

1. This link contains a sample R program for computing the classic and U-statistics based kappa estimates and their asymptotic variance when data is complete.

2. This link contains a sample R program for computing the U-statistics based kappa estimate and its asymptotic variance under missing complete at random (MCAR) assumption.

The classic approach is described in Fleiss et al., Landis and Koch, etc., while the U-statistics based approach is developed in Ma et al. (2006). Please see the following for more detailed descriptions about these two methods:

1. Cohen, J. (1960). A coefficient of agreement for nominal scales. *Education and Psychological Measurement*, 20, 37-46.

2. Cohen, J. (1968). Weighted Kappa: Nominal scale agreement with provision for scaled disagreement or partial credit. *Psychological Bulletin*, 70, 213-220.

3. Everitt, B.S. (1968). Moments of the statistics Kappa and weighted Kappa. *British Journal of Mathematical and Statistical Psychology*, 21: 97-103.

4. Fleiss, J.L., Cohen, J. and Everitt, B.S. (1969). Large sample standard errors of Kappa and weighted Kappa. *Psychological Bulletin*, 72, 323-327.

5. Ma, Y., Tang, W., Feng, C., and Tu, X.M. (2006). Inference for Kappa for longitudinal and other clustered study data: Application to HIV prevention and sexual abuse research. Technical report.