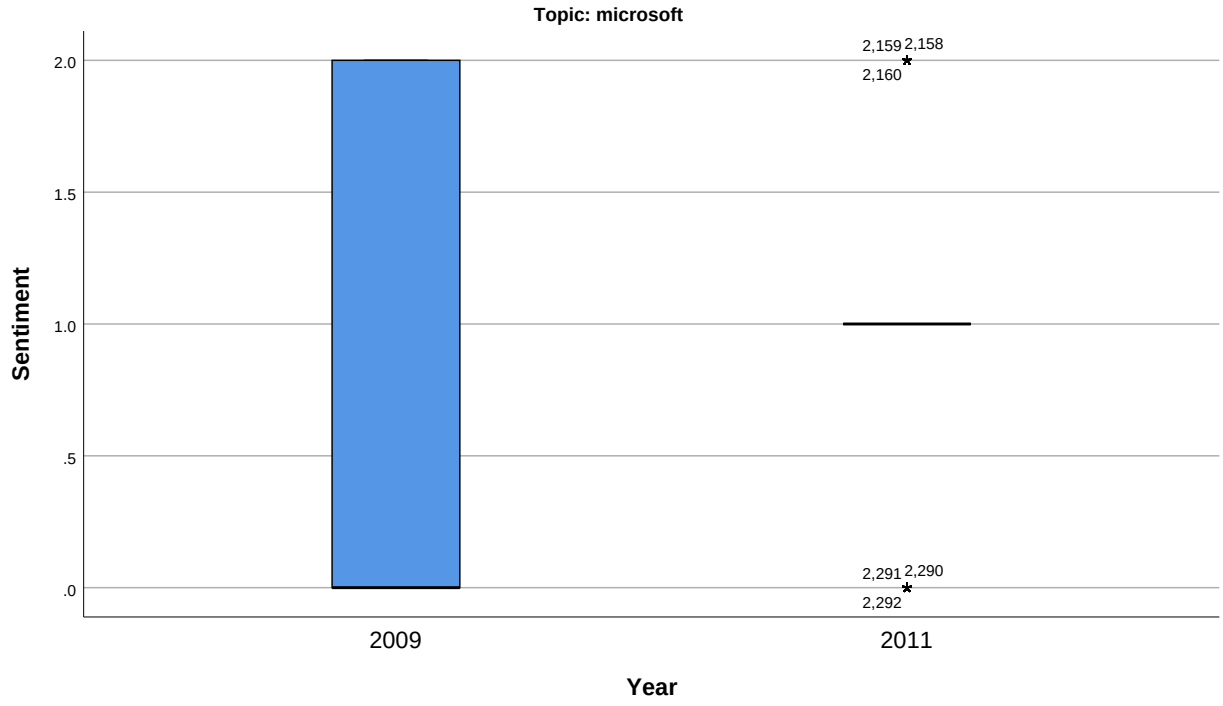




Stem-and-Leaf Plots

```
Sentiment Stem-and-Leaf Plot for
Year= 2009
```

```
Topic= microsoft

 Frequency    Stem &  Leaf

    54.00        0 .  000000000000000000000000000000000000000000000000000000
      .00        0 .
      .00        1 .
      .00        1 .
    36.00        2 .  000000000000000000000000000000000000

 Stem width:  1
 Each leaf:        1 case(s)



Sentiment Stem-and-Leaf Plot for
Year= 2011
Topic= microsoft

 Frequency    Stem &  Leaf

   132.00 Extremes    (=<.0)
   641.00        1 .  00000000000000000000000000000000000000000000000000000000
000000000000000000000000000000000000
    91.00 Extremes    (>=2)

 Stem width:  1
 Each leaf:        7 case(s)
```



Topic = twitter

Year

Case Processing Summary[a]

		Cases					
		Valid		Missing		Total	
	Year	N	Percent	N	Percent	N	Percent
Sentiment	2009	150	100.0%	0	0.0%	150	100.0%
	2011	719	100.0%	0	0.0%	719	100.0%

a. Topic = twitter

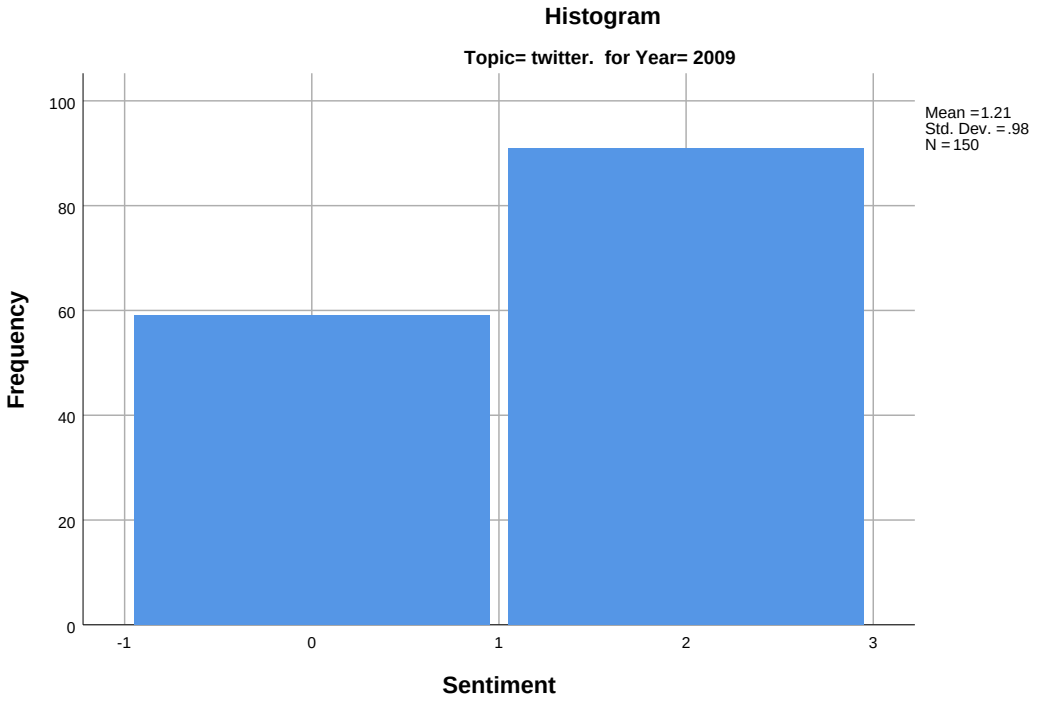
Descriptives[a]

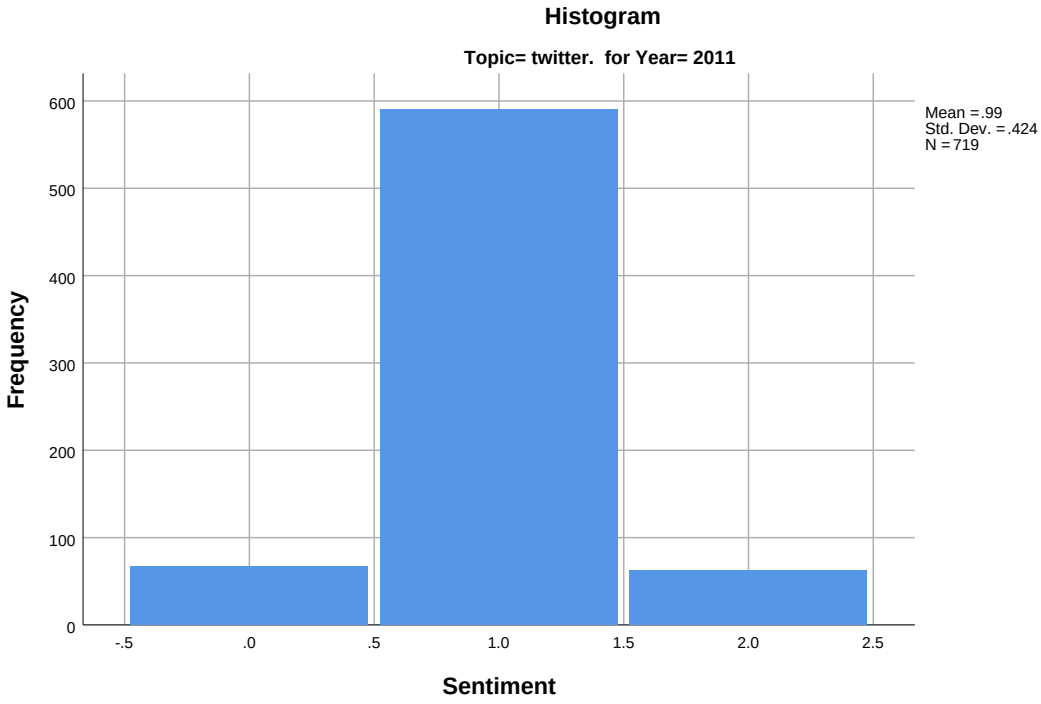
	Year			Statistic	Std. Error
Sentiment	2009	Mean		1.21	.080
		95% Confidence Interval for Mean	Lower Bound	1.06	
			Upper Bound	1.37	
		5% Trimmed Mean		1.24	
		Median		2.00	
		Variance		.961	
		Std. Deviation		.980	
		Minimum		0	
		Maximum		2	
		Range		2	
		Interquartile Range		2	
		Skewness		-.441	.198
		Kurtosis		-1.830	.394
	2011	Mean		.99	.016
		95% Confidence Interval for Mean	Lower Bound	.96	
			Upper Bound	1.02	
		5% Trimmed Mean		.99	
		Median		1.00	
		Variance		.180	
		Std. Deviation		.424	
		Minimum		0	
		Maximum		2	
		Range		2	
		Interquartile Range		0	
		Skewness		-.042	.091
		Kurtosis		2.599	.182

a. Topic = twitter

Sentiment

Histograms





Stem-and-Leaf Plots

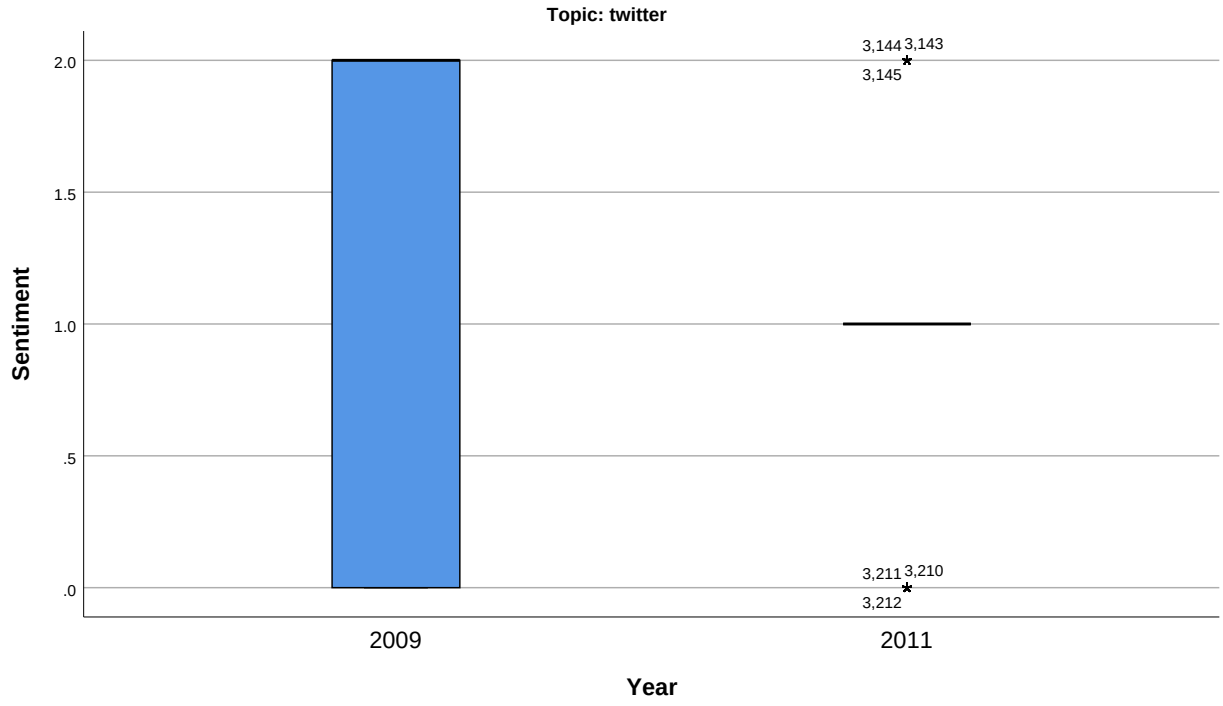
Sentiment Stem-and-Leaf Plot for
Year= 2009

