How to Calculate Cohen’s Kappa in SPSS: A Step-by-Step Guide

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Cohen's Kappa is a statistical measure used to assess the level of agreement between two raters or methods. To calculate Cohen's Kappa using SPSS, you will need to first gather the data from the two raters and enter it into the software. Then, go to the "Analyze" menu and select "Crosstabs". Choose the two raters as the row and column variables. Next, click on the "Statistics" button and select "Kappa" under the "Agreement" category. This will generate the Cohen's Kappa value and its corresponding p-value. A higher Kappa value indicates a stronger agreement between the two raters.

Cohen's Kappa is used to measure the level of agreement between two raters or judges who each classify items into mutually exclusive categories.

The formula for Cohen's kappa is calculated as:

k = (po - pe) / (1 - pe)

where:

po: Relative observed agreement among raters
pe: Hypothetical probability of chance agreement

Rather than just calculating the percentage of items that the raters agree on, Cohen's Kappa attempts to account for the fact that the raters may happen to agree on some items purely by chance.

The value for Cohen's Kappa always ranges between **0** and **1** where:

0 indicates no agreement between the two raters
1 indicates perfect agreement between the two raters.

The following table summarizes how to interpret different values for Cohen's Kappa:

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Cohen's Kappa	Interpretation
0	No agreement
0.10 - 0.20	Slight agreement
0.21 - 0.40	Fair agreement
0.41 - 0.60	Moderate agreement
0.61 - 0.80	Substantial agreement
0.81 - 0.99	Near perfect agreement
1	Perfect agreement

The following example shows how to calculate Cohen's Kappa in SPSS.

Example: How to Calculate Cohen's Kappa in SPSS

Suppose two art museum curators are asked to rate 30 paintings on whether they're good enough to be shown in a new exhibit.

The following dataset shows the ratings given by each rater:

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	Rater1	Rater2	var	var	var	va
1	Yes	Yes				
2	Yes	Yes				
3	Yes	Yes				
4	Yes	Yes				
5	Yes	Yes				
6	Yes	No				
7	Yes	Yes				
8	Yes	No				
9	Yes	Yes				
10	Yes	No				
11	Yes	No				
12	Yes	Yes				
13	Yes	Yes				
14	Yes	Yes				
15	Yes	Yes				
16	Yes	No				
17	Yes	Yes				
18	Yes	Yes				
19	Yes	No				
20	No	Yes				
21	No	Yes				
22	No	No				
23	No	No				
24	No	Yes				
25	No	Yes				
26	No	No				
27	No	No				
28	No	No				
29	No	No				
30	No	No				
31						

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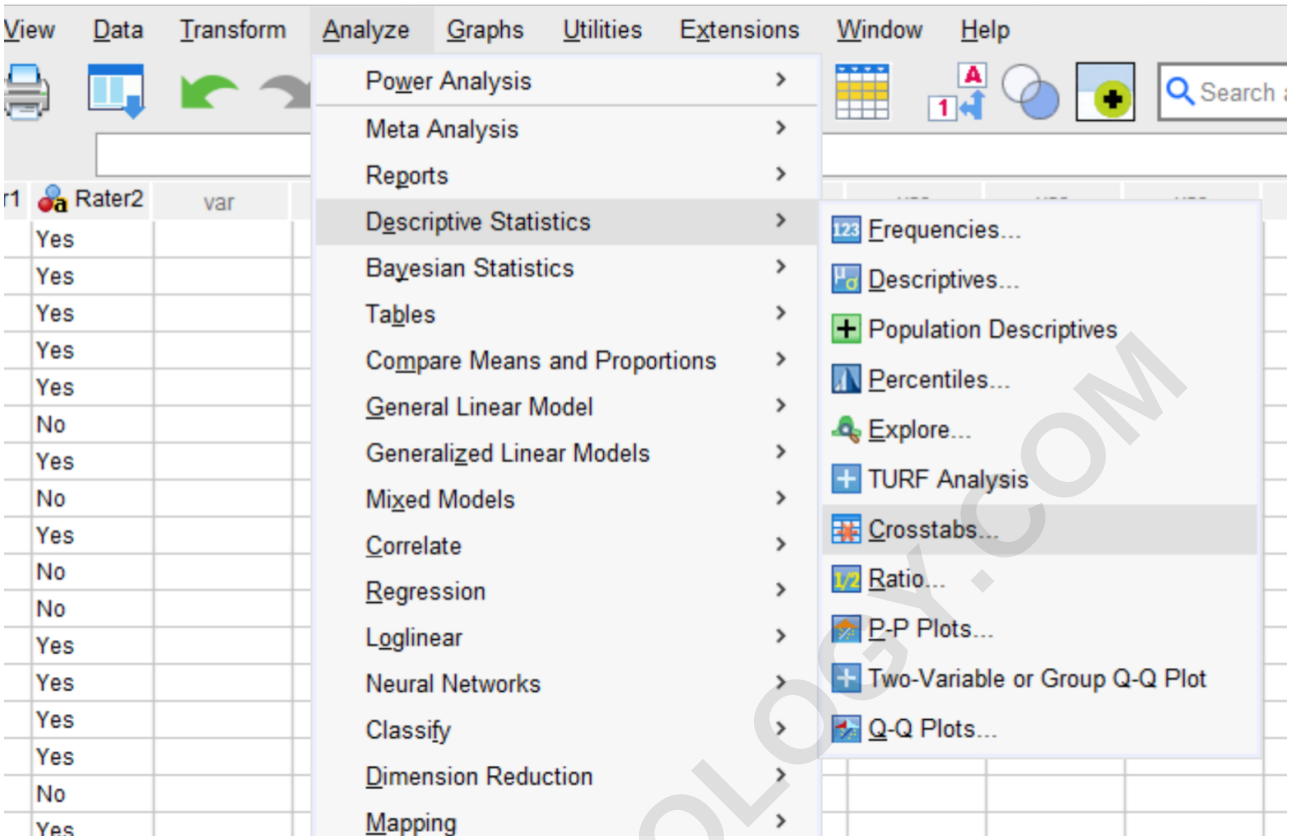
Suppose we would like to calculate Cohen's Kappa to measure the level of agreement between the two curators.

