Package 'ppcor'

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Type Package

Title Partial and Semi-Partial (Part) Correlation

Version 1.1

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Author Seongho Kim

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Depends R (>= 2.6.0), MASS

Description Calculates partial and semi-partial (part) correlations along with p-value.

License GPL-2

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Contents

`ppcor-package` *Partial and Semi-partial (Part) Correlation*

Description

Calculates parital and semi-partial (part) correlations along with p value.

Details

Package:	ppcor
Type:	Package
Version:	1.0
Date:	2011-06-14
License:	GPL-2

Author(s)

Seongho Kim <biostatistician.kim@gmail.com>

References

Kim, S. (2015) ppcor: An R Package for a Fast Calculation to Semi-partial Correlation Coefficients. Communications for Statistical Applications and Methods, 22(6), 665-674.

Examples

```
# data
y.data <- data.frame(
hl=c(7,15,19,15,21,22,57,15,20,18),
disp=c(0.000,0.964,0.000,0.000,0.921,0.000,0.000,1.006,0.000,1.011),
deg=c(9,2,3,4,1,3,1,3,6,1),
BC=c(1.78e-02,1.05e-06,1.37e-05,7.18e-03,0.00e+00,0.00e+00,0.00e+00
              ,4.48e-03,2.10e-06,0.00e+00)
)
# partial correlation
pcor(y.data)

# partial correlation between "hl" and "disp" given "deg" and "BC"
pcor.test(y.data$hl,y.data$disp,y.data[,c("deg","BC")])
pcor.test(y.data[,1],y.data[,2],y.data[,c(3:4)])
pcor.test(y.data[,1],y.data[,2],y.data[,-c(1:2)])

# semi-partial (part) correlation
spcor(y.data)

# semi-partial (part) correlation between "hl" and "disp" given "deg" and "BC"
spcor.test(y.data$hl,y.data$disp,y.data[,c("deg","BC")])
spcor.test(y.data[,1],y.data[,2],y.data[,c(3:4)])
spcor.test(y.data[,1],y.data[,2],y.data[,-c(1:2)])
```

pcor *Partial correlation*

Description

The function pcor can calculate the pairwise partial correlations for each pair of variables given others. In addition, it gives us the p value as well as statistic for each pair of variables.

Usage

```
pcor(x, method = c("pearson", "kendall", "spearman"))
```

Arguments

x	a matrix or data fram.
method	a character string indicating which partial correlation coefficient is to be computed. One of "pearson" (default), "kendall", or "spearman" can be abbreviated.

Details

Partial correlation is the correlation of two variables while controlling for a third or more other variables. When the determinant of variance-covariance matrix is numerically zero, Moore-Penrose generalized matrix inverse is used. In this case, no p-value and statistic will be provided if the number of variables are greater than or equal to the sample size.

Value

estimate	a matrix of the partial correlation coefficient between two variables
p.value	a matrix of the p value of the test
statistic	a matrix of the value of the test statistic
n	the number of samples
gn	the number of given variables
method	the correlation method used

Note

Missing values are not allowed.

Author(s)

Seongho Kim <<biostatistician.kim@gmail.com>>

References

Kim, S. (2015) ppcor: An R Package for a Fast Calculation to Semi-partial Correlation Coefficients. Communications for Statistical Applications and Methods, 22(6), 665-674.

See Also

pcor.test, spcor, spcor.test

Examples

```
# data
y.data <- data.frame(
hl=c(7,15,19,15,21,22,57,15,20,18),
disp=c(0.000,0.964,0.000,0.000,0.921,0.000,0.000,1.006,0.000,1.011),
deg=c(9,2,3,4,1,3,1,3,6,1),
BC=c(1.78e-02,1.05e-06,1.37e-05,7.18e-03,0.00e+00,0.00e+00,0.00e+00
              ,4.48e-03,2.10e-06,0.00e+00)
)
# partial correlation
pcor(y.data)
```

---

pcor.test *Partial correlation for two variables given a third variable.*

Description

The function pcor.test can calculate the pairwise partial correlations between two variables. In addition, it gives us the p value as well as statistic.

Usage

```
pcor.test(x, y, z, method = c("pearson", "kendall", "spearman"))
```

Arguments

x	a numeric vector.
y	a numeric vector.
z	a numeric vector.
method	a character string indicating which partial correlation coefficient is to be computed. One of "pearson" (default), "kendall", or "spearman" can be abbreviated.

Details

Partial correlation is the correlation of two variables while controlling for a third variable. When the determinant of variance-covariance matrix is numerically zero, Moore-Penrose generalized matrix inverse is used. In this case, no p-value and statistic will be provided if the number of variables are greater than or equal to the sample size.

Value

estimate	the partial correlation coefficient between two variables
p.value	the p value of the test
statistic	the value of the test statistic
n	the number of samples
gn	the number of given variables
method	the correlation method used

Note

Missing values are not allowed

Author(s)

Seongho Kim <<biostatistician.kim@gmail.com>>

References

Kim, S. (2015) ppcor: An R Package for a Fast Calculation to Semi-partial Correlation Coefficients. Communications for Statistical Applications and Methods, 22(6), 665-674.