Topic= twitter

```
 Frequency    Stem &  Leaf

    59.00        0 .  00000000000000000000000000000000000000000000000000000000
000
      .00        0 .
      .00        0 .
      .00        0 .
      .00        0 .
      .00        1 .
      .00        1 .
      .00        1 .
      .00        1 .
      .00        1 .
    91.00        2 .  00000000000000000000000000000000000000000000000000000000
0000000000000000000000000000000000

 Stem width:  1
 Each leaf:        1 case(s)
```

Sentiment Stem-and-Leaf Plot for
Year= 2011
Topic= twitter

```
 Frequency    Stem &  Leaf

    67.00 Extremes    (=<.0)
   590.00        1 .  00000000000000000000000000000000000000000000000000000000
0000000000000000000000000000000000000000000000000000000000
    62.00 Extremes    (>=2)

 Stem width:  1
 Each leaf:        6 case(s)
```




```
EXAMINE VARIABLES=Sentiment BY Year
  /PLOT BOXPLOT STEMLEAF HISTOGRAM NPPLOT
  /COMPARE GROUPS
  /STATISTICS DESCRIPTIVES
  /CINTERVAL 95
  /MISSING LISTWISE
  /NOTOTAL.
```

Explore

Notes

Output Created		20-JAN-2025 01:08:15
Comments		
Input	Data	C:\Users\User\Desktop\data_bases\final.csv
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	Topic
	N of Rows in Working Data File	3803
Missing Value Handling	Definition of Missing	User-defined missing values for dependent variables are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any dependent variable or factor used.
Syntax		EXAMINE VARIABLES=Sentiment BY Year /PLOT BOXPLOT STEMLEAF HISTOGRAM NPPLOT /COMPARE GROUPS /STATISTICS DESCRIPTIVES /CINTERVAL 95 /MISSING LISTWISE /NOTOTAL.
Resources	Processor Time	00:00:06.81
	Elapsed Time	00:00:03.50

Topic = apple

Year

Case Processing Summary[a]

		Cases					
		Valid		Missing		Total	
	Year	N	Percent	N	Percent	N	Percent
Sentiment	2009	70	100.0%	0	0.0%	70	100.0%
	2011	1003	100.0%	0	0.0%	1003	100.0%

a. Topic = apple

Descriptives[a]

	Year			Statistic	Std. Error
Sentiment	2009	Mean		.66	.113
		95% Confidence Interval for Mean	Lower Bound	.43	
			Upper Bound	.88	
		5% Trimmed Mean		.62	
		Median		.00	
		Variance		.895	
		Std. Deviation		.946	
		Minimum		0	
		Maximum		2	
		Range		2	
		Interquartile Range		2	
		Skewness		.746	.287
		Kurtosis		-1.487	.566
	2011	Mean		.85	.021
		95% Confidence Interval for Mean	Lower Bound	.81	
			Upper Bound	.89	
		5% Trimmed Mean		.83	
		Median		1.00	
		Variance		.456	
		Std. Deviation		.675	
		Minimum		0	
		Maximum		2	
		Range		2	
		Interquartile Range		1	
		Skewness		.192	.077
		Kurtosis		-.825	.154

a. Topic = apple

Tests of Normality[a]

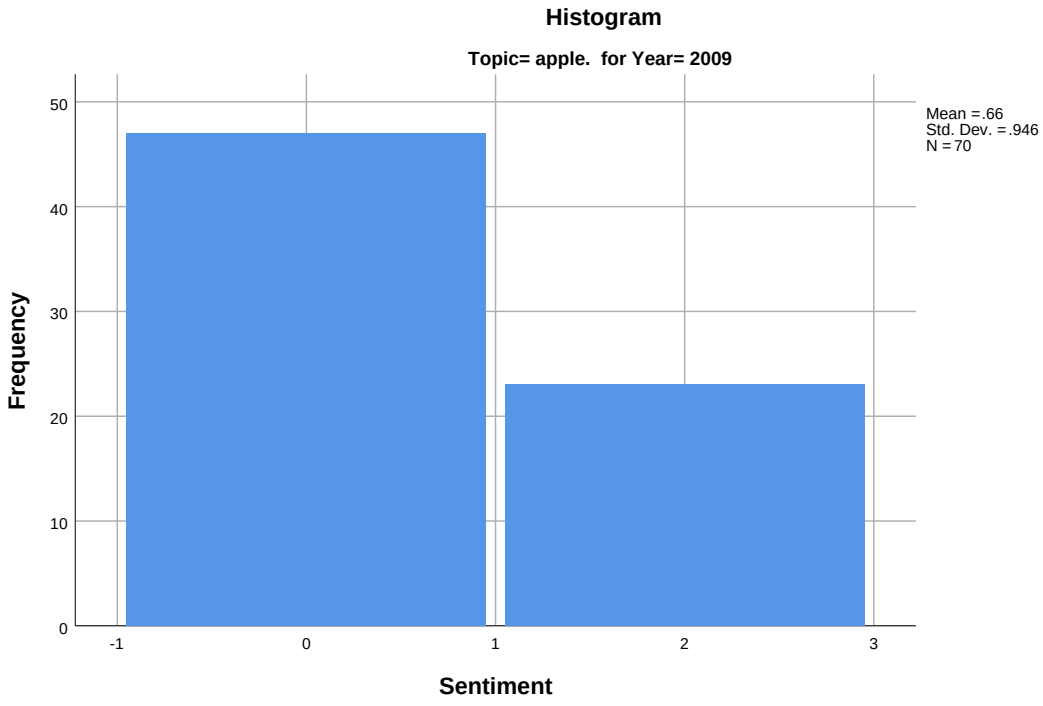
		Kolmogorov-Smirnov[b]			Shapiro-Wilk		
	Year	Statistic	df	Sig.	Statistic	df	Sig.
Sentiment	2009	.428	70	.000	.592	70	.000
	2011	.274	1003	.000	.795	1003	.000

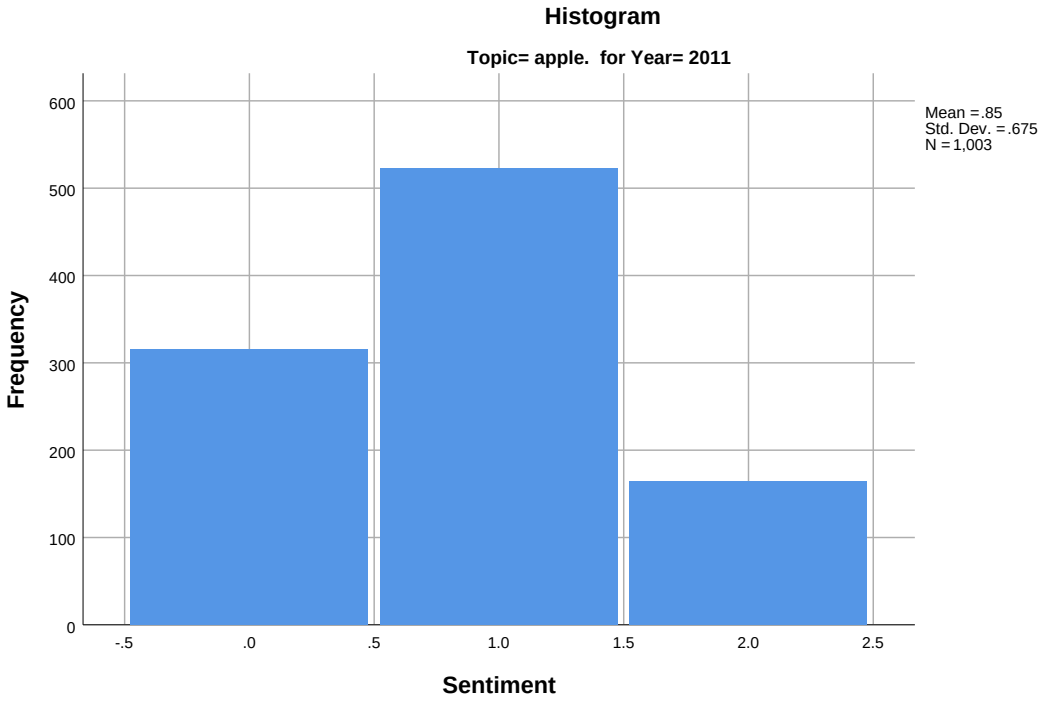
a. Topic = apple

b. Lilliefors Significance Correction

Sentiment

Histograms



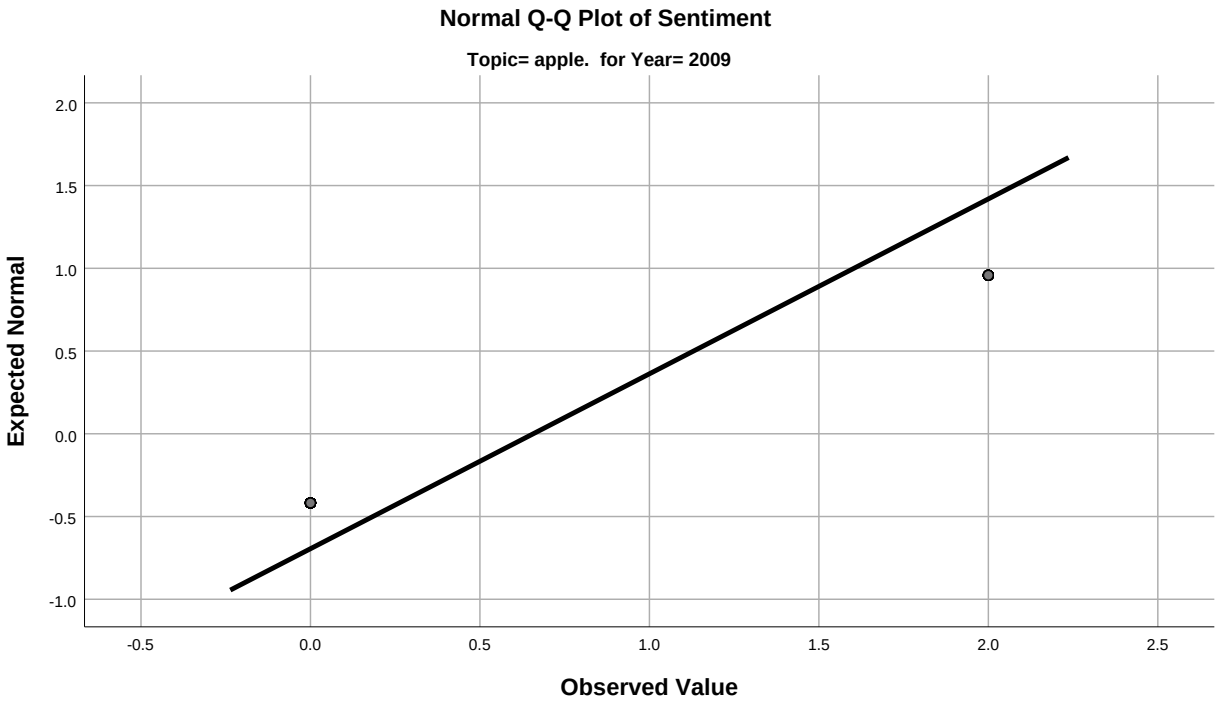


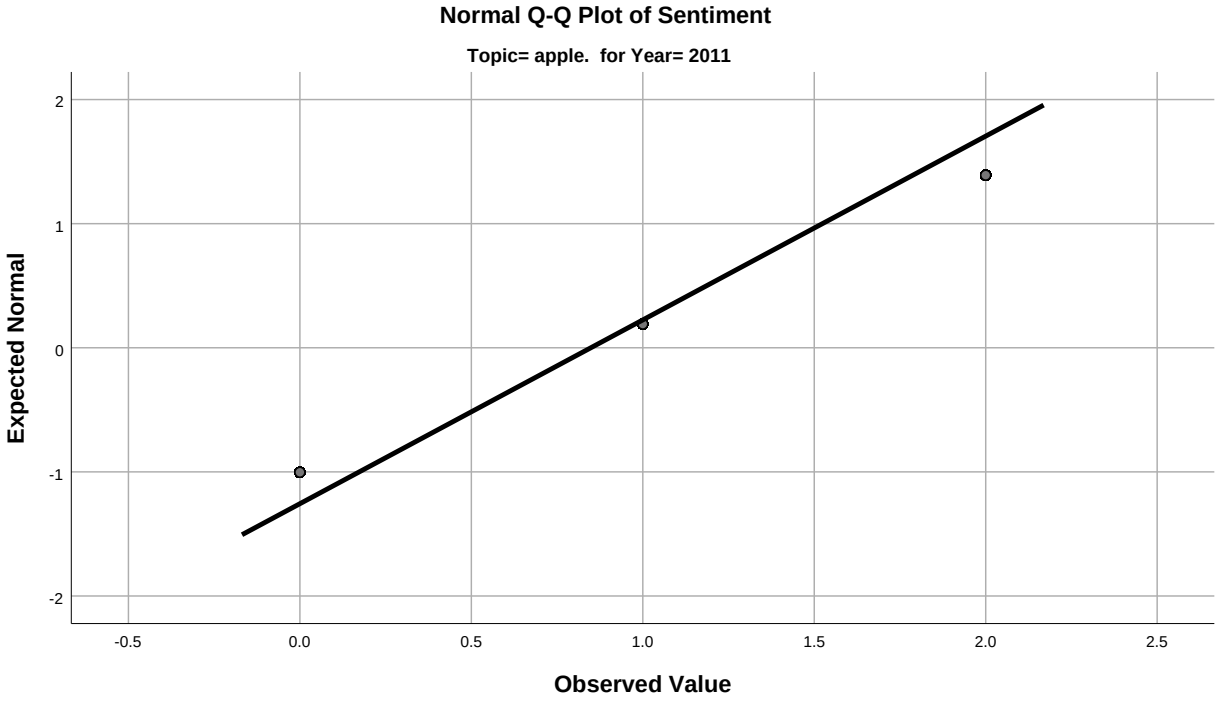
Stem-and-Leaf Plots

```
Sentiment Stem-and-Leaf Plot for
Year= 2009
Topic= apple

 Frequency    Stem &  Leaf

    47.00        0 .  00000000000000000000000000000000000000000000000
      .00        0 .
      .00        1 .
      .00        1 .
    23.00        2 .  00000000000000000000000

 Stem width:  1
 Each leaf:        1 case(s)


Sentiment Stem-and-Leaf Plot for
Year= 2011
Topic= apple
```