To do so, click the **Analyze** tab, then click **Descriptive Statistics**, then click **Crosstabs**:



In the new window that appears, drag the **Rater1** variable into the **Rows** box, then drag the **Rater2** variable into the **Columns** box:

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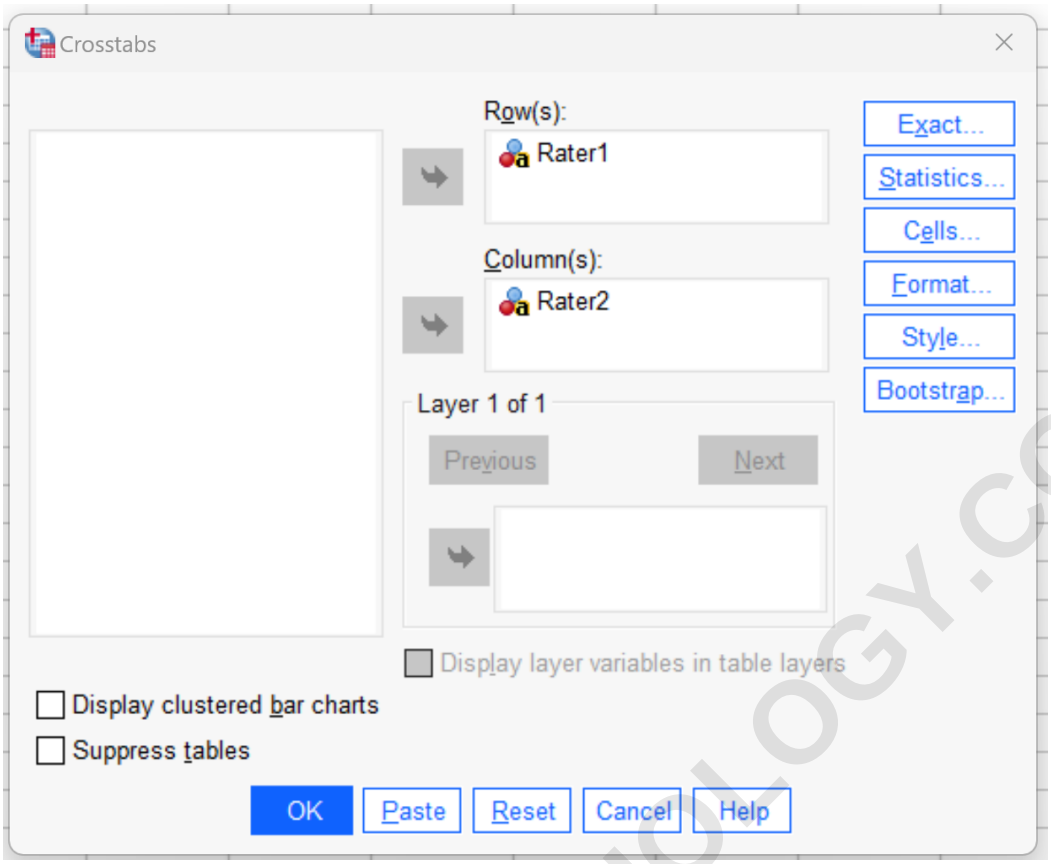

