Package ‘CP’

June 29, 2016

Type Package
Title Conditional Power Calculations
Version 1.6
Date 2016-06-28
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Depends R(>= 3.3.0)
Imports stats, graphics, survival
Description Functions for calculating the conditional power
   for different models in survival time analysis
   within randomized clinical trials
   with two different treatments to be compared
   and survival as an endpoint.
License GPL-3
URL https://www.imise.uni-leipzig.de
LazyLoad yes
LazyData yes
NeedsCompilation no
Repository CRAN
Date/Publication 2016-06-29 16:00:49

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Conditional Power Calculations

Description

This package provides several functions for calculating the conditional power for different models in survival time analysis within randomized clinical trials with two different treatments to be compared and survival as an endpoint.
CP-package

Details
This package could be some help when you want to calculate the conditional power at the time of an interim analysis of a randomized clinical trial with survival as an endpoint.

The conditional power is defined as the probability of obtaining a significant result at the end of the trial when the real effect is equal to the expected effect given the data from the interim analysis.

Functions for the model with exponential survival (ConPwrExp) and the non-mixture models with exponential (ConPwrNonMixExp), Weibull type (ConPwrNonMixWei) and Gamma type survival (ConPwrNonMixGamma) are provided.

There is also the function CompSurvMod to compare the four mentioned models.

Additionally, there is also a function for the exponential model with the original formulae of the Andersen paper (ConPwrExpAndersen).

Finally, the user is able to generate further data frames by random via GenerateDataFrame.

**Note**

The theoretical results of this implementation are based on some assumptions.
Non-Mixture-Exponential: $\lambda[1] = \lambda[2]$

In general, such assumptions are not fulfilled when using real data.

Nevertheless, when doing conditional power calculations the situation is that you have no significant difference at the time of interim analysis. In this case, no treatment arm is superior to the other one. Thus, the assumptions named above are approximately satisfied.

In contrast to this, caution should be exercised when calculating the conditional power in the case of significant results at the time of interim analysis.

**Author(s)**

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**References**

See Also

ConPwrExp
ConPwrNonMixExp
ConPwrNonMixWei
ConPwrNonMixGamma
CompSurvMod
ConPwrExpAndersen
GenerateDataFrame
test

Examples

# data frame 'test' generated by 'GenerateDataFrame'

# conditional power calculations
# within the exponential model
ConPwrExp(data = test, cont.time = 12, new.pat = c(2.5, 2.5),
theta.0 = 0.75, alpha = 0.05,
disp.data = TRUE, plot.km = TRUE)

# conditional power calculations
# within the non-mixture model with exponential survival
ConPwrNonMixExp(data = test, cont.time = 12, new.pat = c(2.5, 2.5),
theta.0 = 0.75, alpha = 0.05,
disp.data = TRUE, plot.km = TRUE)

# conditional power calculations
# within the non-mixture model with Weibull type survival
ConPwrNonMixWei(data = test, cont.time = 12, new.pat = c(2.5, 2.5),
theta.0 = 0.75, alpha = 0.05,
disp.data = TRUE, plot.km = TRUE)

# conditional power calculations
# within the non-mixture model with Gamma type survival
ConPwrNonMixGamma(data = test, cont.time = 12, new.pat = c(2.5, 2.5),
theta.0 = 0.75, alpha = 0.05,
disp.data = TRUE, plot.km = TRUE)

# conditional power calculations
# within the four mentioned models
CompSurvMod(data = test, cont.time = 12, new.pat = c(2.5, 2.5),
theta.0 = 0.75, alpha = 0.05,
disp.data = TRUE, plot.km = TRUE)

# conditional power calculations
# within the exponential model
# with the original formulae of the Andersen paper
ConPwrExpAndersen(data = test, cont.time = 12, new.pat = c(2.5, 2.5),
theta.0 = 0.75, alpha = 0.05,
disp.data = TRUE, plot.km = TRUE)
CalcConPwrNonMix

CalcConPwrExp  Auxiliary Function

Description
Calculates the conditional power in the exponential model.