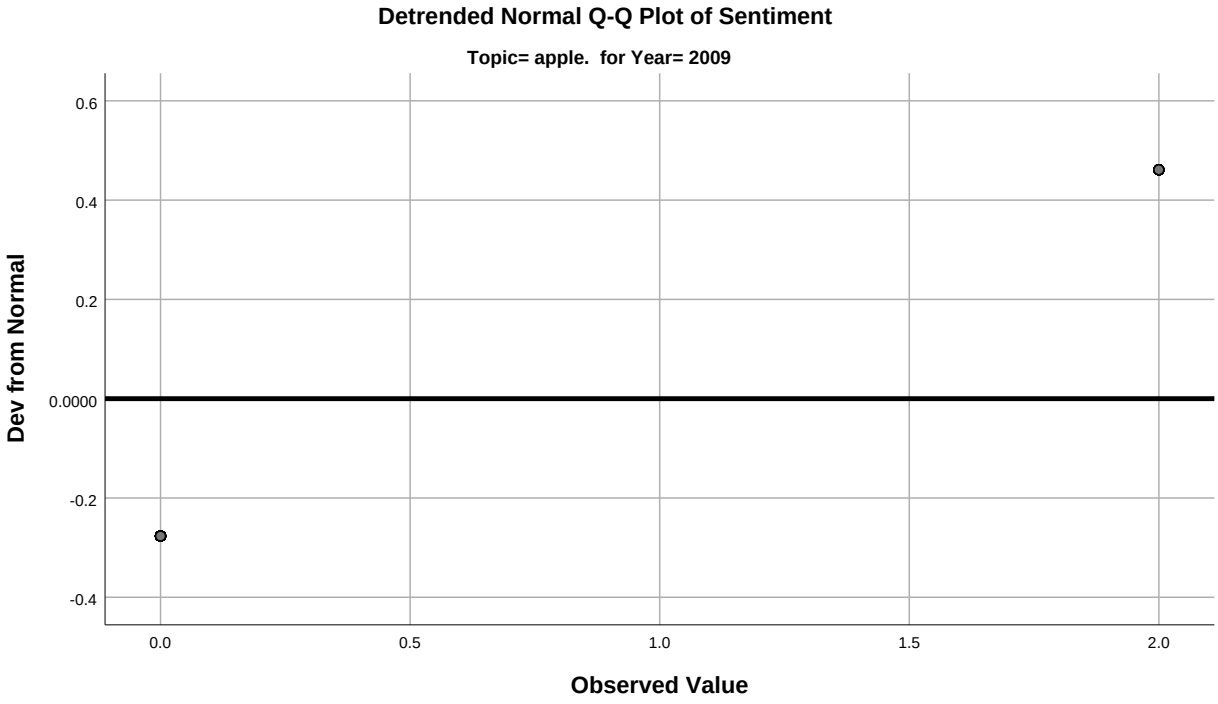
```
 Frequency    Stem &  Leaf

   316.00        0 .  0000000000000000000000000000000000000000000000000000
      .00        1 .
      .00        2 .
      .00        3 .
      .00        4 .
      .00        5 .
      .00        6 .
      .00        7 .
      .00        8 .
      .00        9 .
   523.00       10 .  0000000000000000000000000000000000000000000000000000000000000000
0000000000000000000000000000000
      .00       11 .
      .00       12 .
      .00       13 .
      .00       14 .
      .00       15 .
      .00       16 .
      .00       17 .
      .00       18 .
      .00       19 .
   164.00       20 .  00000000000000000000000000

 Stem width:  0
 Each leaf:        6 case(s)
```

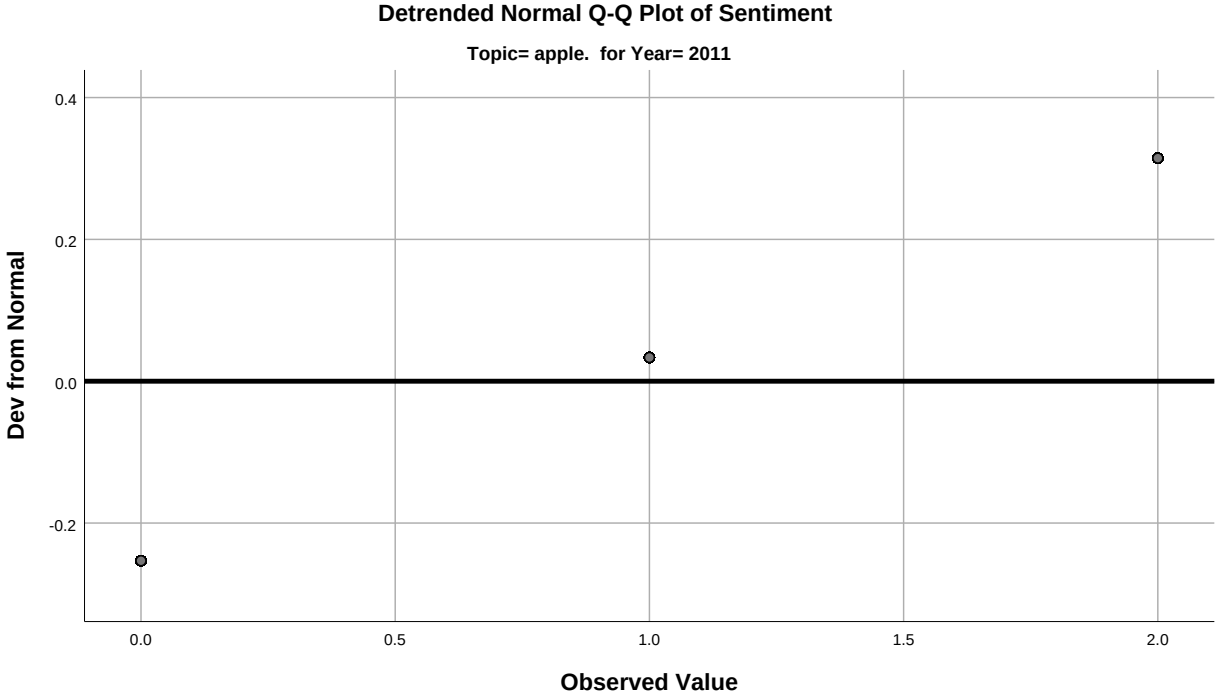
Normal Q-Q Plots

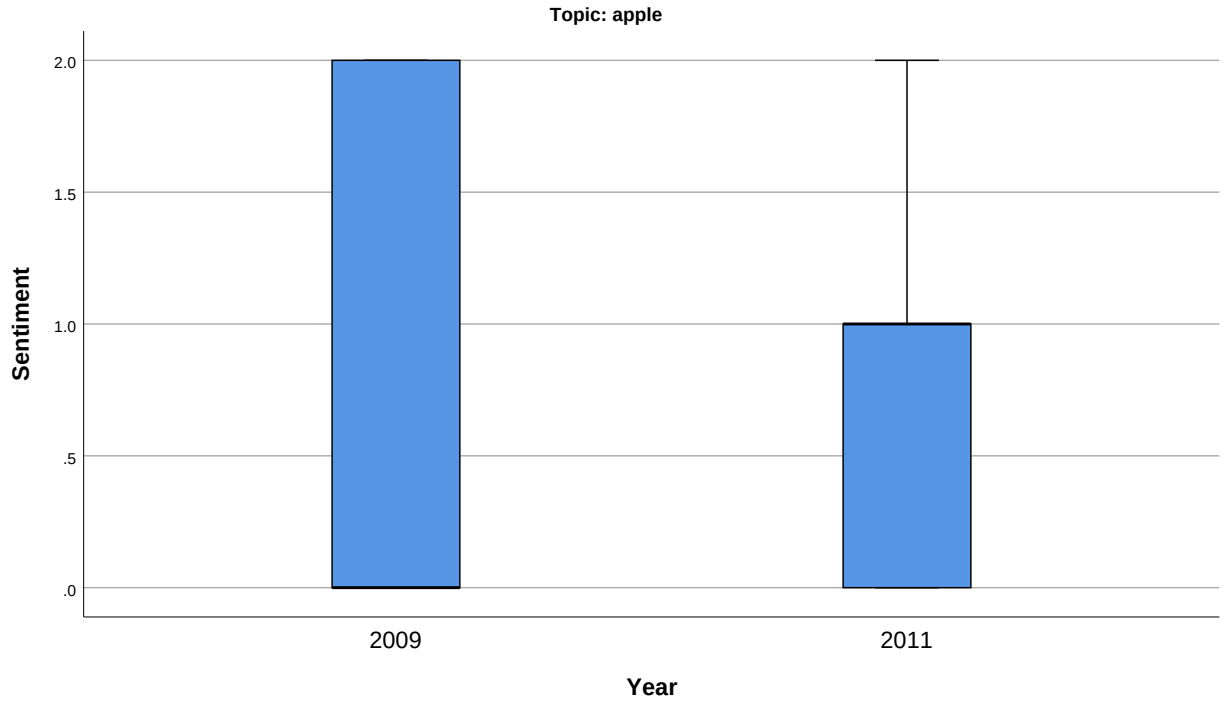




Detrended Normal Q-Q Plots


Detrended Normal Q-Q Plot of Sentiment
Topic= apple. for Year= 2009
Dev from Normal
0.6
0.4
0.2
0.0000
-0.2
-0.4
0.0
0.5
1.0
1.5
2.0
Observed Value


Detrended Normal Q-Q Plot of Sentiment
Topic= apple. for Year= 2011
Dev from Normal
0.4
0.2
0.0
-0.2
0.0
0.5
1.0
1.5
2.0
Observed Value



Topic = google

Year

Case Processing Summary[a]

		Cases					
		Valid		Missing		Total	
	Year	N	Percent	N	Percent	N	Percent
Sentiment	2009	69	100.0%	0	0.0%	69	100.0%
	2011	838	100.0%	0	0.0%	838	100.0%

a. Topic = google

Descriptives[a]

	Year			Statistic	Std. Error
Sentiment	2009	Mean		1.30	.116
		95% Confidence Interval for Mean	Lower Bound	1.07	
			Upper Bound	1.53	
		5% Trimmed Mean		1.34	
		Median		2.00	
		Variance		.921	
		Std. Deviation		.960	
		Minimum		0	
		Maximum		2	
		Range		2	
		Interquartile Range		2	
		Skewness		-.653	.289
		Kurtosis		-1.621	.570
	2011	Mean		1.17	.018
		95% Confidence Interval for Mean	Lower Bound	1.14	
			Upper Bound	1.21	
		5% Trimmed Mean		1.19	
		Median		1.00	
		Variance		.279	
		Std. Deviation		.529	
		Minimum		0	
		Maximum		2	
		Range		2	
		Interquartile Range		0	
		Skewness		.156	.084
		Kurtosis		.116	.169

a. Topic = google

Tests of Normality[a]

