Package ‘Ridit’

February 19, 2015

Type Package

Title Ridit Analysis (An extension of the Kruskal-Wallis Test.)

Version 1.1

Date 2012-10-15

Author SeyedMahmood TaghaviShahri

Maintainer SeyedMahmood TaghaviShahri <taghavi_m@razi.tums.ac.ir>

Description An extension of the Kruskal-Wallis Test that allow selection of arbitrary reference group. Also provide Mean Ridit for each group. Mean Ridit of a group is an estimate of probability a random observation from that group will be greater than or equal to a random observation from reference group.

License GPL-2 | GPL-3

Repository CRAN

Date/Publication 2012-10-15 20:03:34

NeedsCompilation no

R topics documented:

  Ridit-package .......................................................... 2
  ict ................................................................. 2
  print.ridit .......................................................... 3
  ridit .............................................................. 5
  ridit.raw .......................................................... 6

Index 8
**Ridit-package**  
*Ridit Analysis (An extension of the Kruskal-Wallis Test.)*

**Description**
An extension of the Kruskal-Wallis Test that allow selection of arbitrary reference group. Also provide Mean Ridit for each group. Mean Ridit of a group is an estimate of probability a random observation from that group will be greater than or equal to a random observation from reference group.

**Details**

<table>
<thead>
<tr>
<th>Package</th>
<th>Ridit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Package</td>
</tr>
<tr>
<td>Version</td>
<td>1.1</td>
</tr>
<tr>
<td>Date</td>
<td>2012-10-15</td>
</tr>
<tr>
<td>License</td>
<td>GPL-2</td>
</tr>
</tbody>
</table>

**Author(s)**
SeyedMahmood TaghaviShahri  
Maintainer: SeyedMahmood TaghaviShahri <taghavi_m@razi.tums.ac.ir>

**References**

---

**ict**

*Inverse CrossTabualtion*

**Description**
Inverse CrossTabualtion

**Usage**

```r
ict(crosstab)
```

**Arguments**

crosstab
print.ridit

Author(s)

SeyedMahmood TaghaviShahri

Examples

```r
## Should be DIRECTLY executable !! ----
##-- ==> Define data, use random,
##---or do help(data=index) for the standard data sets.

## The function is currently defined as
function (crosstab)
{
  crosstab = as.matrix(crosstab)
  n1 = 1:nrow(crosstab)
  n2 = 1:ncol(crosstab)
  d1 = c()
  d2 = c()
  for (i in n1) for (j in n2) {
    count = crosstab[i, j]
    if (is.na(count))
      warning(paste("NA in row", i, ", column", j, "exist!"),
      immediate. = TRUE)
    else if (count > 0)
      for (k in 1:count) {
        d1 = c(d1, n1[i])
        d2 = c(d2, n2[j])
      }
    }
  d1 = factor(d1, labels = rownames(crosstab))
  d2 = factor(d2, labels = colnames(crosstab))
  list(d1 = d1, d2 = d2)
}
```

print.ridit  

Print Output of Ridit analysis

Description

Print Output of Ridit analysis

Usage

```r
# print.ridit(x, ...)
## S3 method for class 'ridit'
print(x,g,...)
```
Arguments

x  
a numeric vector of data values or a matrix of crosstab data.

g  
a vector giving group of data or when x is a crosstab, number 1 or 2 when group

is in the row or column of crosstab.

...  
a optional text corresponds to label or code of arbitrary reference group or a

number corresponds to row of group in output (when we want change reference
group of output). Also user can enter an arbitrary numeric vector as reference
group. Default is Null that used for total of all group as reference (special case
that equivalent to the Kruskal-Wallis test).

Author(s)

SeyedMahmood TaghaviShahri

Examples

```r
## Should be DIRECTLY executable !! ----
## for defines data, use random,
## or do help(data=index) for the standard data sets.

## The function is currently defined as
function (x, ...) 
{
  cat("\n")
  cat("Ridit Analysis:")
  cat("\n")
  cat("\n")
  m = max(nchar(names(x$MeanRidit)))
  cutpoint = 40
  if (m > cutpoint)
    m = cutpoint
  cat("Group", "t", format("Label", width = m), "t", "Mean Ridit",
    "\n", sep = "")
  cat("-----", "t", format("-----", width = m), "t", "--------",
    "\n", sep = "")
  for (k in 1:length(x$MeanRidit)) cat(k, "t", format(substr(names(x$MeanRidit)[k],
    start = 1, stop = m), "t", round(x$MeanRidit,
    4)[k], "n", sep = "")
  cat("\n")
  cat(x$msg, "\n")
  cat("chi-squared = ", round(x$TestStatistic, 4), sep = "")
  cat("", df = "", x$df, sep = "")
  cat("p-value = ", format(x$Sig, digits = 4), sep = "")
  cat("\n")
  cat("\n")
}
```

**ridit**

---

**Ridit Analysis**

**Description**

An extension of the Kruskal-Wallis test that allow specify arbitrary reference group. Also provide Mean Ridit for each group. Mean Ridit of a group is an estimate of probability a random observation from that group will be greater than or equal to a random observation from reference group.