Next, click the **Statistics** button. In the new window that appears, check the box next to **Kappa** to indicate that you would like to calculate Cohen's Kappa:

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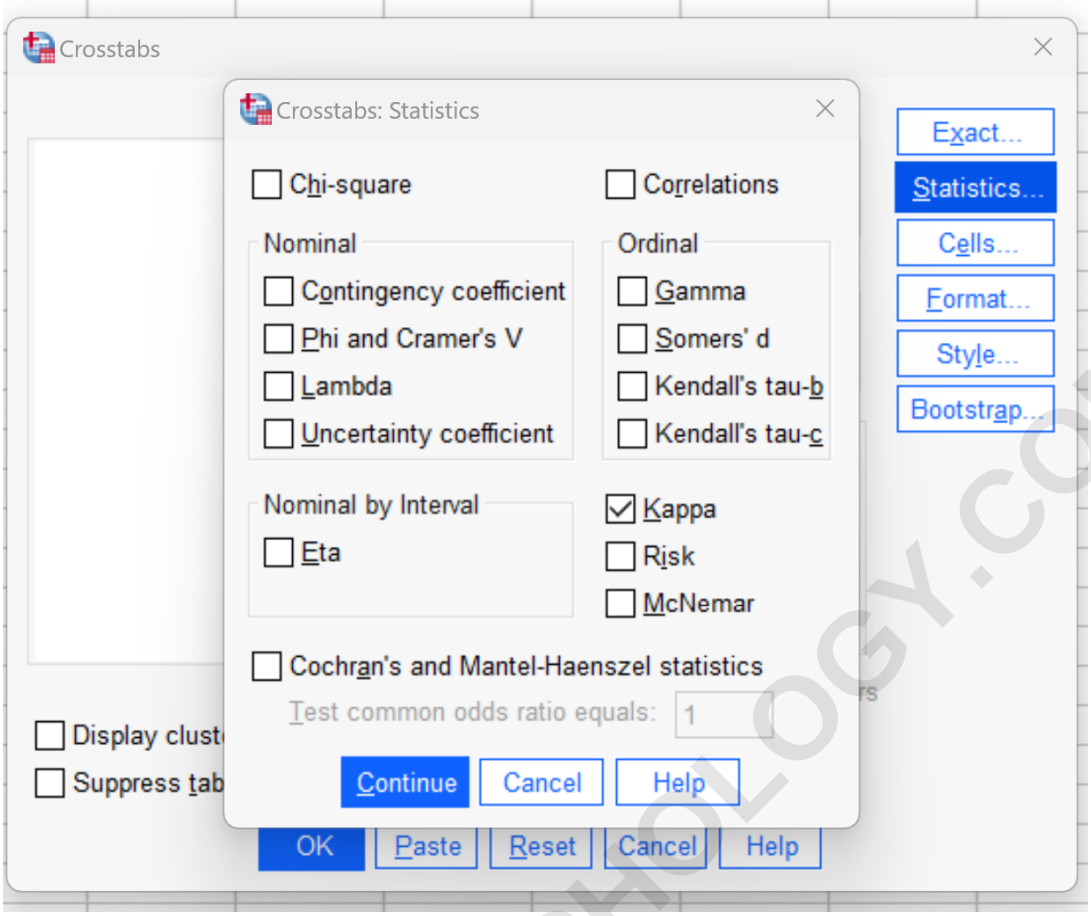

Next, click **Continue**. Then click **OK**.

The following output will be produced:

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Crosstabs

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Rater1 * Rater2	30	100.0%	0	0.0%	30	100.0%

Rater1 * Rater2 Crosstabulation

Count

		Rater2		
		No	Yes	Total
Rater1	No	7	4	11
	Yes	6	13	19
Total		13	17	30

Symmetric Measures

		Value	Asymptotic Standard Error [a]	Approximate T [b]	Approximate Significance
Measure of Agreement	Kappa	.309	.175	1.708	.088
N of Valid Cases		30			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

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The crosstab summarizes the number of "Yes" and "No" responses between the two raters.

For example, we can see:

There were **7** paintings that both raters rated **No**.
There were **4** paintings that Rater1 rated **No** and Rater2 rated **Yes**.
There were **6** paintings that Rater1 rated **Yes** and Rater2 rated **No**.
There were **13** paintings that both raters rated **Yes**.

In the final table in the output we can see that Cohen's Kappa is calculated to be **.309**.

We can refer to the following table to understand how to interpret this value:

Cohen's Kappa	Interpretation
0	No agreement
0.10 - 0.20	Slight agreement
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0.61 - 0.80	Substantial agreement
0.81 - 0.99	Near perfect agreement
1	Perfect agreement

Based on the table, we would say that the two raters only had a "fair" level of agreement.

The following tutorials offer additional resources on Cohen's Kappa:

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