Author(s)
Andreas Kuehnapfel

See Also
CP ConPwrExp CompSurvMod

CalcConPwrExpAndersen  Auxiliary Function

Description
Calculates the conditional power in the exponential model with the original formulae of the Andersen paper.

Author(s)
Andreas Kuehnapfel

See Also
CP ConPwrExp CompSurvMod

CalcConPwrNonMix  Auxiliary Function

Description
Calculates the conditional power in the non-mixture models.

Author(s)
Andreas Kuehnapfel

See Also
CP ConPwrNonMixExp ConPwrNonMixWei ConPwrNonMixGamma CompSurvMod
Description

Calculates the conditional power within the exponential model and the non-mixture models with exponential, Weibull type and Gamma type survival.

Usage

```
CompSurvMod(data, cont.time, new.pat = c(0, 0),
            theta.0 = 1, alpha = 0.05,
            disp.data = FALSE, plot.km = FALSE)
```

Arguments

- **data**: Data frame which consists of at least three columns with the group (two different expressions) in the first, status (1 = event, 0 = censored) in the second and event time in the third column.
- **cont.time**: Period of time of continuing the trial.
- **new.pat**: 2-dimensional vector which consists of numbers of new patients who will be recruited each time unit (first component = group 1, second component = group 2) with default at (0, 0).
- **theta.0**: Originally postulated clinically relevant difference (hazard ratio = hazard of group 2 / hazard of group 1) with default at 1.
- **alpha**: Significance level for conditional power calculations with default at 0.05.
- **disp.data**: Logical value indicating if all calculated data should be displayed with default at FALSE.
- **plot.km**: Logical value indicating if Kaplan-Meier curves and estimated survival curves according to the four mentioned models should be plotted with default at FALSE.

Details

This function calculates the conditional power within the exponential model and the non-mixture models with exponential, Weibull type and Gamma type survival and plots the conditional power curves.

Optionally, further data will be displayed. This includes data from interim analysis, log-likelihoods, AICs, calculated estimators and further patient times.

Moreover, it is possible to plot the Kaplan-Meier curves and the estimated survival curves according to the four mentioned models.
**Value**

See Details.

Returns a list which consists of the following components:

- `lambda1.hat.exp`: estimated hazard of group 1 within the exponential model
- `lambda2.hat.exp`: estimated hazard of group 2 within the exponential model
- `theta.hat.exp`: estimated hazard ratio = estimated hazard of group 2 / estimated hazard of group 1 within the exponential model
- `gamma.theta.0.exp`: conditional power within the exponential model
- `lambda1.hat.nm.exp`: estimated rate parameter of group 1 within the non-mixture model with exponential survival
- `c1.hat.nm.exp`: estimated survival fraction of group 1 within the non-mixture model with exponential survival
- `lambda2.hat.nm.exp`: estimated rate parameter of group 2 within the non-mixture model with exponential survival
- `c2.hat.nm.exp`: estimated survival fraction of group 2 within the non-mixture model with exponential survival
- `theta.hat.nm.exp`: estimated hazard ratio = log(estimated survival fraction of group 2) / log(estimated survival fraction of group 1) within the non-mixture model with exponential survival
- `gamma.theta.0.nm.exp`: conditional power within the non-mixture model with exponential survival
- `lambda1.hat.nm.wei`: estimated scale parameter of group 1 within the non-mixture model with Weibull type survival
- `k1.hat.nm.wei`: estimated shape parameter of group 1 within the non-mixture model with Weibull type survival
- `c1.hat.nm.wei`: estimated survival fraction of group 1 within the non-mixture model with Weibull type survival
- `lambda2.hat.nm.wei`: estimated scale parameter of group 2 within the non-mixture model with Weibull type survival
- `k2.hat.nm.wei`: estimated shape parameter of group 2 within the non-mixture model with Weibull type survival
- `c2.hat.nm.wei`: estimated survival fraction of group 2 within the non-mixture model with Weibull type survival
- `theta.hat.nm.wei`: estimated hazard ratio = log(estimated survival fraction of group 2) / log(estimated survival fraction of group 1) within the non-mixture model with Weibull type survival
gamma.theta.0.nm.wi
conditional power within the non-mixture model with Weibull type survival