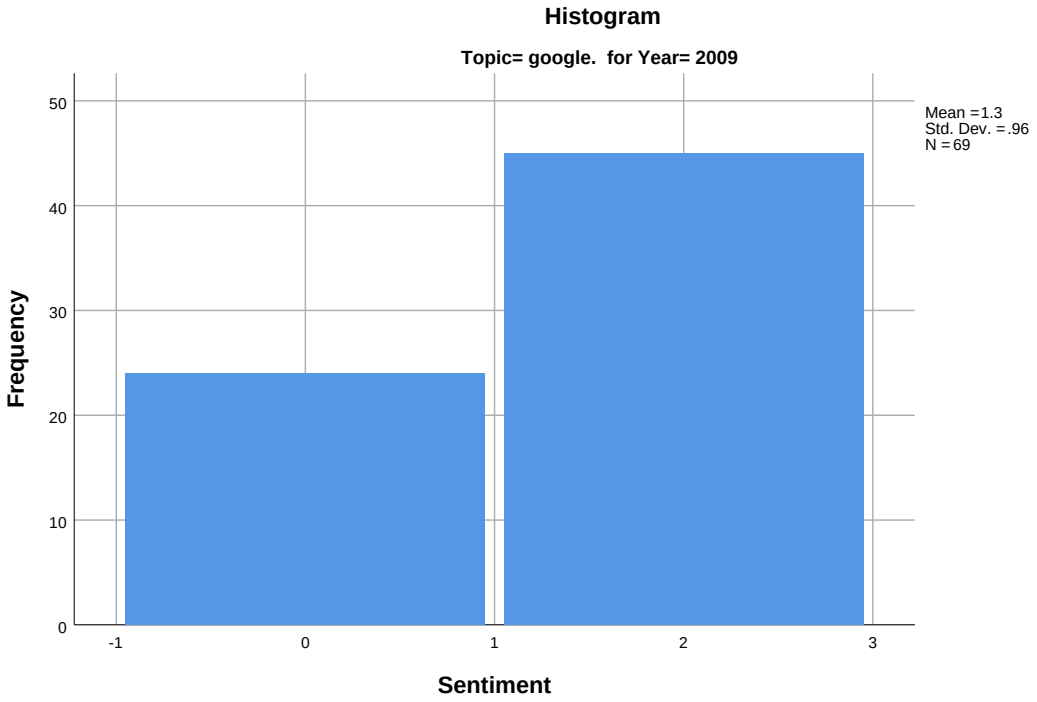
		Kolmogorov-Smirnov[b]			Shapiro-Wilk		
	Year	Statistic	df	Sig.	Statistic	df	Sig.
Sentiment	2009	.418	69	.000	.602	69	.000
	2011	.387	838	.000	.703	838	.000

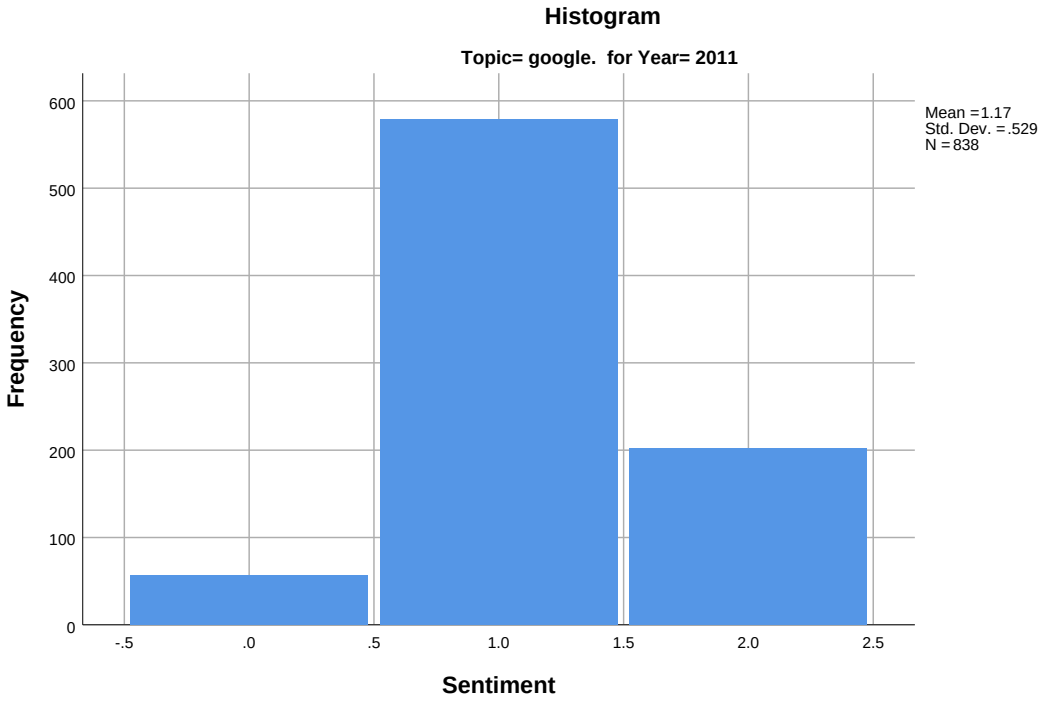
a. Topic = google

b. Lilliefors Significance Correction

Sentiment

Histograms



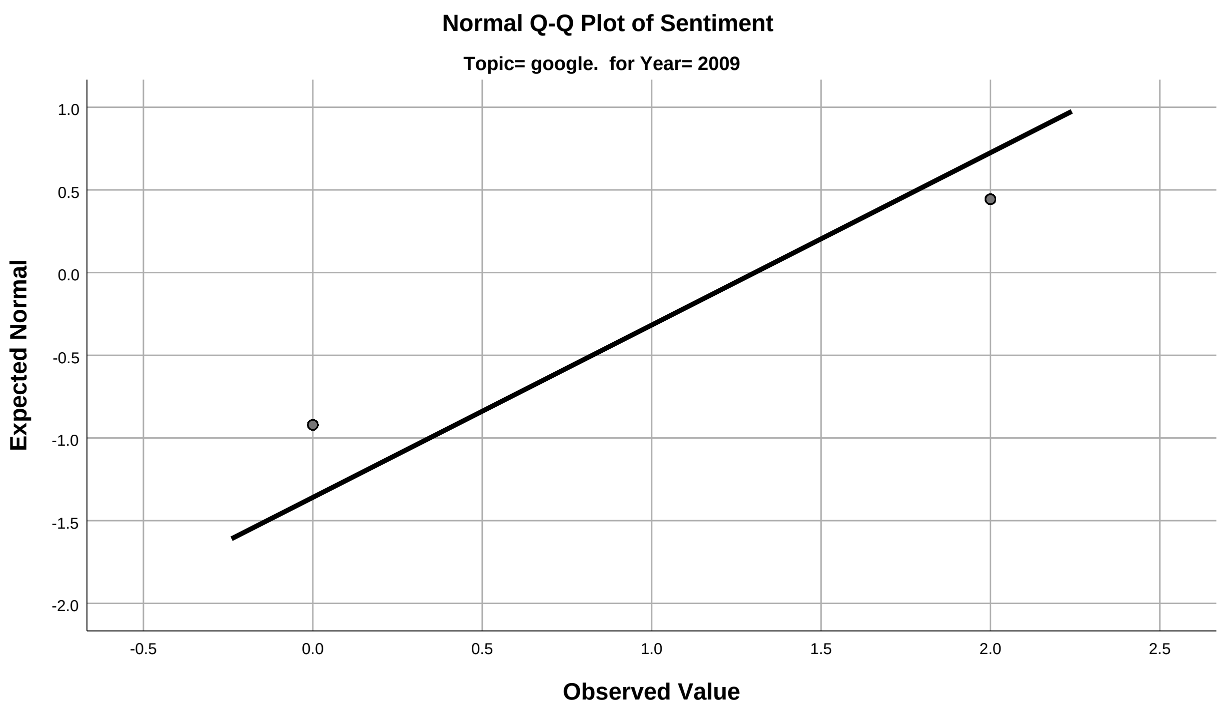


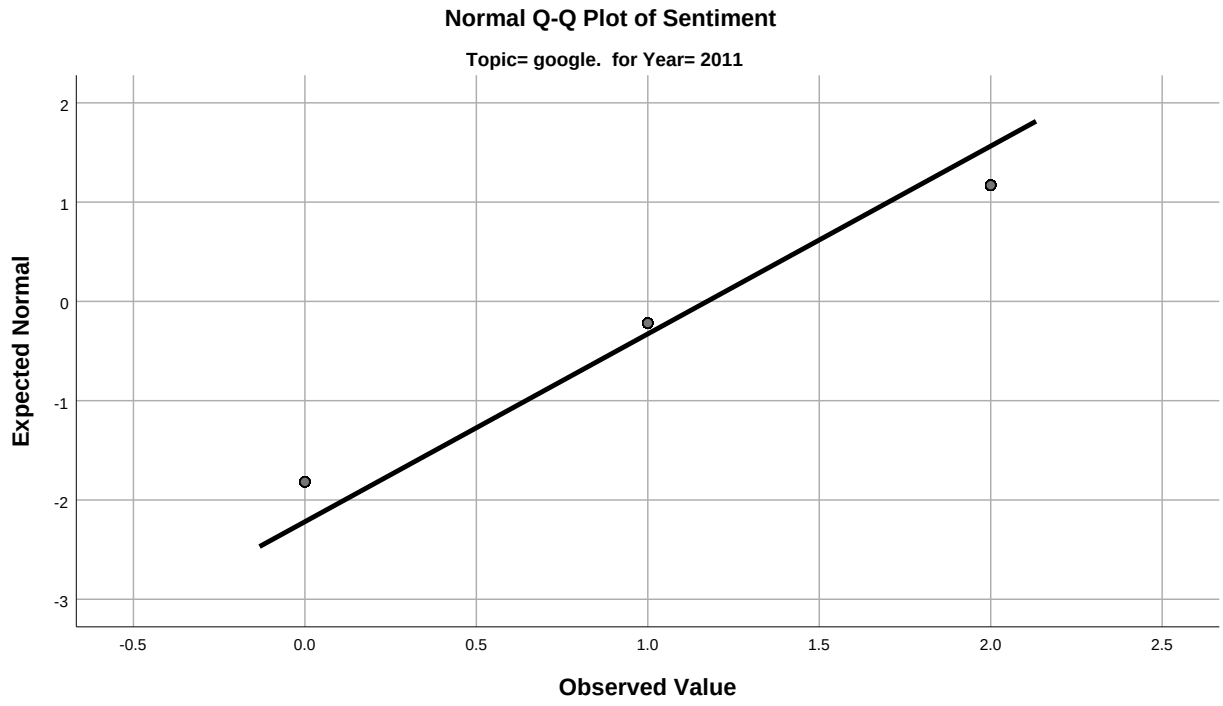
Stem-and-Leaf Plots

```
Sentiment Stem-and-Leaf Plot for
Year= 2009
Topic= google

 Frequency    Stem &  Leaf

    24.00        0 .  000000000000000000000000
      .00        0 .
      .00        1 .
      .00        1 .
    45.00        2 .  000000000000000000000000000000000000000000000000

 Stem width:  1
 Each leaf:        1 case(s)



Sentiment Stem-and-Leaf Plot for
Year= 2011
Topic= google
```

