Package ‘bivarRIpower’

February 19, 2015

Type Package
Title Sample size calculations for bivariate longitudinal data
Version 1.2
Date 2010-12-02
Author W. Scott Comulada and Robert E. Weiss
Maintainer W. Scott Comulada <scomulad@ucla.edu>
Description Implements sample size calculations for bivariate random
intercept regression model that are described in Comulada and
Weiss (2010)
License GPL (>= 2)
LazyLoad yes
Repository CRAN
Date/Publication 2012-10-29 08:58:19
NeedsCompilation no

R topics documented:

   bivarRIpower-package ........................................... 1
   bivarcalcn .................................................. 3

Index 5

bivarRIpower-package  Sample size calculations for bivariate longitudinal data

Description

Provides function to carry out sample size calculations for correlations that occur between random
intercepts, residuals, and observations in a bivariate longitudinal model. Maximum likelihood
estimates are used for correlation variances. Sample size is calculated under one-sample z-test
framework. Details of calculations are given in Comulada and Weiss (2010).
Details
Author(s)
W. Scott Comulada and Robert E. Weiss
Maintainer: W. Scott Comulada <scomulad@ucla.edu>

References
Comulada WS and Weiss RE. (2010). Power calculations for correlations between bivariate lon-

Description
Function carries out maximum likelihood sample size calculations for one of four types of correla-
tions in a bivariate random-intercept (RI) linear regression model discussed in Comulada and Weiss
(2010): 1) Correlations between RI; 2) residuals, 3) observations measured at the same time point
(concurrent); and 4) observations measured at different time points (lagged). Standard deviations
for variance parameters and correlations between RI and residuals are specified by the user. Cor-
relations between concurrent and lagged observations are calculated. Sample size is calculated for
specified correlation and power under a two-sided test with a .05 alpha level. Powers for remaining
three non-specified correlations are also shown.

Usage
bivarcalcn(power, powerfor, timepts, d1, d2, p, p1, s1, s2, r, r1)

Arguments
power Power to achieve (usually at least .80)
powerfor Correlation to base sample size calculation on. Possible entries are 'RI', Random
intercepts; 'RESIDUAL', Residuals; 'YYcon', Concurrent outcome obser-
vations; or 'YYlag', Lagged outcome observations.
timepts Number of time points
Value

Returns sample size (labeled as 'clusters') and parameters specified for calculations.

Author(s)

W. Scott Comulada and Robert E. Weiss

References


Examples

# Example: Calculate necessary sample size to achieve 80 percent power at 5 percent alpha level for null and alternative hypotheses that correlation between RI is 0 and .R, respectively, across 6 time points. Other covariance parameter are set as follows: Correlation between residuals = 0; Standard deviations: 1st RI = 1, 2nd RI = 2, 1st residual = .5, 2nd residual = .75 library(bivarRIpower) bivarcalcn(power=.80,powerfor='RI',timepts=6,d1=1,d2=2,p=0,p1=.R,s1=.5,s2=.75, r=0,r1=.1)
Index

*Topic **bivarRIpower**
  bivarRIpower-package, 1

bivarcalc, 3
bivarRIpower (bivarRIpower-package), 1
bivarRIpower-package, 1