a1.hat.nm.gamma
estimated shape parameter of group 1 within the non-mixture model with Gamma type survival

b1.hat.nm.gamma
estimated rate parameter of group 1 within the non-mixture model with Gamma type survival

c1.hat.nm.gamma
estimated survival fraction of group 1 within the non-mixture model with Gamma type survival

a2.hat.nm.gamma
estimated shape parameter of group 2 within the non-mixture model with Gamma type survival

b2.hat.nm.gamma
estimated rate parameter of group 2 within the non-mixture model with Gamma type survival

b2.hat.nm.gamma
estimated survival fraction of group 2 within the non-mixture model with Gamma type survival

theta.hat.nm.gamma
estimated hazard ratio = \log(\text{estimated survival fraction of group 2}) / \log(\text{estimated survival fraction of group 1}) within the non-mixture model with Gamma type survival

gamma.theta.0.nm.gamma
conditional power within the non-mixture model with Gamma type survival

Note

There are several mechanisms to ensure that no illegal operations will be done and maximum likelihood calculations will be executed stable. That is why there should not be too less data in the data frame, for example one patient of each group and both being censored.

Author(s)

Andreas Kuehnapfel

References


See Also

CP
ConPwrExp
ConPwrNonMixExp
ConPwrNonMixWe1
ConPwrNonMixGamma
ConPwrExp

GenerateDataFrame
test

Examples

# data frame 'test' generated by 'GenerateDataFrame'
# conditional power calculations
# within the four mentioned models
CompSurvMod(data = test, cont.time = 12, new.pat = c(2.5, 2.5),
theta.0 = 0.75, alpha = 0.05,
disp.data = TRUE, plot.km = TRUE)

ConPwrExp  Conditional Power (Exponential)

Description

Calculates the conditional power within the exponential model.

Usage

ConPwrExp(data, cont.time, new.pat = c(0, 0),
theta.0 = 1, alpha = 0.05,
disp.data = FALSE, plot.km = FALSE)

Arguments

data
cont.time
new.pat
theta.0
alpha
disp.data
plot.km

Data frame which consists of at least three columns with the group (two different expressions) in the first, status (1 = event, 0 = censored) in the second and event time in the third column.
Period of time of continuing the trial.
2-dimensional vector which consists of numbers of new patients who will be recruited each time unit (first component = group 1, second component = group 2) with default at (0, 0).
Originally postulated clinically relevant difference (hazard ratio = hazard of group 2 / hazard of group 1) with default at 1.
Significance level for conditional power calculations with default at 0.05.
Logical value indicating if all calculated data should be displayed with default at FALSE.
Logical value indicating if Kaplan-Meier curves and estimated survival curves according to the exponential model should be plotted with default at FALSE.
Details

This function calculates the conditional power within the exponential model, i.e.

\[ S(t) = e^{(-\lambda t)} \]

for all \( t \geq 0 \) and \( \lambda > 0 \), and plots the conditional power curve.

Optionally, further data will be displayed. This includes data from interim analysis, log-likelihoods, AICs, calculated estimators and further patient times.

Moreover, it is possible to plot the Kaplan-Meier curves and the estimated survival curves according to the exponential model.

Value

See Details.

Returns a list which consists of the following components:

- \( \lambda 1hat \): estimated hazard of group 1
- \( \lambda 2hat \): estimated hazard of group 2
- \( \theta hat \): estimated hazard ratio = estimated hazard of group 2 / estimated hazard of group 1
- \( \gamma theta 0 \): conditional power

Note

There are several mechanisms to ensure that no illegal operations will be done. That is why there should not be too less data in the data frame, for example one patient of each group and both being censored.

Author(s)

Andreas Kuehnapfel

References


See Also

CP
GenerateDataFrame
test
ConPwrExpAndersen

Examples

# data frame 'test' generated by 'GenerateDataFrame'

# conditional power calculations
# within the exponential model
ConPwrExpAndersen(data = testL contNtime = 12, newNpat = c(2.5, 2.5),
theta.0 = 0.75, alpha = 0.05,
disp.data = TRUE, plot.km = TRUE)

ConPwrExpAndersen  Conditional Power (Exponential (Andersen))

Description

Calculates the conditional power within the exponential model with the original formulae of the Andersen paper.