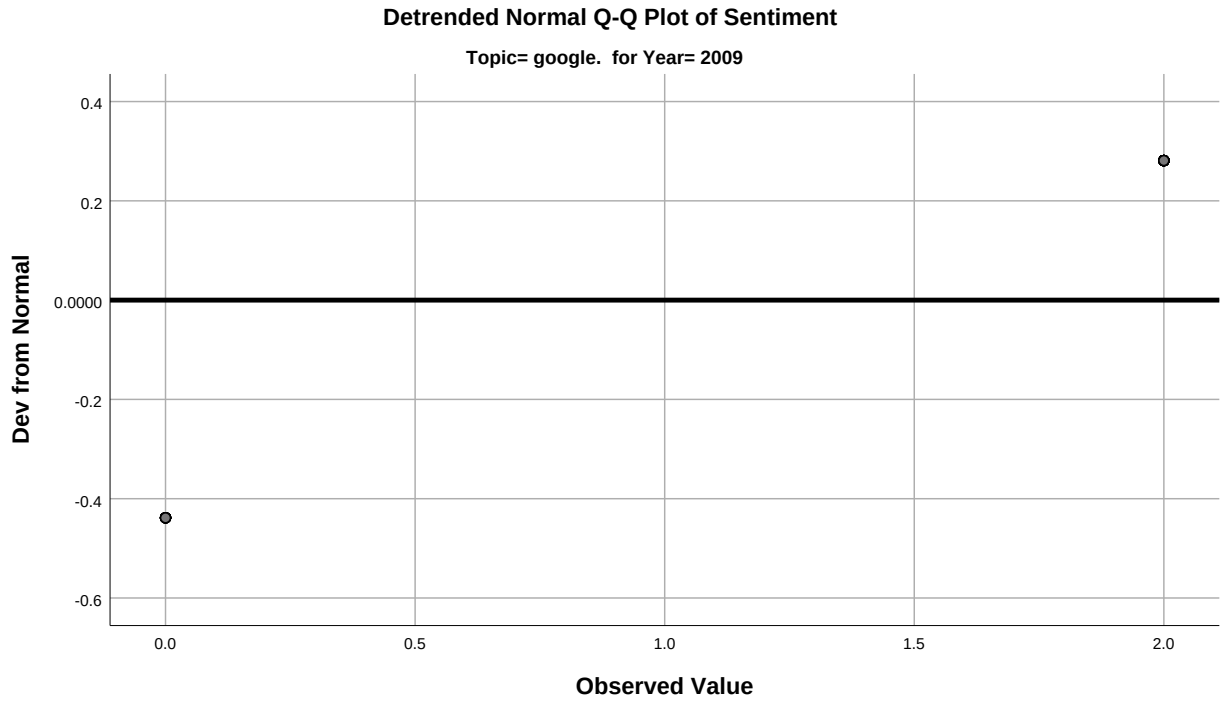
```
 Frequency    Stem &  Leaf

    57.00 Extremes    (=<.0)
   579.00        1 .  00000000000000000000000000000000000000000000000000000000
0000000000000000000000000000000000000000
   202.00 Extremes    (>=2)

 Stem width:  1
 Each leaf:        6 case(s)
```

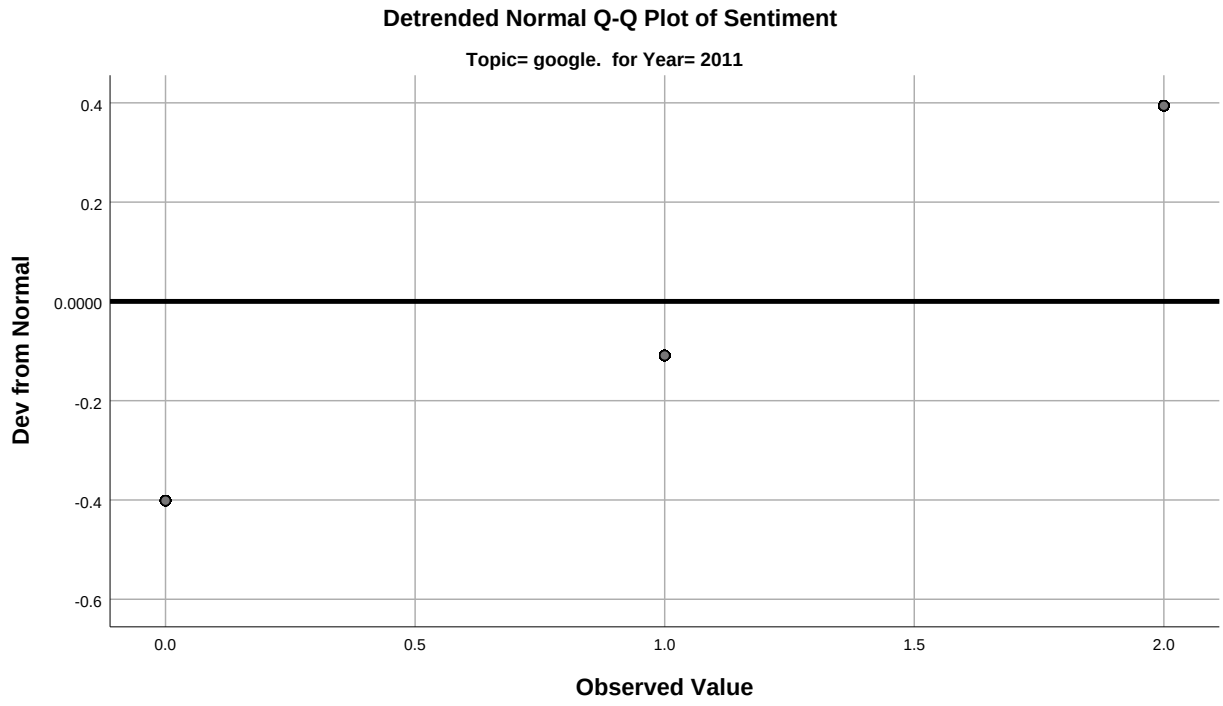
Normal Q-Q Plots

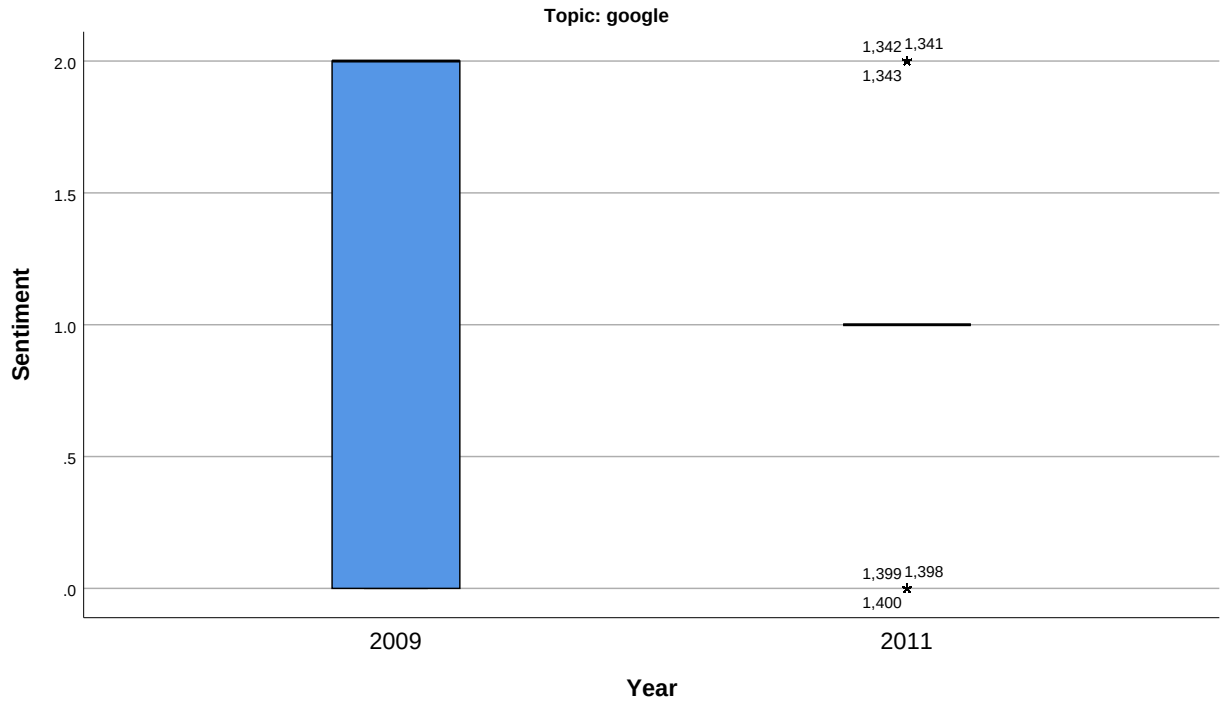




Detrended Normal Q-Q Plots







Topic = microsoft

Year

Case Processing Summary[a]

		Cases					
		Valid		Missing		Total	
	Year	N	Percent	N	Percent	N	Percent
Sentiment	2009	90	100.0%	0	0.0%	90	100.0%
	2011	864	100.0%	0	0.0%	864	100.0%

a. Topic = microsoft

Descriptives[a]

	Year			Statistic	Std. Error
Sentiment	2009	Mean		.80	.104
		95% Confidence Interval for Mean	Lower Bound	.59	
			Upper Bound	1.01	
		5% Trimmed Mean		.78	
		Median		.00	
		Variance		.971	
		Std. Deviation		.985	
		Minimum		0	
		Maximum		2	
		Range		2	
		Interquartile Range		2	
		Skewness		.415	.254
		Kurtosis		-1.870	.503
	2011	Mean		.95	.017
		95% Confidence Interval for Mean	Lower Bound	.92	
			Upper Bound	.99	
		5% Trimmed Mean		.95	
		Median		1.00	
		Variance		.256	
		Std. Deviation		.506	
		Minimum		0	
		Maximum		2	
		Range		2	
		Interquartile Range		0	
		Skewness		-.085	.083
		Kurtosis		.870	.166

a. Topic = microsoft

Tests of Normality[a]

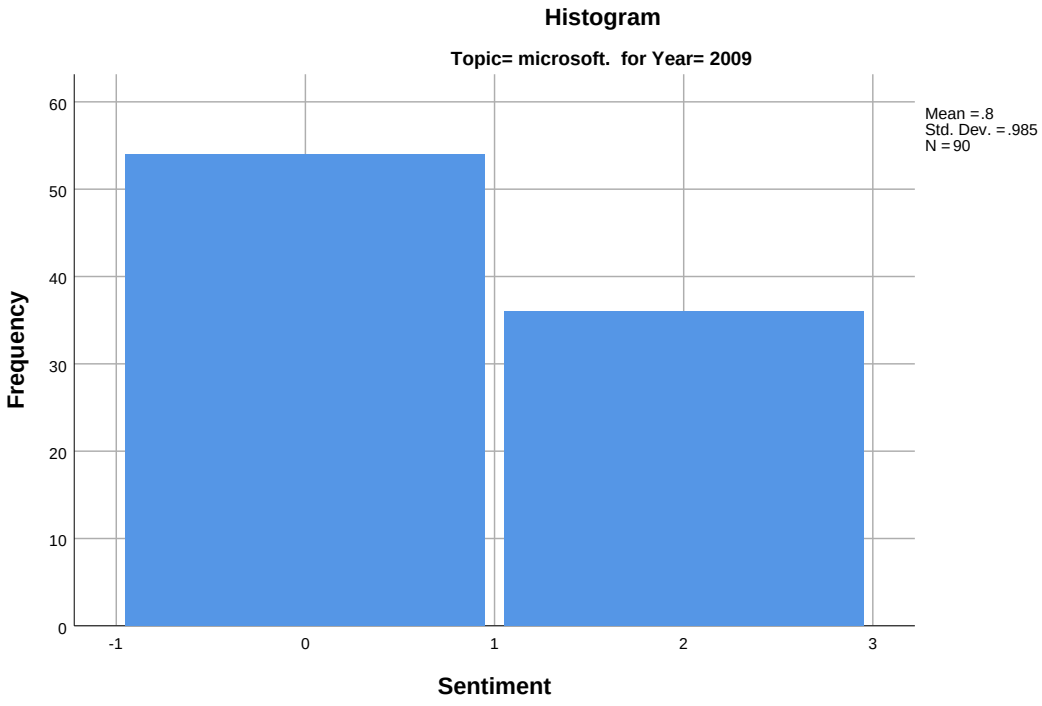
		Kolmogorov-Smirnov[b]			Shapiro-Wilk		
	Year	Statistic	df	Sig.	Statistic	df	Sig.
Sentiment	2009	.392	90	.000	.622	90	.000
	2011	.385	864	.000	.684	864	.000