See Also

pcor, spcor, spcor.test

Examples

```
# data
y.data <- data.frame(
hl=c(7,15,19,15,21,22,57,15,20,18),
disp=c(0.000,0.964,0.000,0.000,0.921,0.000,0.000,1.006,0.000,1.011),
deg=c(9,2,3,4,1,3,1,3,6,1),
BC=c(1.78e-02,1.05e-06,1.37e-05,7.18e-03,0.00e+00,0.00e+00,0.00e+00
              ,4.48e-03,2.10e-06,0.00e+00)
)

# partial correlation between "hl" and "disp" given "deg" and "BC"
pcor.test(y.data$hl,y.data$disp,y.data[,c("deg","BC")])
pcor.test(y.data[,1],y.data[,2],y.data[,c(3:4)])
pcor.test(y.data[,1],y.data[,2],y.data[,-c(1:2)])
```

spcor *Semi-partial (part) correlation*

Description

The function spcor can calculate the pairwise semi-partial (part) correlations for each pair of variables given others. In addition, it gives us the p value as well as statistic for each pair of variables.

Usage

```
spcor(x, method = c("pearson", "kendall", "spearman"))
```

Arguments

x	a matrix or data fram.
method	a character string indicating which semi-partial (part) correlation coefficient is to be computed. One of "pearson" (default), "kendall", or "spearman" can be abbreviated.

Details

Semi-partial correlation is the correlation of two variables with variation from a third or more other variables removed only from the second variable. When the determinant of variance-covariance matrix is numerically zero, Moore-Penrose generalized matrix inverse is used. In this case, no p-value and statistic will be provided if the number of variables are greater than or equal to the sample size.

Value

estimate	a matrix of the semi-partial (part) correlation coefficient between two variables
p.value	a matrix of the p value of the test
statistic	a matrix of the value of the test statistic
n	the number of samples
gn	the number of given variables
method	the correlation method used

Note

Missing values are not allowed.

Author(s)

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References

Kim, S. (2015) ppcor: An R Package for a Fast Calculation to Semi-partial Correlation Coefficients. Communications for Statistical Applications and Methods, 22(6), 665-674.

See Also

spcor.test, pcor, pcor.test

Examples

```
# data
y.data <- data.frame(
hl=c(7,15,19,15,21,22,57,15,20,18),
disp=c(0.000,0.964,0.000,0.000,0.921,0.000,0.000,1.006,0.000,1.011),
deg=c(9,2,3,4,1,3,1,3,6,1),
BC=c(1.78e-02,1.05e-06,1.37e-05,7.18e-03,0.00e+00,0.00e+00,0.00e+00
              ,4.48e-03,2.10e-06,0.00e+00)
)

# semi-partial (part) correlation
spcor(y.data)
```

---

spcor.test *Semi-partial (part) correlation for two variables given a third variable.*

Description

The function spcor.test can calculate the pairwise semi-partial (part) correlations between two variables. In addition, it gives us the p value as well as statistic.

Usage

```
spcor.test(x, y, z, method = c("pearson", "kendall", "spearman"))
```

Arguments

x	a numeric vector.
y	a numeric vector.
z	a numeric vector.
method	a character string indicating which partial correlation coefficient is to be computed. One of "pearson" (default), "kendall", or "spearman" can be abbreviated.

Details

Semi-partial correlation is the correlation of two variables with variation from a third variable removed only from the second variable. When the determinant of variance-covariance matrix is numerically zero, Moore-Penrose generalized matrix inverse is used. In this case, no p-value and statistic will be provided if the number of variables are greater than or equal to the sample size.

Value

estimate	the semi-partial (part) correlation coefficient between two variables
p.value	the p value of the test
statistic	the value of the test statistic
n	the number of samples
gn	the number of given variables
method	the correlation method used

Note

Missing values are not allowed

Author(s)

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References

Kim, S. (2015) ppcor: An R Package for a Fast Calculation to Semi-partial Correlation Coefficients. Communications for Statistical Applications and Methods, 22(6), 665-674.

See Also

spcor, pcor, pcor.test

Examples

```
# data
y.data <- data.frame(
hl=c(7,15,19,15,21,22,57,15,20,18),
disp=c(0.000,0.964,0.000,0.000,0.921,0.000,0.000,1.006,0.000,1.011),
deg=c(9,2,3,4,1,3,1,3,6,1),
BC=c(1.78e-02,1.05e-06,1.37e-05,7.18e-03,0.00e+00,0.00e+00,0.00e+00
              ,4.48e-03,2.10e-06,0.00e+00)
)

# semi-partial (part) correlation between "hl" and "disp" given "deg" and "BC"
spcor.test(y.data$hl,y.data$disp,y.data[,c("deg","BC")])
spcor.test(y.data[,1],y.data[,2],y.data[,c(3:4)])
spcor.test(y.data[,1],y.data[,2],y.data[,-c(1:2)])
```

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