Usage

ConPwrExpAndersen(data, cont.time, new.pat = c(0, 0),
theta.0 = 1, alpha = 0.05,
disp.data = FALSE, plot.km = FALSE)

Arguments

data Data frame which consists of at least three columns with the group (two different expressions) in the first, status (1 = event, 0 = censored) in the second and event time in the third column.

cont.time Period of time of continuing the trial.

new.pat 2-dimensional vector which consists of numbers of new patients who will be recruited each time unit (first component = group 1, second component = group 2) with default at (0, 0).

theta.0 Originally postulated clinically relevant difference (hazard ratio = hazard of group 2 / hazard of group 1) with default at 1.

alpha Significance level for conditional power calculations with default at 0.05.

disp.data Logical value indicating if all calculated data should be displayed with default at FALSE.

plot.km Logical value indicating if Kaplan-Meier curves and estimated survival curves according to the exponential model should be plotted with default at FALSE.
Details

This function calculates the conditional power within the exponential model, i.e.

\[ S(t) = e^{(\lambda t)} \]

for all \( t \geq 0 \) and \( \lambda > 0 \), and plots the conditional power curve. The original formulae of the Andersen paper are used.

Optionally, further data will be displayed. This includes data from interim analysis, log-likelihoods, AICs, calculated estimators and further patient times.

Moreover, it is possible to plot the Kaplan-Meier curves and the estimated survival curves according to the exponential model.

Value

See Details.

Returns a list which consists of the following components:

- \( \hat{\lambda}_1 \): estimated hazard of group 1
- \( \hat{\lambda}_2 \): estimated hazard of group 2
- \( \hat{\theta} \): estimated hazard ratio = estimated hazard of group 2 / estimated hazard of group 1
- \( \gamma . \theta . \theta \): conditional power

Note

There are several mechanisms to ensure that no illegal operations will be done. That is why there should not be too less data in the data frame, for example one patient of each group and both being censored.

Author(s)

Andreas Kuehnepfel

References


See Also

CP
GenerateDataFrame
test
Examples

```r
# data frame 'test' generated by 'GenerateDataFrame'

# conditional power calculations
# within the exponential model
# with the original formulae of the Andersen paper
ConPwrExpAndersen(data = test, cont.time = 12, new.pat = c(2.5, 2.5),
                   theta.0 = 0.75, alpha = 0.05,
                   disp.data = TRUE, plot.km = TRUE)
```

---

**ConPwrNonMixExp**  
*Conditional Power (Non-Mixture-Exponential)*

**Description**

Calculates the conditional power within the non-mixture model with exponential survival.

**Usage**

```r
ConPwrNonMixExp(data, cont.time, new.pat = c(0, 0),
                 theta.0 = 1, alpha = 0.05,
                 disp.data = FALSE, plot.km = FALSE)
```

**Arguments**

- `data`  
  Data frame which consists of at least three columns with the group (two different expressions) in the first, status (1 = event, 0 = censored) in the second and event time in the third column.

- `cont.time`  
  Period of time of continuing the trial.

- `new.pat`  
  2-dimensional vector which consists of numbers of new patients who will be recruited each time unit (first component = group 1, second component = group 2) with default at (0, 0).

- `theta.0`  
  Originally postulated clinically relevant difference (hazard ratio = hazard of group 2 / hazard of group 1) with default at 1.

- `alpha`  
  Significance level for conditional power calculations with default at 0.05.

- `disp.data`  
  Logical value indicating if all calculated data should be displayed with default at FALSE.

- `plot.km`  
  Logical value indicating if Kaplan-Meier curves and estimated survival curves according to the non-mixture model with exponential survival should be plotted with default at FALSE.
This function calculates the conditional power within the non-mixture model with exponential survival, i.e.

\[ S(t) = c(1 - e^{-\lambda t}) \]

for all \( t \geq 0, \lambda > 0 \) and \( 0 < c < 1 \), and plots the conditional power curve.