**Usage**

`ridit(x, g, ref = NULL)`

**Arguments**

- `x`: a numeric vector of data values or a matrix of crosstab data.
- `g`: a vector giving group of data or when `x` is a crosstab, number 1 or 2 when group is in the row or column of crosstab.
- `ref`: a text corresponds to label or code of arbitrary reference group or a number corresponds to row of group in output (when we want change reference group of output). Also user can enter an arbitrary numeric vector as reference group. Default is Null that used for total of all group as reference (special case that equivalent to the Kruskal-Wallis test).

**Author(s)**

SeyedMahmood TaghaviShahri

**References**


**See Also**

Special case of Ridit Analysis is `kruskal.test` when reference is total of all groups.

**Examples**

```r
x <- airquality$Ozone
g <- airquality$Month
kruskal.test(x, g)
ridit(x, g)
ridit(x, g, "5")
ridit(x, g, 5)
```
Engine function that compute Ridit analysis

Usage

```r
ridit.raw(x, g, ref = NULL)
```

Arguments

- `x`
- `g`
- `ref`

Author(s)

SeyedMahmood TaghaviShahri

Examples

```r
## Should be DIRECTLY executable !! ----
##-- ==> Define data, use random,
##-- or do help(data=index) for the standard data sets.

## The function is currently defined as
function (x, g, ref = NULL) {
  x = as.numeric(x)
  x = as.vector(x)
  g = as.factor(g)
  levels = levels(g)
  levels(g) = 1:length(levels)
  g = as.vector(g)
  g = as.character(g)
  code = is.numeric(ref)
  ref = as.vector(ref)
  ref = as.character(ref)
  if (length(ref) > 1) {
    x = c(x, ref)
    g = c(g, rep(".ref", length(ref)))
    levels = c(".ref", levels)
  }
  crosstab = t(as.matrix(table(x, g)))
  rownames(crosstab) = levels
  reindex = NULL
  if (length(ref) == 1) {
```
if (!code)
    refindex = which(levels == ref)
if (code == ref)
    refindex = as.numeric(ref)
else if (length(refindex) == 0)
    refrow = crosstab[refindex,]
else refrow = apply(crosstab, 2, sum)
if (length(refindex) == 0)
    msg = paste("Reference: Total of all groups", sep = "")
else msg = paste("Reference: Group ", refindex, ", Label = ", levels[refindex], sep = "")
nref = sum(refrow)
ridit = 0.5 * refrow[1]/nref
for (i in 2:length(refrow)) {
    iridit = (sum(refrow[1:i - 1]) + 0.5 * refrow[i])/nref
    ridit = c(ridit, iridit)
}
n = apply(crosstab, 1, sum)
meanRidit = c()
for (i in 1:nrow(crosstab)) {
    itable = crosstab[i,]
    meanRidit = c(meanRidit, sum(ridit * itable)/n[i])
}
n0 = sum(n)
rbar0 = sum(n * meanRidit)/n0
t = apply(crosstab, 2, sum)
f = 1 - (sum(t * (t - 1) * (t + 1))/(n0 * (n0 - 1) * (n0 + 1)))
teststatistic = (12 * n0 * sum(n * (meanRidit - rbar0)^2))/((n0 + 1) * f)
testdf = nrow(crosstab) - 1
pvalue = pchisq(q = teststatistic, df = testdf, lower.tail = FALSE)
if (length(ref) == 0)
    ref = NULL
names(meanRidit) = rownames(crosstab)
output = list(MeanRidit = meanRidit, TestStatistic = teststatistic,
               df = testdf, Sig = pvalue, x = x, g = g, ref = ref, crosstab = crosstab,
               msg = msg)
class(output) <- c("ridit", class(output))
output
Index

*Topic **Statistics**
  ridit, 5
*Topic **\textasciitilde kwd1**
  ict, 2
  print.ridit, 3
  ridit.raw, 6
*Topic **\textasciitilde kwd2**
  ict, 2
  print.ridit, 3
  ridit.raw, 6
*Topic **htest**
  ridit, 5
*Topic **package**
  Ridit-package, 2
*Topic **univar**
  ridit, 5

  ict, 2

  kruskal.test, 5

  print.ridit, 3

  Ridit (Ridit-package), 2
  ridit, 5
  Ridit-package, 2
  ridit.raw, 6