

Package ‘survC’

May 9, 2026

Title Survival Model Validation Utilities

Version 0.1.0

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Description Provides helper functions to compute linear predictors, time-dependent ROC curves, and Harrell's concordance index for Cox proportional hazards models as described in Therneau (2024) <<https://CRAN.R-project.org/package=survival>>, Therneau and Grambsch (2000, ISBN:0-387-98784-3), Hung and Chiang (2010) <[doi:10.1002/cjs.10046](https://doi.org/10.1002/cjs.10046)>, Uno et al. (2007) <[doi:10.1198/016214507000000149](https://doi.org/10.1198/016214507000000149)>, Blanche, Dartigues, and Jacqmin-Gadda (2013) <[doi:10.1002/sim.5958](https://doi.org/10.1002/sim.5958)>, Blanche, Latouche, and Viallon (2013) <[doi:10.1007/978-1-4614-8981-8_11](https://doi.org/10.1007/978-1-4614-8981-8_11)>, Harrell et al. (1982) <[doi:10.1001/jama.1982.03320430047030](https://doi.org/10.1001/jama.1982.03320430047030)>, Peto and Peto (1972) <[doi:10.2307/2344317](https://doi.org/10.2307/2344317)>, Schemper and Uno et al. (2011) <[doi:10.1002/sim.4154](https://doi.org/10.1002/sim.4154)>.

Imports survival, stats, timeROC, officer, rvg

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Encoding UTF-8

RoxygenNote 7.3.2

URL <https://newjoseph.github.io/survC/>

Suggests magrittr, jstable, testthat (>= 3.0.0)

Config/testthat/edition 3

NeedsCompilation no

Repository CRAN

Date/Publication 2025-10-29 19:40:02 UTC

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calc_risk_score	<i>Compute risk scores from a fitted survival model</i>
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Description

This helper wraps `stats::predict()` for `coxph` objects so that package users can easily obtain linear predictors (default) or risk scores to feed into downstream metrics such as time-dependent ROC or Harrell's C-index.

Usage

```
calc_risk_score(model, data = NULL, type = "lp", ...)
```

Arguments

<code>model</code>	A fitted <code>coxph</code> object.
<code>data</code>	Optional dataset on which to score the model. Defaults to the training data stored within <code>model</code> .
<code>type</code>	Scale of the predictions to return. Either "lp" (linear predictor, the default) or "risk". If NULL or omitted, "lp" is used.
<code>...</code>	Additional arguments passed to <code>stats::predict()</code> .

Value

A numeric vector containing the requested risk scores.

Examples

```
if (requireNamespace("survival", quietly = TRUE)) {  
  fit <- survival::coxph(survival::Surv(time, status) ~ age, data = survival::lung)  
  # Linear predictor on the training data  
  calc_risk_score(fit)  
  
  # Risk scale predictions on new data  
  calc_risk_score(fit, survival::lung, type = "risk")  
}
```

cindex_calc	<i>Calculate Harrell's C-index with 95% CI</i>
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Description

Calculate Harrell's C-index with 95% CI

Usage

```
cindex_calc(model, newdata = NULL, digits = 3)
```

Arguments

model	a 'coxph' object
newdata	optional validation dataset
digits	number of decimal places for rounding (default 3).

Value

numeric vector of C-index (lower, upper)

Examples

```
library(survival)
fit <- coxph(Surv(time, status) ~ age + sex, data = lung)
cindex_calc(fit)
```

tdroc_calc	<i>Calculate time-dependent ROC and AUC</i>
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Description

Calculate time-dependent ROC and AUC

Usage

```
tdroc_calc(time, status, marker, times)
```

Arguments

time	Survival time vector
status	Event indicator (1 = event, 0 = censor)
marker	Risk score or linear predictor
times	Vector of time points (e.g., c(365, 730, 1095))

Value

A data.frame with AUCs for each time

validation_report	<i>Generate survival model validation report</i>
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Description

Generate survival model validation report

Usage

```
validation_report(  
  train_data,  
  val_data,  
  model,  
  time_col,  
  status_col,  
  times = c(365, 730, 1095),  
  time_unit = "days",  
  output = NULL  
)
```

Arguments

train_data	training dataset containing survival outcomes.
val_data	validation dataset containing survival outcomes.
model	fitted 'coxph'
time_col	name of the survival time column present in both datasets
status_col	name of the event indicator column present in both datasets
times	follow-up timepoints
time_unit	character label for the time axis (default = "days")
output	file path (.pptx or .html). Defaults to a temporary file.

Value

Invisibly returns the file path containing the validation report

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