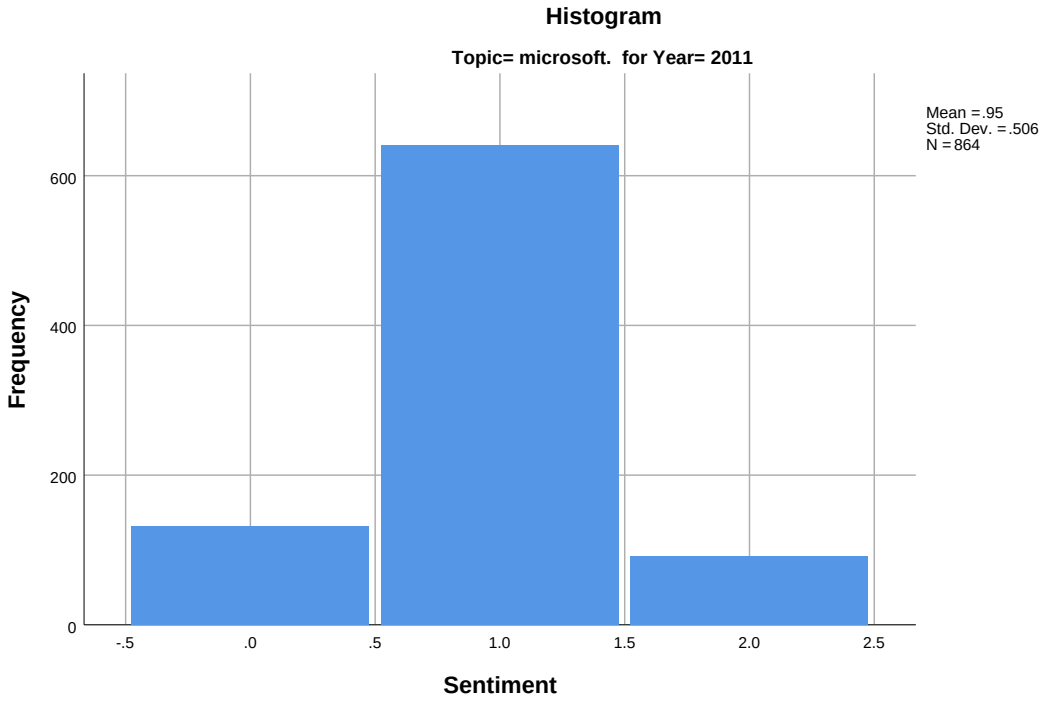
a. Topic = microsoft

b. Lilliefors Significance Correction

Sentiment

Histograms





Stem-and-Leaf Plots

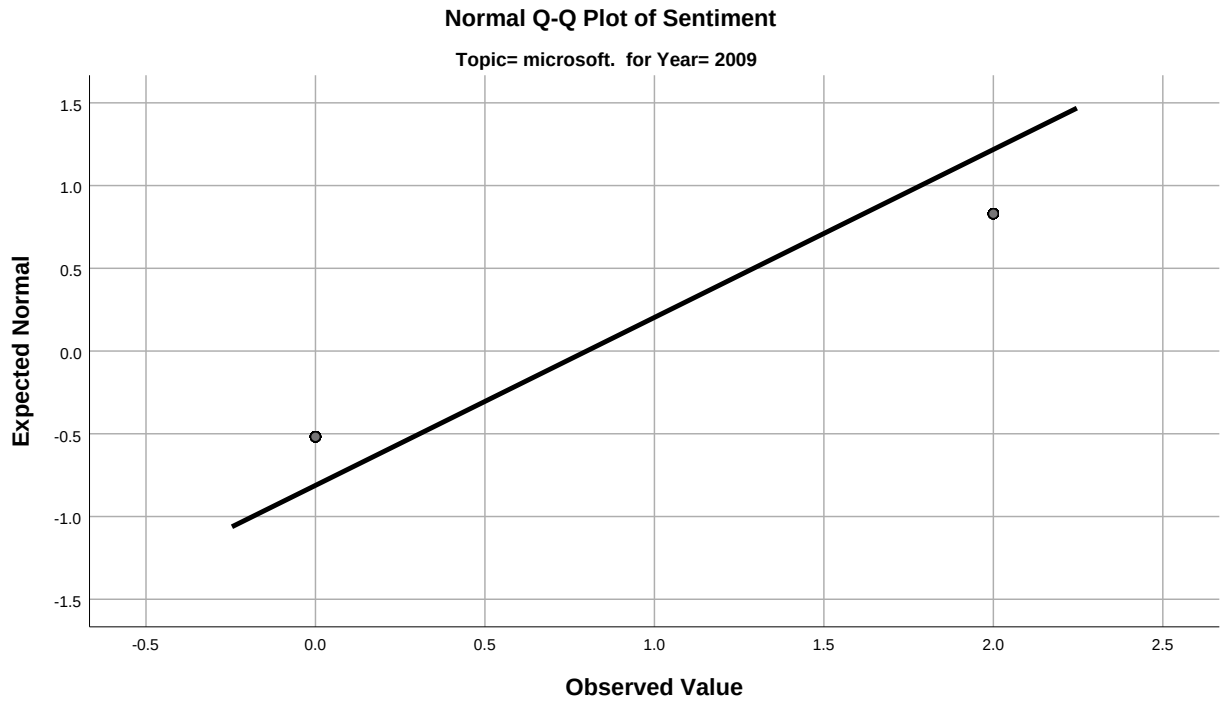
Sentiment Stem-and-Leaf Plot for
Year= 2009
Topic= microsoft

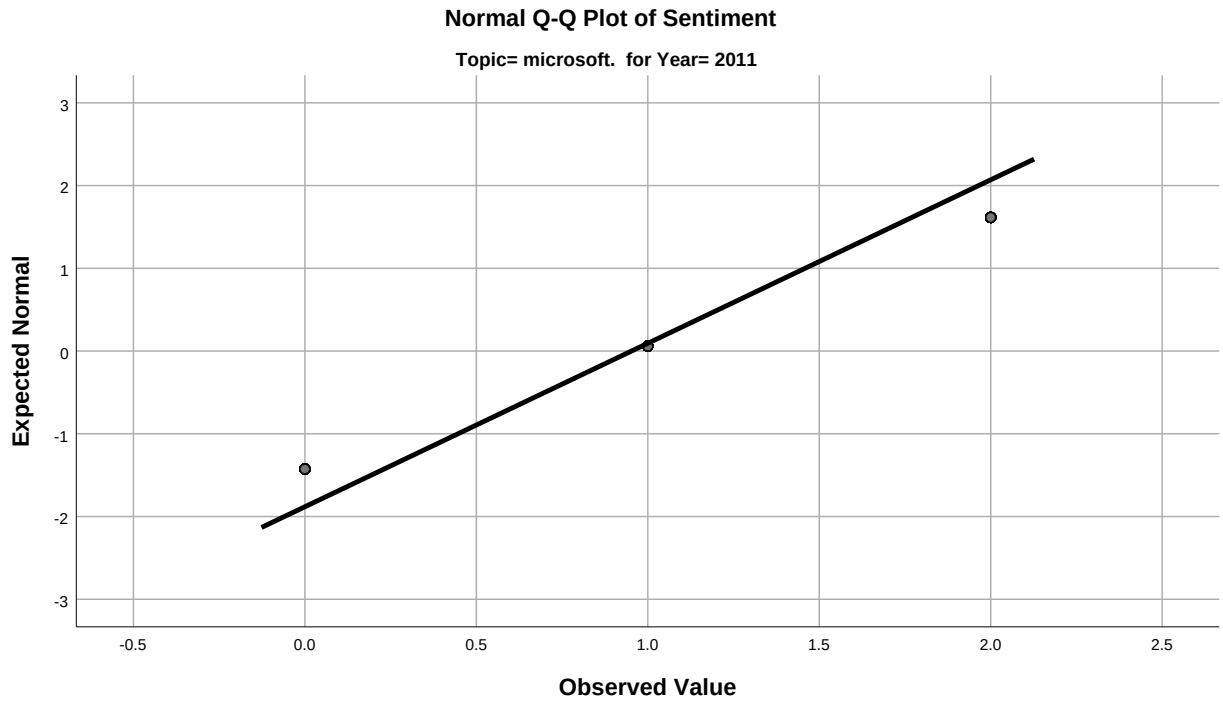
```
 Frequency    Stem &  Leaf

    54.00        0 .  000000000000000000000000000000000000000000000000000000
      .00        0 .
      .00        1 .
      .00        1 .
    36.00        2 .  000000000000000000000000000000000000

 Stem width:  1
 Each leaf:        1 case(s)
```

Sentiment Stem-and-Leaf Plot for
Year= 2011
Topic= microsoft

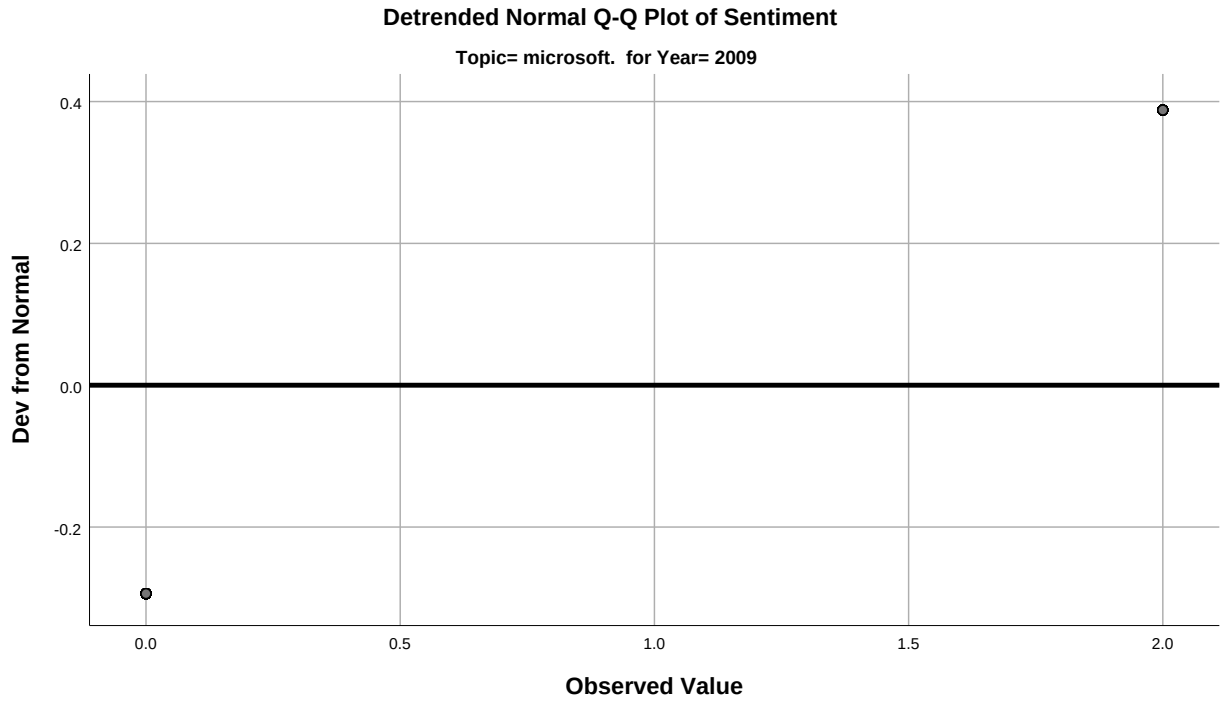
```
 Frequency    Stem &  Leaf

   132.00 Extremes    (=<.0)
   641.00        1 .  0000000000000000000000000000000000000000000000000000000000000000
0000000000000000000000000000000000000
    91.00 Extremes    (>=2)

 Stem width:  1
 Each leaf:        7 case(s)
```