Optionally, further data will be displayed. This includes data from interim analysis, log-likelihoods, AICs, calculated estimators and further patient times.

Moreover, it is possible to plot the Kaplan-Meier curves and the estimated survival curves according to the non-mixture model with exponential survival.

Value

See Details.

Returns a list which consists of the following components:

- \( \text{lambda1.hat} \): estimated rate parameter of group 1
- \( \text{c1.hat} \): estimated survival fraction of group 1
- \( \text{lambda2.hat} \): estimated rate parameter of group 2
- \( \text{c2.hat} \): estimated survival fraction of group 2
- \( \text{theta.hat} \): estimated hazard ratio = \( \frac{\log(\text{estimated survival fraction of group 2})}{\log(\text{estimated survival fraction of group 1})} \)
- \( \text{gamma.theta.0} \): conditional power

Note

There are several mechanisms to ensure that no illegal operations will be done and maximum likelihood calculations will be executed stable. That is why there should not be too less data in the data frame, for example one patient of each group and both being censored.

Author(s)

Andreas Kuehnapfel

References


See Also

CP
GenerateDataFrame
test
ConPwrNonMixGamma

Description

Calculates the conditional power within the non-mixture model with Gamma type survival.

Usage

ConPwrNonMixGamma(data, cont.time, new.pat = c(0, 0),
theta.0 = 1, alpha = 0.05,
disp.data = FALSE, plot.km = FALSE)

Arguments

data
cont.time
new.pat
theta.0
alpha
disp.data
plot.km

Data frame which consists of at least three columns with the group (two different expressions) in the first, status (1 = event, 0 = censored) in the second and event time in the third column.

Period of time of continuing the trial.

2-dimensional vector which consists of numbers of new patients who will be recruited each time unit (first component = group 1, second component = group 2) with default at (0, 0).

Originally postulated clinically relevant difference (hazard ratio = hazard of group 2 / hazard of group 1) with default at 1.

Significance level for conditional power calculations with default at 0.05.

Logical value indicating if all calculated data should be displayed with default at FALSE.

Logical value indicating if Kaplan-Meier curves and estimated survival curves according to the non-mixture model with Gamma type survival should be plotted with default at FALSE.
Details

This function calculates the conditional power within the non-mixture model with Gamma type survival, i.e.,
\[ S(t) = c \Gamma(0)(a, bt) \]
for all \( t \geq 0 \), \( a > 0 \), \( b > 0 \) and \( 0 < c < 1 \) with \( \Gamma(0) \) being the regularized incomplete Gamma function of the upper bound, and plots the conditional power curve.

Optionally, further data will be displayed. This includes data from interim analysis, log-likelihoods, AICs, calculated estimators and further patient times.

Moreover, it is possible to plot the Kaplan-Meier curves and the estimated survival curves according to the non-mixture model with Gamma type survival.

Value

See Details.

Returns a list which consists of the following components:

- \( \hat{a}_1 \) estimated shape parameter of group 1
- \( \hat{b}_1 \) estimated rate parameter of group 1
- \( \hat{c}_1 \) estimated survival fraction of group 1
- \( \hat{a}_2 \) estimated shape parameter of group 2
- \( \hat{b}_2 \) estimated rate parameter of group 2
- \( \hat{c}_2 \) estimated survival fraction of group 2
- \( \hat{\theta} \) estimated hazard ratio = \( \log(\text{estimated survival fraction of group 2}) / \log(\text{estimated survival fraction of group 1}) \)
- \( \gamma(\theta) \) conditional power

Note

There are several mechanisms to ensure that no illegal operations will be done and maximum likelihood calculations will be executed stable. That is why there should not be too less data in the data frame, for example one patient of each group and both being censored.

Author(s)

Andreas Kuehnapfel

References


See Also

- CP
- GenerateDataFrame
- test
Examples

```r
# data frame 'test' generated by 'GenerateDataFrame'

# conditional power calculations
# within the non-mixture model with Gamma type survival
ConPwrNonMixGamma(data = test, cont.time = 12, new.pat = c(2.5, 2.5),
                   theta.0 = 0.75, alpha = 0.05,
                   disp.data = TRUE, plot.km = TRUE)
```

---

**ConPwrNonMixWei**  
*Conditional Power (Non-Mixture-Weibull)*

**Description**

Calculates the conditional power within the non-mixture model with Weibull type survival.

