Package 'ABSurvTDC'

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Type Package

Title Survival Analysis using Time Dependent Covariate for Animal
Breeding

Version 0.1.0

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Description Survival analysis is employed to model the time it takes for events to occur. Survival model examines the relationship between survival and one or more predictors, usually termed covariates in the survival-analysis literature. To this end, Cox-proportional (Cox-PH) hazard rate model introduced in a seminal paper by Cox (1972) <doi:10.1111/j.2517-6161.1972.tb00899.x>, is a broadly applicable and the most widely used method of survival analysis. This package can be used to estimate the effect of fixed and time-dependent covariates and also to compute the survival probabilities of the lactation of dairy animal. This package has been developed using algorithm of Klein and Moeschberger (2003) <doi:10.1007/b97377>.

License GPL-3

Encoding UTF-8

Imports stats, survival, readxl

RoxygenNote 7.2.3

NeedsCompilation no

Depends R (>= 3.5.0)

Repository CRAN

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Contents

ABCoxPH   *Cox-PH Model for Animal Breeding*

Description

Data preparation for ABCoxPH

Usage

```
ABCoxPH(wide_data, lact)
```

Arguments

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

Value

- Cox_Model - ABCoxPH 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("ABSurvTDC")
library("readxl")
data_test<-read_excel(path = system.file("extdata/data_test.xlsx", package = "ABSurvTDC"))
PropData<-DataPrep(data =as.data.frame(data_test))
ABCoxPH(PropData)
```

CoxPred	*ABCoxPH Prediction*

Description

Prediction for ABCoxPH model

Usage

```
CoxPred(Model, NewData, AFC, HYS)
```

Arguments

Model	ABCoxPH model
NewData	New data
AFC	Age (in days) at first calving
HYS	Combine effect of herd, year and season

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>

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Examples

```
library("ABSurvTDC")
library("readxl")
data_test<-read_excel(path = system.file("extdata/data_test.xlsx", package = "ABSurvTDC"))
PropData<-DataPrep(data =as.data.frame(data_test))
model<-ABCoxPH(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)
HYS<-2033
```

```
AFC <- 1400
CoxPred(Model=model, NewData=ndata, AFC, HYS)
```

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

```
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library("readxl")
data_test<-read_excel(path = system.file("extdata/data_test.xlsx", package = "ABSurvTDC"))
PropData<-DataPrep(data =as.data.frame(data_test))
```

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