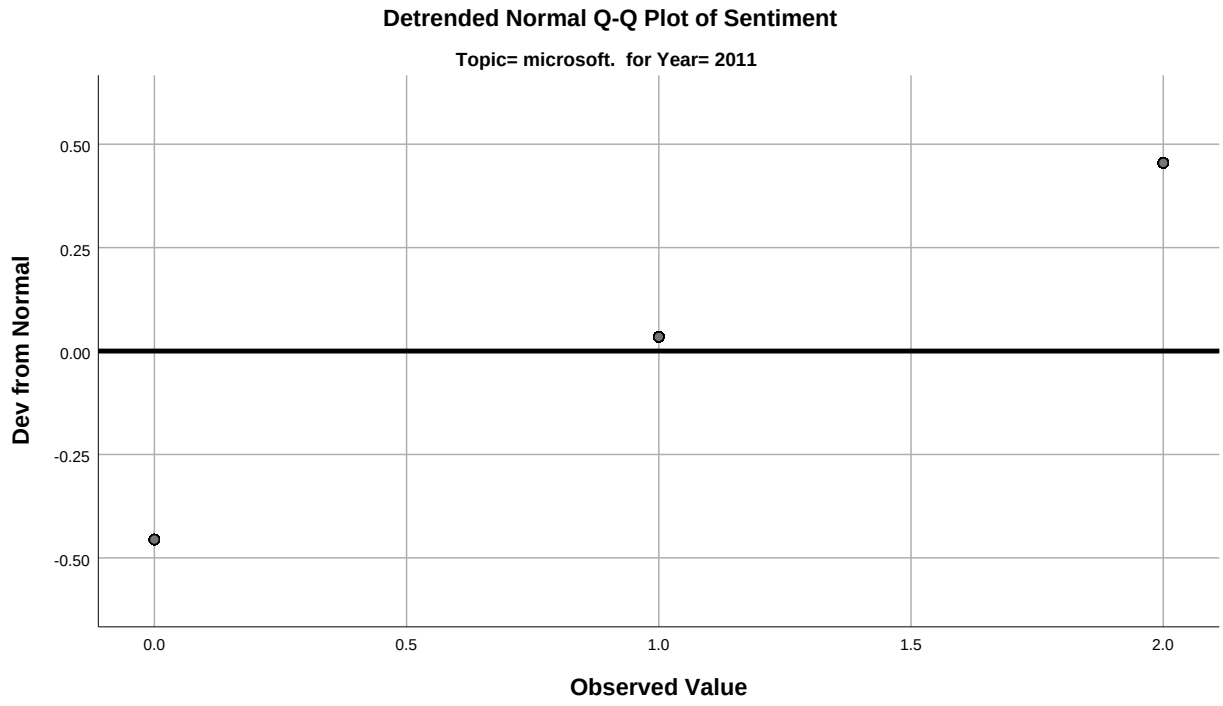
Normal Q-Q Plots

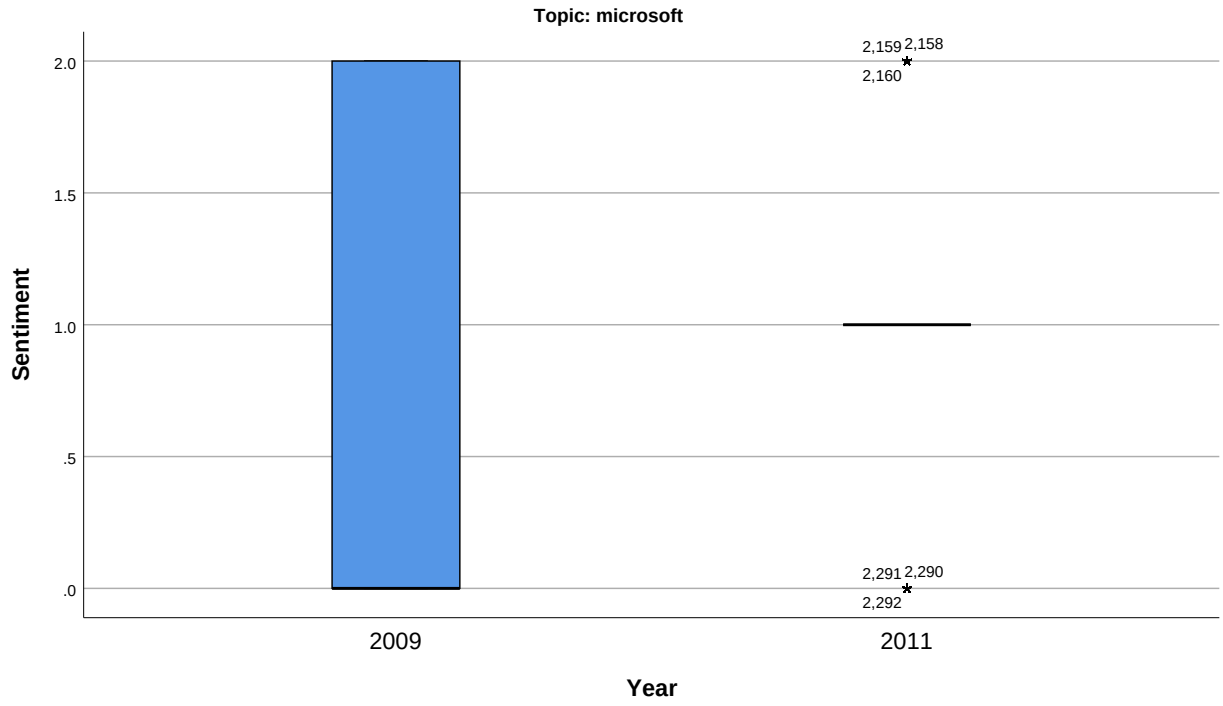




Detrended Normal Q-Q Plots







Topic = twitter

Year

Case Processing Summary[a]

		Cases					
		Valid		Missing		Total	
	Year	N	Percent	N	Percent	N	Percent
Sentiment	2009	150	100.0%	0	0.0%	150	100.0%
	2011	719	100.0%	0	0.0%	719	100.0%

a. Topic = twitter

Descriptives[a]

	Year			Statistic	Std. Error
Sentiment	2009	Mean		1.21	.080
		95% Confidence Interval for Mean	Lower Bound	1.06	
			Upper Bound	1.37	
		5% Trimmed Mean		1.24	
		Median		2.00	
		Variance		.961	
		Std. Deviation		.980	
		Minimum		0	
		Maximum		2	
		Range		2	
		Interquartile Range		2	
		Skewness		-.441	.198
		Kurtosis		-1.830	.394
	2011	Mean		.99	.016
		95% Confidence Interval for Mean	Lower Bound	.96	
			Upper Bound	1.02	
		5% Trimmed Mean		.99	
		Median		1.00	
		Variance		.180	
		Std. Deviation		.424	
		Minimum		0	
		Maximum		2	
		Range		2	
		Interquartile Range		0	
		Skewness		-.042	.091
		Kurtosis		2.599	.182

a. Topic = twitter

Tests of Normality[a]

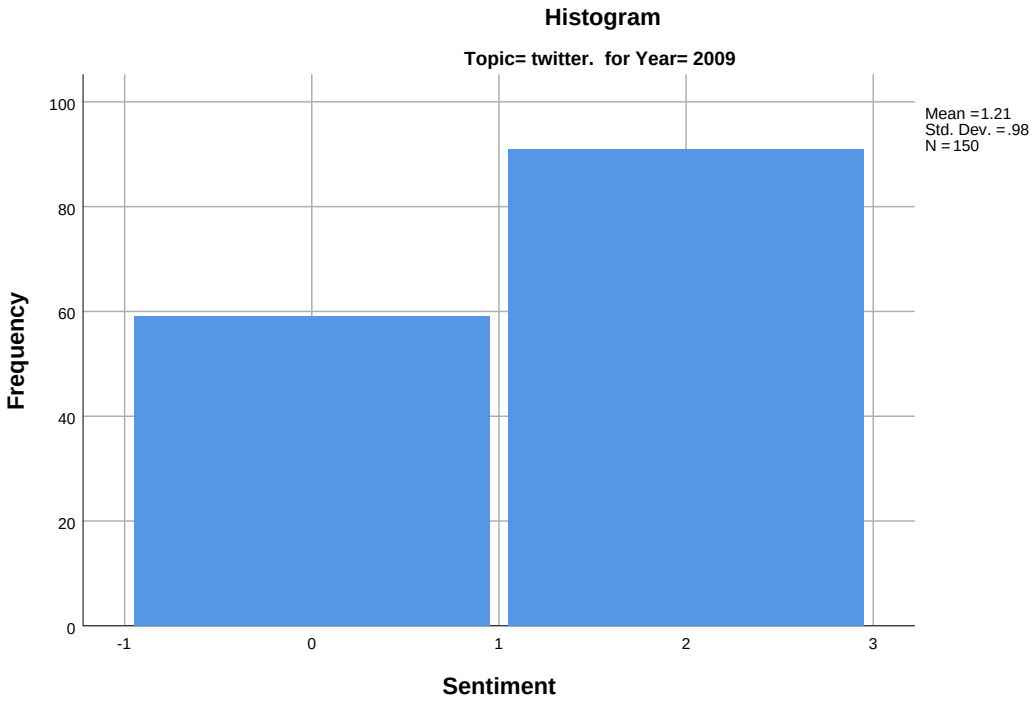
		Kolmogorov-Smirnov[b]			Shapiro-Wilk		
	Year	Statistic	df	Sig.	Statistic	df	Sig.
Sentiment	2009	.396	150	.000	.620	150	.000
	2011	.413	719	.000	.585	719	.000