**Usage**

```r
ConPwrNonMixWei(data, cont.time, new.pat = c(0, 0),
                 theta.0 = 1, alpha = 0.05,
                 disp.data = FALSE, plot.km = FALSE)
```

**Arguments**

- `data`  
  Data frame which consists of at least three columns with the group (two different expressions) in the first, status (1 = event, 0 = censored) in the second and event time in the third column.

- `cont.time`  
  Period of time of continuing the trial.

- `new.pat`  
  2-dimensional vector which consists of numbers of new patients who will be recruited each time unit (first component = group 1, second component = group 2) with default at (0, 0).

- `theta.0`  
  Originally postulated clinically relevant difference (hazard ratio = hazard of group 2 / hazard of group 1) with default at 1.

- `alpha`  
  Significance level for conditional power calculations with default at 0.05.

- `disp.data`  
  Logical value indicating if all calculated data should be displayed with default at FALSE.

- `plot.km`  
  Logical value indicating if Kaplan-Meier curves and estimated survival curves according to the non-mixture model with Weibull type survival should be plotted with default at FALSE.
Details
This function calculates the conditional power within the non-mixture model with Weibull type survival, i.e.
\[
S(t) = e^{c(1 - e^{\lambda t^k})}
\]
for all \( t \geq 0, \lambda > 0, k > 0 \) and \( 0 < c < 1 \), and plots the conditional power curve.
Optionally, further data will be displayed. This includes data from interim analysis, log-likelihoods, AICs, calculated estimators and further patient times.
Moreover, it is possible to plot the Kaplan-Meier curves and the estimated survival curves according to the non-mixture model with Weibull type survival.

Value
See Details.
Returns a list which consists of the following components:

- `lambda1.hat` estimated scale parameter of group 1
- `k1.hat` estimated shape parameter of group 1
- `c1.hat` estimated survival fraction of group 1
- `lambda2.hat` estimated scale parameter of group 2
- `k2.hat` estimated shape parameter of group 2
- `c2.hat` estimated survival fraction of group 2
- `theta.hat` estimated hazard ratio = \( \log(\text{estimated survival fraction of group 2}) / \log(\text{estimated survival fraction of group 1}) \)
- `gamma.theta.0` conditional power

Note
There are several mechanisms to ensure that no illegal operations will be done and maximum likelihood calculations will be executed stable. That is why there should not be too less data in the data frame, for example one patient of each group and both being censored.

Author(s)
Andreas Kuehnapfel

References

See Also
- CP
- GenerateDataFrame
- test
Examples

# data frame 'test' generated by 'GenerateDataFrame'

# conditional power calculations
# within the non-mixture model with Weibull type survival
ConPwrNonMixWei(data = test, cont.time = 12, new.pat = c(2.5, 2.5),
theta.0 = 0.75, alpha = 0.05,
disp.data = TRUE, plot.km = TRUE)

DispConPwr

Auxiliary Function

Description

Displays the conditional power in ConPwrExp, ConPwrNonMixExp, ConPwrNonMixWei and ConPwrNonMixGamma.

Author(s)

Andreas Kuehnapfel

See Also

CP ConPwrExp ConPwrNonMixExp ConPwrNonMixWei ConPwrNonMixGamma

DispConPwrAll

Auxiliary Function

Description

Displays the conditional power in CompSurvMod.

