Package 'sAUC'

July 21, 2017

Title Semi-parametric Area Under the Curve (AUC) regression

Description Perform AUC analyses with discrete covariates and a semi-parametric
estimation.

Version 0.0.1.9000

Date 2017-03-06

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URL https://github.com/sbohora/sAUC

BugReports https://github.com/sbohora/sAUC/issues

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LazyData TRUE

Depends R(>= 3.1.0)

Imports Matrix,
stats,
base,
methods,
utils,
DT,
htmltools

Suggests testthat,
testit

RoxygenNote 6.0.1.9000

R topics documented:

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calculate_auc   *Ihis function calculates different estimates related to AUC*

Description

This function calculates variance of predicted AUC, logit of predicted AUC, and variance of logit of predicted AUC responses passed

Usage

```
calculate_auc(x, y = NULL, data = NULL)
```

Arguments

x	A formula object with two vector responses (For e.g., y1 ~ y2) or a vector of responses.
y	A vector of responses.
data	An R dataframe object.

Value

A list of AUC estimates.

Author(s)

Som Bohora

Examples

```
calculate_auc(mpg ~ am, data = datasets::mtcars)
calculate_auc(datasets::iris$Sepal.Length, datasets::iris$Petal.Length)
```

---

compute_inverse   *Compute AUC and its variance*

Description

A function compute to compute AUC and its variance

Ask for a function and compute its inverse

Usage

```
compute_auc(d, nd)

compute_inverse(x)
```

Arguments

d	A vector of response from treatment group
nd	A vector of response from control group
x	A value between 0 and 1

Author(s)

Som Bohora

Som Bohora

Examples

```
compute_auc(d = c(0.3,0.2,0.6), nd = c(0.2, 0.9,0.1, 0.5))
compute_inverse(0.6)
```

---

fasd	*FASD data about effects of brochure types on alcohol use*

Description

A dataset containing the alcohol use and other attributes.

Usage

```
data(fasd)
```

Format

A data frame with 210 rows and 4 variables:

y alcohol use, number of drinks

group types of brochures

x1 Whether vitamin was taken or not

x2 Smoking status

Source

<http://www.netfas.net/>

Examples

```
data(fasd)
```

---

sAUC   *Run semiparametric AUC regression model adjusting for categorical*
                              covariates

Description

Ask for data frame that contains only required variables in the model, Request to define response
and treatment group, convert variables other than response into factors, estimate model parameters,
and display results.

Usage

```
sAUC(x = FALSE, treatment_group = FALSE, data = FALSE)
```

Arguments

x   A formula with response and covariates such as response ~ x1 + x2

treatment_group
                        A treatment group for which a comparision is to be made

data   A dataframe that contains only variables needed for the analysis. At this point,
                        this dataframe should not contain any extra variables

Value

A list of model summary, coefficients, AUC details, and session information.

Author(s)

Som Bohora

Examples

```
ds <- NULL
for (x1 in 0:1){
 for (x2 in 0:2){
   for (x3 in 0:2){
     for (group in 0:1){
         response <- round(rnorm(n = 100, mean = 0, sd = 1),4)
         column <- cbind(x1,x2,x3, group, response)
         ds <- as.data.frame(rbind(ds, column))
   }
  }
 }
}
ds[,c("x1", "x2", "x3", "group")] <- lapply(ds[,c("x1", "x2", "x3", "group")],
                                    function(x) factor(x))

sAUC(x = response ~ x1 + x2 + x3, treatment_group = "group", data = ds)
```

simulate_one_predictor

Simulate Semi-parametric AUC regression adjusting for one categorical predictor

Description

Ask for number of iterations to run the simulation for Semiparametric AUC regression adjusting for one discrete covariate. In this simulation, true parameters are as follows: beta0 = 0.15, beta1 = 0.50, beta2 = 1.

Usage

```
simulate_one_predictor(iter = 100, m = 20, p = 30, b0 = 0.15,
  b1 = 0.5, b2 = 1)
```

Arguments

iter	Number of realizations to run
m	Number of observations on treatment condition
p	Number of observations on control condition
b0	True intercept value
b1	True beta 1 value
b2	True beta 2 value

Author(s)

Som Bohora

Examples

```
simulate_one_predictor(iter = 200, m = 100, p = 120)
```

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