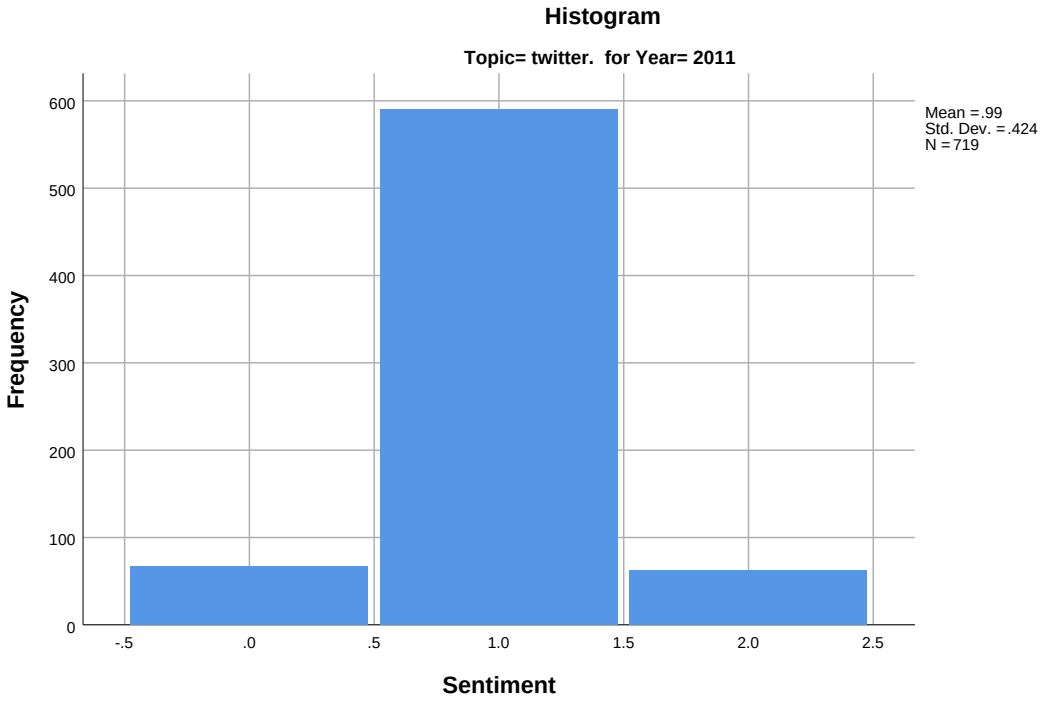
a. Topic = twitter

b. Lilliefors Significance Correction

Sentiment

Histograms





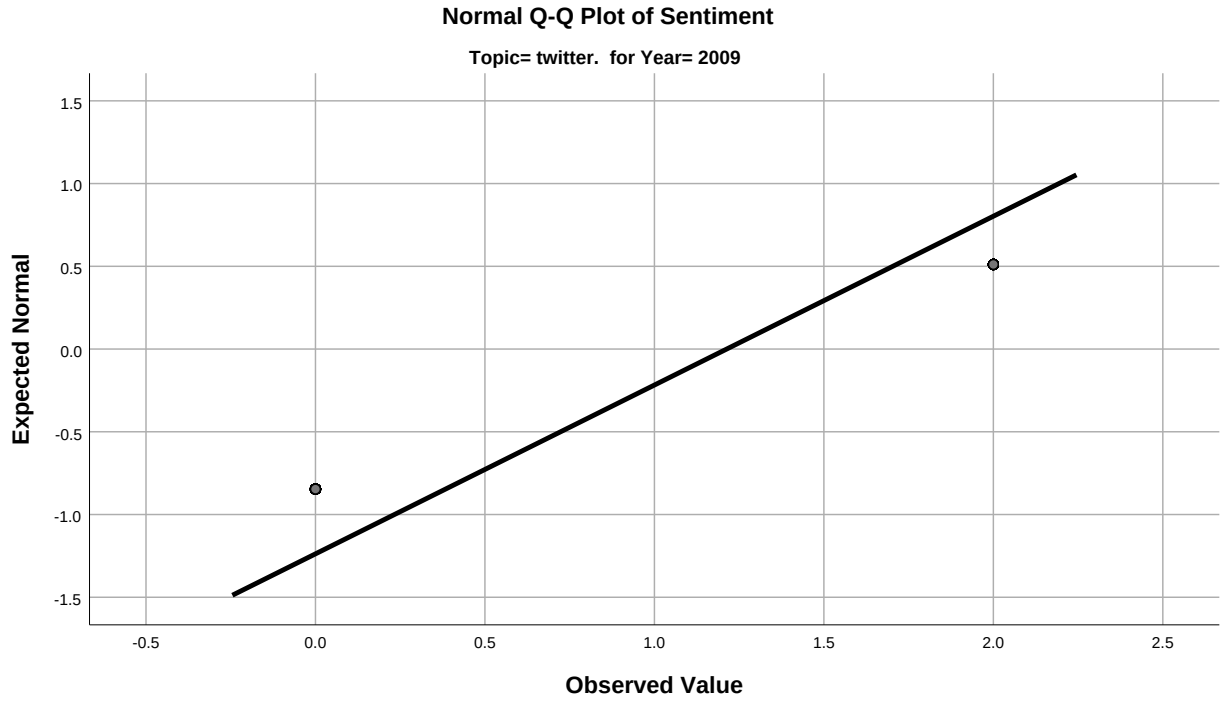
Stem-and-Leaf Plots

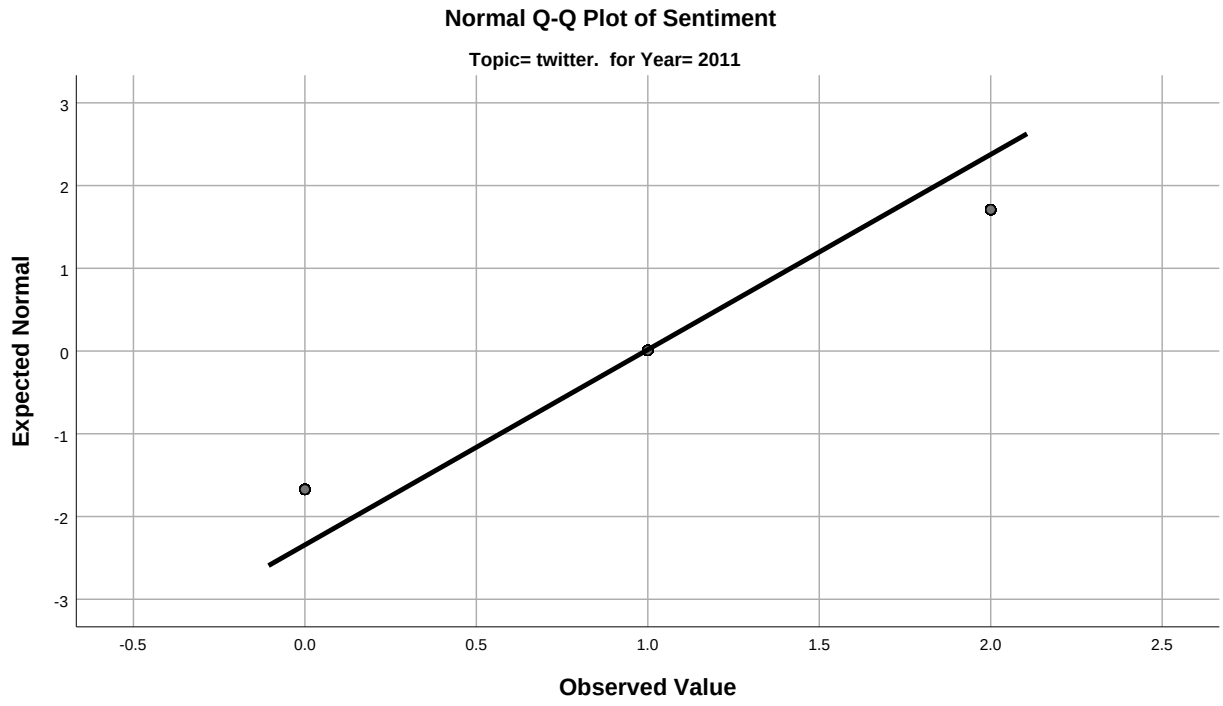
Sentiment Stem-and-Leaf Plot for
Year= 2009
Topic= twitter

```
 Frequency    Stem &  Leaf

    59.00        0 .  00000000000000000000000000000000000000000000000000000000000
000
      .00        0 .
      .00        0 .
      .00        0 .
      .00        0 .
      .00        1 .
      .00        1 .
      .00        1 .
      .00        1 .
      .00        1 .
    91.00        2 .  00000000000000000000000000000000000000000000000000000000000
0000000000000000000000000000000000000

 Stem width:  1
```

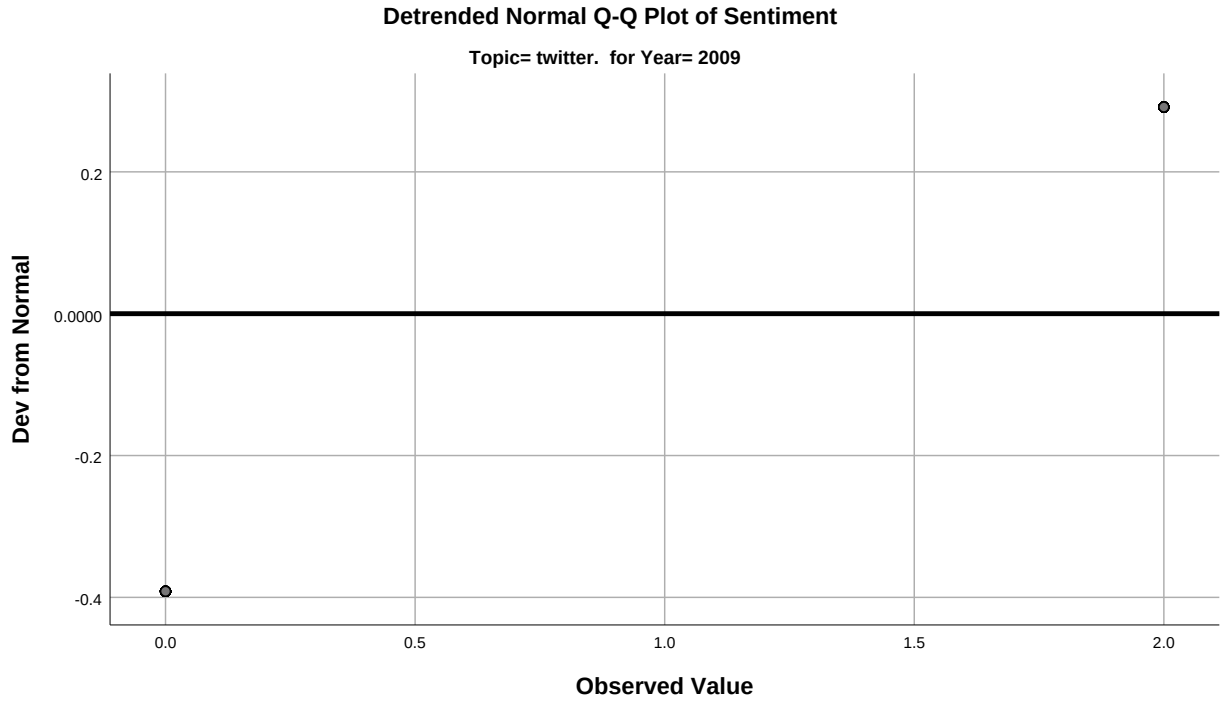
```
 Each leaf:        1 case(s)


Sentiment Stem-and-Leaf Plot for
Year= 2011
Topic= twitter

 Frequency    Stem &  Leaf

    67.00 Extremes    (=<.0)
   590.00        1 .  0000000000000000000000000000000000000000000000000000000000000000
0000000000000000000000000000000000000000
    62.00 Extremes    (>=2)

 Stem width:  1
 Each leaf:        6 case(s)
```

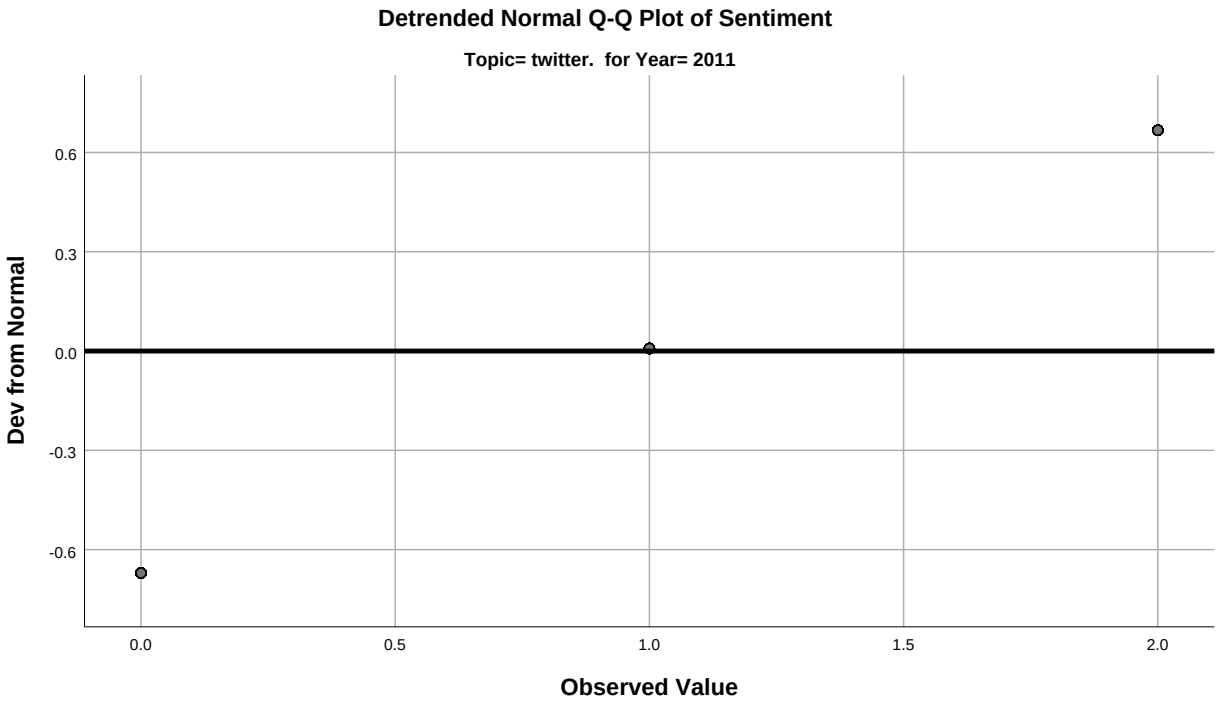
Normal Q-Q Plots

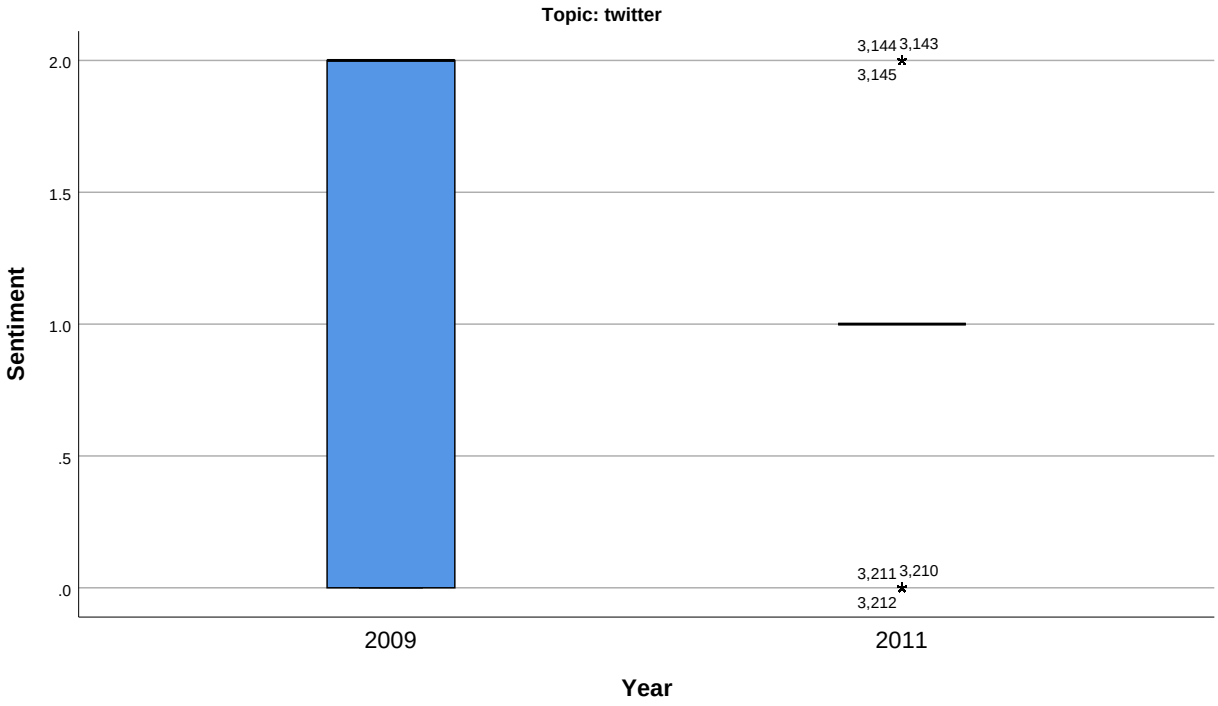




Detrended Normal Q-Q Plots




Detrended Normal Q-Q Plot of Sentiment
Topic= twitter. for Year= 2011
Dev from Normal
0.6
0.3
0.0
-0.3
-0.6
0.0
0.5
1.0
1.5
2.0
Observed Value


Topic: twitter
Sentiment
2.0
1.5
1.0
.5
.0
3,144
3,143
3,145
3,211
3,210
3,212
2009
2011
Year