Author(s)

Andreas Kuehnapfel

See Also

CP CompSurvMod
DispDataAll  

**Auxiliary Function**

**Description**
Displays the data in `CompSurvMod`.

**Author(s)**
Andreas Kuehnapfel

**See Also**
- CP `CompSurvMod`

**DispDataExp**  

**Auxiliary Function**

**Description**
Displays the data in the exponential model.

**Author(s)**
Andreas Kuehnapfel

**See Also**
- CP `ConPwrExp`

**DispDataNonMixExp**  

**Auxiliary Function**

**Description**
Displays the data in the non-mixture model with exponential survival.

**Author(s)**
Andreas Kuehnapfel

**See Also**
- CP `ConPwrNonMixExp`
DispDataNonMixGamma  Auxiliary Function

**Description**
Displays the data in the non-mixture model with Gamma type survival.

**Author(s)**
Andreas Kuehnapfel

**See Also**
CP ConPwrNonMixGamma

DispDataNonMixWei  Auxiliary Function

**Description**
Displays the data in the non-mixture model with Weibull type survival.

**Author(s)**
Andreas Kuehnapfel

**See Also**
CP ConPwrNonMixWei

FctPersMonNonMixExp  Auxiliary Function

**Description**
Calculates the value of some function of the further person months in the non-mixture model with exponential survival.

**Author(s)**
Andreas Kuehnapfel

**See Also**
CP ConPwrNonMixExp
FctPersMonNonMixGamma  Auxiliary Function

Description
Calculates the value of some function of the further person months in the non-mixture model with Gamma type survival.

Author(s)
Andreas Kuehnapfel

See Also
CP ConPwrNonMixGamma

FctPersMonNonMixWei  Auxiliary Function

Description
Calculates the value of some function of the further person months in the non-mixture model with Weibull type survival.

Author(s)
Andreas Kuehnapfel

See Also
CP ConPwrNonMixWei

GenerateDataFrame  Generating Data Frame

Description
Generates a data frame for conditional power calculations.

Usage
GenerateDataFrame()
Details

This function generates a data frame for testing the conditional power calculating functions.

Its data is generated by random in the following way:

The number of all patients is a realization of a Poisson distributed random variable with parameter 200.

The probability of censoring is a realization of a uniform distributed random variable of the interval from 0.4 to 0.6, one random variable for each of the two groups 'A' and 'B'.

The patients are randomized to group 'A' or 'B' each with probability 0.5.

The status (1 = event, 0 = censored) is a realization of a Bernoulli random variable with parameter (1 - probability of being censored).

The event time is a realization of an exponential random variable with parameter (1 - probability of being censored).

Value

This function returns a data frame consisting of three columns: the group ('A' or 'B') in the first ('group'), the status (0 or 1) in the second ('stat') and the event time in the third column ('time').

Note

Of course, this is only one and also a quiet simple way of generating data frames for interim analysis. Such a generated data frame should be more an aid to get to know the conditional power calculating functions than simulating realistic data.

Author(s)

Andreas Kuehnapfel

See Also

CP
test

Examples

# generate a data frame
data <- GenerateDataFrame()
InitValLikelihoodNonMixExp

Auxiliary Function

Description

Calculates initial values for maximum likelihood calculations in the non-mixture model with exponential survival.

Author(s)

Andreas Kuehnapfel

See Also

CP ConPwrNonMixExp

InitValLikelihoodNonMixGamma

Auxiliary Function

Description

Calculates initial values for maximum likelihood calculations in the non-mixture model with Gamma type survival.

Author(s)

Andreas Kuehnapfel

See Also

CP ConPwrNonMixGamma
InitValLikelihoodNonMixWei

Auxiliary Function

Description
Calculates initial values for maximum likelihood calculations in the non-mixture model with Weibull type survival.

Author(s)
Andreas Kuehnapfel

See Also
CP ConPwrNonMixWei

InterimData

Auxiliary Function

Description
Displays the data from the interim analysis.

Author(s)
Andreas Kuehnapfel

See Also
CP ConPwrExp ConPwrNonMixExp ConPwrNonMixWei ConPwrNonMixGamma CompSurvMod

IsValid

Auxiliary Function

Description
Checks the passed parameters of the user.

