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The Mantel-Haenszel Chi-Square Test

For ordinal associations, the Mantel-Haenszel chi-square test is a more powerful test than the Pearson chi-square test. The Mantel-Haenszel test considers only ordinal associations, whereas the Pearson test considers all possible associations. When two variables have an ordinal association, an increase in the value of one variable tends to be associated with an increase or decrease in the value of the other variable. The Mantel-Haenszel chi-square test can help to determine whether, as the row values increase in size, the column values also increase in size. When the variables have more than two levels, the levels must be in a logical order for the test results to be meaningful.

For the Mantel-Haenszel chi-square test, the null hypothesis is that there's no ordinal association between the row and column variables. The alternative hypothesis is that there is an ordinal association between the two variables. The Mantel-Haenszel chi-square statistic and its corresponding p-value are like the Pearson chi-square statistic and its corresponding p-value. They both indicate only whether an association exists, but not the magnitude of the association, and they depend on and reflect the sample size. A larger sample will be more apt to find a significant result than a smaller sample.

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