

Introduction: This submission provides SAS code for calculating intraclass correlation coefficients (ICC) and corresponding confidence intervals. The data, program, and output serve for demonstrational purposes only.

Keyword Categories:

Clinical: Instrument Selection
Statistical: Intraclass Correlation Coefficient, Confidence Intervals,
Mixed Models, Reliability Testing, Clustered Data
Software: SAS 9.2

References:

Van Ness PH, Towle VR, Juthani-Mehta M. Testing measurement reliability in older populations: Methods for informed discrimination in instrument selection and application. *Journal of Aging and Health*. 2008; 20:183-197.

Component Files:

- a. PDF file explaining the entire project: ICCsummaryVanNess.pdf
- b. SAS program: ICCprogramVanNess.sas
- c. SAS data file: ICCdataVanNess.txt
- d. SAS output file: ICCoutputVanNess.txt

Optimal Use:

The NLMIXED procedure requires starting values for the parameters it estimates. An initial run of the MIXED procedure (choosing maximum likelihood estimation) for calculating an ICC will produce very accurate starting values. It also allows you to confirm that the more complicated NLMIXED code is correct because the two approaches should generate the same value for the ICC.

Prerequisites:

One needs the ability to run SAS programs in any recent version. Knowledge of mixed model statistical theory and experience with the MIXED and NLMIXED procedures will be helpful.

Potential Applications:

The ICC is often used in biomedical research for testing measurement reliability. It is also used to measure the extent of the dependency induced by having observations clustered, for instance, in hospitals, nursing homes, or other clinical settings from which study participants are recruited.