

# 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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ABCoxPH	<i>Cox-PH Model for Animal Breeding</i>
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## Description

Data preparation for ABCoxPH

## Usage

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

## Arguments

<code>wide_data</code>	Dataset from DataPrep function
<code>lact</code>	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)
```

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DataPrep

*Data Preparation*

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## Description

Data preparation for ABCoxPH

## Usage

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

## Arguments

<code>data</code>	Raw data sets
<code>t_int</code>	No of days to be considered as single time interval (Default value: 90)
<code>max_lac</code>	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("ABSurvTDC")  
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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