Author(s)
Andreas Kuehnapfel

See Also
CP ConPwrExp ConPwrNonMixExp ConPwrNonMixWei ConPwrNonMixGamma CompSurvMod
LikelihoodNonMixExp

**Auxiliary Function**

**Description**
Calculates the maximum likelihood estimators of the non-mixture model with exponential survival.

**Author(s)**
Andreas Kuehnapfel

**See Also**
CP ConPwrNonMixExp

LikelihoodNonMixGamma

**Auxiliary Function**

**Description**
Calculates the maximum likelihood estimators of the non-mixture model with Gamma type survival.

**Author(s)**
Andreas Kuehnapfel

**See Also**
CP ConPwrNonMixGamma

LikelihoodNonMixWei

**Auxiliary Function**

**Description**
Calculates the maximum likelihood estimators of the non-mixture model with Weibull type survival.

**Author(s)**
Andreas Kuehnapfel

**See Also**
CP ConPwrNonMixWei
PersMonExp  

**Auxiliary Function**

**Description**
Calculates the further person months in the exponential model.

**Author(s)**
Andreas Kuehnapfel

**See Also**
CP ConPwrExp

PersMonNonMixExp  

**Auxiliary Function**

**Description**
Calculates the further person months in the non-mixture model with exponential survival.

**Author(s)**
Andreas Kuehnapfel

**See Also**
CP ConPwrNonMixExp

PersMonNonMixGamma  

**Auxiliary Function**

**Description**
Calculates the further person months in the non-mixture model with Gamma type survival.

**Author(s)**
Andreas Kuehnapfel

**See Also**
CP ConPwrNonMixGamma
### PersMonNonMixWei

**Auxiliary Function**

**Description**

Calculates the further person months in the non-mixture model with Weibull type survival.

**Author(s)**

Andreas Kuehnapfel

**See Also**

CP ConPwrNonMixWei

### PlotConPwr

**Auxiliary Function**

**Description**

Plots the conditional power curve in ConPwrExp, ConPwrNonMixExp, ConPwrNonMixWei and ConPwrNonMixGamma.

**Author(s)**

Andreas Kuehnapfel

**See Also**

CP ConPwrExp ConPwrNonMixExp ConPwrNonMixWei ConPwrNonMixGamma

### PlotConPwrAll

**Auxiliary Function**

**Description**

Plots the conditional power curve in CompSurvMod.

**Author(s)**

Andreas Kuehnapfel

**See Also**

CP CompSurvMod
PlotEstExp  
*Auxiliary Function*

**Description**

Plots the estimated survival curves of the exponential model.

**Author(s)**

Andreas Kuehnapfel

**See Also**

CP ConPwrExp

PlotEstNonMixExp  
*Auxiliary Function*

**Description**

Plots the estimated survival curves of the non-mixture model with exponential survival.

**Author(s)**

Andreas Kuehnapfel

**See Also**

CP ConPwrNonMixExp

PlotEstNonMixGamma  
*Auxiliary Function*

**Description**

Plots the estimated survival curves of the non-mixture model with Gamma type survival.

**Author(s)**

Andreas Kuehnapfel

**See Also**

CP ConPwrNonMixGamma
**PlotEstNonMixWei**

**Auxiliary Function**

**Description**

Plots the estimated survival curves of the non-mixture model with Weibull type survival.

**Author(s)**

Andreas Kuehnapfel

**See Also**

CP ConPwrNonMixWei

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**PlotKM**

**Auxiliary Function**

**Description**

Plots the Kaplan-Meier curves.

**Author(s)**

Andreas Kuehnapfel

**See Also**

CP ConPwrExp ConPwrNonMixExp ConPwrNonMixWei ConPwrNonMixGamma CompSurvMod

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**SplitData**

**Auxiliary Function**

**Description**

Splits the entire data frame into two sub data frames each for one group.

**Author(s)**

Andreas Kuehnapfel

**See Also**

CP ConPwrExp ConPwrNonMixExp ConPwrNonMixWei ConPwrNonMixGamma CompSurvMod
<table>
<thead>
<tr>
<th>test</th>
<th>Test Data Frame</th>
</tr>
</thead>
</table>

**Description**

The data frame 'test' is generated by random and does not refer to a special realistic issue.

**Format**

This data frame consists of three columns. The first column consists of the group expressions 'A' and 'B' (character). The second column consists of the status 1 for event or 2 for censored (numeric). The third column consists of the event time (numeric).

**Source**

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