Package 'ExtendedABSurvTDC'

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Type Package

Title Survival Analysis using Indicators under Time Dependent Covariates

Version 0.1.0

Author Dr. Himadri Ghosh [aut, cre],
Mr. Saikath Das [aut],
Dr. Md Yeasin [aut],
Dr. Debopam Rakshit [aut]

Maintainer Dr. Himadri Ghosh <hghosh@gmail.com>

Description Survival analysis is employed to model time-to-event data. This package examines the relationship between survival and one or more predictors, termed as covariates, which can include both treatment variables (e.g., season of birth, represented by indicator functions) and continuous variables. To this end, the Cox-proportional hazard (Cox-PH) model, introduced by Cox in 1972, is a widely applicable and commonly used method for survival analysis. This package enables the estimation of the effect of randomization for the treatment variable to account for potential confounders, providing adjustment when estimating the association with exposure. It accommodates both fixed and time-dependent covariates and computes survival probabilities for lactation periods in dairy animals. The package is built upon the algorithm developed by Klein and Moeschberger (2003) <DOI:10.1007/b97377>.

License GPL-3

Encoding UTF-8

Imports stats, survival, readxl

RoxygenNote 7.2.1

NeedsCompilation no

Depends R (>= 3.5.0)

Repository CRAN

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Contents

`DataPrep` *Data Preparation*

Description

Data preparation for ABCoxPH

Usage

```
DataPrep(data, t_int, max_lac)
```

Arguments

`data`	Raw data sets
`t_int`	No of days to be considered as single time interval (Default value: 90)
`max_lac`	Maximum no of lactation to be considered for data preparation (Default value: Max Lactation)

Value

- wide_data - Processed data for ABCoxPH

References

- J.D. Kalbfleisch and R.L. Prentice (1980). The statistical analysis of failure time data. John Wiley & Sons, Inc., New York, 1980. <doi:10.1002/9781118032985>
- J.P. Klein and M L. Moeschberger (2003). Survival Analysis: Techniques for Censored and Truncated Data. Springer New York. <doi:10.1007/b97377>

Examples

```
library("ExtendedABSurvTDC")
load(system.file("extdata", "data.RData", package = "ExtendedABSurvTDC"))
PropData<-DataPrep(data =as.data.frame(data_test))
```

ExtendedABSurvTDC *Extended Cox-PH Model for Animal Breeding*

Description

Data preparation for ABCoxPH

Usage

```
ExtendedABSurvTDC(wide_data, lact)
```

Arguments

wide_data	Dataset from DataPrep function
lact	Number of lactation to be used for model building

Value

- Cox_Model - ExtendedABCoxPH model
- LongData- Long data

References

- J.D. Kalbfleisch and R.L. Prentice (1980). The statistical analysis of failure time data. John Wiley & Sons, Inc., New York, 1980. DOI: 10.1002/9781118032985
- J.P. Klein and M L. Moeschberger (2003). Survival Analysis: Techniques for Censored and Truncated Data. Springer New York, DOI:10.1007/b97377

Examples

```
library("ExtendedABSurvTDC")
load(system.file("extdata", "data.RData", package = "ExtendedABSurvTDC"))
PropData<-DataPrep(data =as.data.frame(data_test))
ExtendedABSurvTDC(PropData)
```

ExtendedCoxPred *ExtendedABCoxPH Prediction*

Description

Prediction for ExtendedABCoxPH model

Usage

```
ExtendedCoxPred(Model, NewData)
```

Arguments

Model	ExtendedABCoxPH model
NewData	New data

Value

- SurvProb - Survival probabilities

References

- J.D. Kalbfleisch and R.L. Prentice (1980). The statistical analysis of failure time data. John Wiley & Sons, Inc., New York, 1980. DOI: 10.1002/9781118032985
- J.P. Klein and M L. Moeschberger (2003). Survival Analysis: Techniques for Censored and Truncated Data. Springer New York, DOI:10.1007/b97377

Examples

```
library("ExtendedABSurvTDC")
load(system.file("extdata", "data.RData", package = "ExtendedABSurvTDC"))
PropData<-DataPrep(data =as.data.frame(data_test))
model<-ExtendedABSurvTDC(PropData)
Lact_1<-c("Yes","Yes","Yes","No","No","No","No","No","No","No","No")
Lact_2<-c("No","No","No","No","Yes","Yes","No","No","No","No","No")
Lact_3<-c("No","No","No","No","No","No","No","No","Yes","Yes","Yes")
Lact_4<-c("No","No","No","No","No","No","No","No","No","No","No")
Lact_5<-c("No","No","No","No","No","No","No","No","No","No","No")
Lact_6<-c("No","No","No","No","No","No","No","No","No","No","No")
Lact_7<-c("No","No","No","No","No","No","No","No","No","No","No")
Lact_8<-c("No","No","No","No","No","No","No","No","No","No","No")
Lact_9<-c("No","No","No","No","No","No","No","No","No","No","No")
ndata<- data.frame(Lact_1,Lact_2,Lact_3,Lact_4,Lact_5,Lact_6,Lact_7,
                   Lact_8,Lact_9)
NewData<-ndata
HYS<-2033
AFC <- 1400
Y=as.factor(1)
S=as.factor(1)
H=as.factor(1)
NewData_default <- data.frame(AFC, Y, S, NewData) # Data for default argument of "factors"
ExtendedCoxPred(Model=model, NewData=NewData_default)
```

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