

Package ‘ZIQ-SIR’

February 18, 2025

Type Package

Title ZIQ-SIR package

Version 0.1.0

Author Zirui Wang, Wodan Ling and Tianying Wang

Maintainer Zirui Wang <wzr23@mails.tsinghua.edu.cn>

Description We provide a method to test the relationship between the covariate(s) of interest and zero-inflated data.

License GPL-2

Encoding UTF-8

LazyData true

Depends R (>= 3.5.0),

Imports MASS,

lme4,

splines2,

PearsonDS,

quantreg

RoxygenNote 7.3.2

R topics documented:

Combination	1
fKMQR.test	2
test_stats	3
test_stat_separate	3

Index	4
--------------	----------

Combination	<i>Combine the marginal p-values</i>
-------------	--------------------------------------

Description

Combine the marginal p-values

Usage

```
Combination(
  y,
  X,
  taus = c(0.1, 0.25, 0.5, 0.75, 0.9),
  m = 3,
  test_num,
  method = "Chi"
)
```

Arguments

y	n*1 vector, the observed outcome for n samples
X	n*p matrix, the observed p covariates for n samples
taus	k*1 vector, a grid of quantile levels; e.g., 0.5 for the median, 0.75 for the 3rd quartile; default is c(0.1, 0.25, 0.5, 0.75, 0.9)
m	numeric variable, the order of B-spline function; default is 3
test_num	a vector, representing the test corresponds to which covariate(s) in X.
method	different method for calculating p-value: 'Chi' for large sample cases; 'Pearson' for small sample cases

Details

- Please choose 'Chi' or 'Pearson' for method, no other options.
- taus must be a subset or equal to the grid used to produce input.

Value

quantiles of a m*k matrix, each row is the estimated quantiles for each new case

fKMQR.test	<i>P-value computation for method 'Pearson'</i>
------------	---

Description

P-value computation for method 'Pearson'

Usage

```
fKMQR.test(Y, X, tau, m, test_num, score = NULL, K = NULL)
```

Arguments

Y	n*1 vector, the observed outcome for inference
X	n*p matrix, the observed covariates for inference
tau	k*1 vector, a grid of quantile levels; e.g., 0.5 for the median, 0.75 for the 3rd quartile; default is c(0.1, 0.25, 0.5, 0.75, 0.9)
m	numeric variable, the order of B-spline function; default is 3
test_num	a vector, representing the test corresponds to which covariate(s) in X.
score	'null' as default
K	'null' as default

Value

p-value for method 'Pearson'

test_stats	<i>Test statistic computation for hypothesis testing</i>
------------	--

Description

Test statistic computation for hypothesis testing

Usage

```
test_stats(Y, X, taus, m, test_num)
```

Arguments

Y	n*1 vector, the observed outcome for inference
X	n*p matrix, the observed covariates for inference
taus	k*1 vector, a grid of quantile levels; e.g., 0.5 for the median, 0.75 for the 3rd quartile; default is c(0.1, 0.25, 0.5, 0.75, 0.9)
m	numeric variable, the order of B-spline function; default is 3
test_num	a vector, representing the test corresponds to which covariate(s) in X.

Value

test statistics for method 'Chi'

test_stat_separate	<i>Test statistic computation for hypothesis testing</i>
--------------------	--

Description

Test statistic computation for hypothesis testing

Usage

```
test_stat_separate(Y, X, taus, m, test_num)
```

Arguments

Y	n*1 vector, the observed outcome for inference
X	n*p matrix, the observed covariates for inference
taus	k*1 vector, a grid of quantile levels; e.g., 0.5 for the median, 0.75 for the 3rd quartile; default is c(0.1, 0.25, 0.5, 0.75, 0.9)
m	numeric variable, the order of B-spline function; default is 3
test_num	a vector, representing the test corresponds to which covariate(s) in X.

Value

test statistics for method 'Pearson'

Index

Combination, [1](#)

fKMQR.test, [2](#)

test_stat_separate, [3](#)

test_stats, [3](#)