# Package 'SvyNom'

July 21, 2025

**Type** Package

**Title** Nomograms for Right-Censored Outcomes from Survey Designs

**Version** 1.2

**Description** Builds, evaluates and validates a nomogram with survey data and right-censored outcomes. As described in Capanu (2015) <doi:10.18637/jss.v064.c01>, the package contains functions to create the nomogram, validate it using bootstrap, as well as produce the calibration plots.

**License** GPL-2

**URL** https://github.com/MSKCC-Epi-Bio/SvyNom, https://mskcc-epi-bio.github.io/SvyNom/

**BugReports** https://github.com/MSKCC-Epi-Bio/SvyNom/issues

**Imports** Hmisc, rms, survey, survival

**Encoding** UTF-8

**LazyLoad** yes

**Suggests** spelling

**Language** en-US

**NeedsCompilation** no

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**Repository** CRAN

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SvyNom-package *Nomograms for right-censored outcomes with complex survey data*

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## Description

Builds, evaluates and validates a nomogram with survey data and right-censored outcomes.

## Details

| | |
|---|---|
| Package: | SvyNom |
| Type: | Package |
| Version: | 1.1 |
| Date: | 2015-01-06 |
| License: | GPL-2 |
| LazyLoad: | yes |

There are three functions for the user svycox.nomogram, svycox.validate, svycox.calibrate

## Author(s)

Marinela Capanu and Mithat Gonen
Maintainer: gonenm@mskcc.org

## References

Marinela Capanu, Mithat Gonen (2015). Building a Nomogram for Survey-Weighted Cox Models Using R. Journal of Statistical Software, Code Snippets, 64(1), 1-17. URL https://www.jstatsoft.org/v64/c01/.

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noNA *Gastric cancer case-control study*

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## Description

Example dataset for the SvyNom package.

## Usage

```
data(noNA)
```

## Author(s)

Mithat Gonen, Marinela Capanu

## Examples

```
data(noNA)
```

svycox.calibrate *Checking the calibration of a nomogram for a survey-weighted Cox model*

## Description

Checks the calibration of a nomogram for a survey-weighted Cox model.

## Usage

```
svycox.calibrate(.nom, .timept = .nom$pred.at, .ngroup = 5)
```

## Arguments

| | |
|---|---|
| .nom | a nomogram object from svycox.nomogram |
| .timept | the time point at which calibration will take place; defaults to the time value of the prediction axis in the nomogram |
| .ngroup | number of groups to be formed for validation purposes |

## Value

returns a matrix of calibration values and plots them

## Author(s)

Mithat Gonen, Marinela Capanu

## References

Marinela Capanu, Mithat Gonen (2015). Building a Nomogram for Survey-Weighted Cox Models Using R. Journal of Statistical Software, Code Snippets, 64(1), 1-17. URL https://www.jstatsoft.org/v64/c01/.

## Examples

```
library(survey)
library(rms)
data(noNA)
dd=datadist(noNA)
options(datadist="dd")

dstr2=svydesign(id=~1, strata=~group, prob=~inv_weight, fpc=~ssize, data=noNA)

mynom=svycox.nomogram(.design=dstr2, .model=Surv(survival,surv_cens)~ECOG+liver_only+Alb+Hb+Age+
Differentiation+Gt_1_m1site+lymph_only, .data=noNA, pred.at=24, fun.lab="Prob of 2 Yr OS")

svycox.calibrate(mynom)
```

svycox.nomogram *Builds a nomogram for a survey-weighted Cox model*

## Description

Builds a nomogram for a survey-weighted Cox model.

## Usage

```
svycox.nomogram(.design, .model, .data, pred.at, fun.lab)
```

## Arguments

| | |
|---|---|
| .design | represents a survey design object obtained with the package "survey" |
| .model | indicates a Cox model specification |
| .data | contains the data on which the model is to be fit (can not contain NAs) |
| pred.at | specifies the time point at which the nomogram prediction axis will be drawn |
| fun.lab | designate the label of the prediction axis |

## Details

In addition to the inputs, this function expects the following: 1) the input dataset (.data) cannot contain NAs. You can accomplish this using the na.omit function. See example. 2) datadist must be set. See examples and the documentation for the rms package. 3) survey design must have been saved in .design All of these requirements are explained in Capanu & Gonen (2015) in detail

## Value

A list including elements

| | |
|---|---|
| nomog | A nomogram object |
| preds | predicted values from the model |

In addition to what is listed below, the design and the fitted survey weighted Cox model (svy.cox), as well as the timepoint at which the nomogram prediction axis will be drawn (pred.at) are stored

## Author(s)

Mithat Gonen, Marinela Capanu

## References

Marinela Capanu, Mithat Gonen (2015). Building a Nomogram for Survey-Weighted Cox Models Using R. Journal of Statistical Software, Code Snippets, 64(1), 1-17. URL https://www.jstatsoft.org/v64/c01/.

## Examples

```
library(survey)
library(rms)
data(noNA)
dd=datadist(noNA)
options(datadist="dd")
dstr2=svydesign(id=~1, strata=~group, prob=~inv_weight, fpc=~ssize, data=noNA)
mynom=svycox.nomogram(.design=dstr2, .model=Surv(survival,surv_cens)~ECOG+liver_only+Alb+Hb+Age+
Differentiation+Gt_1_m1site+lymph_only, .data=noNA, pred.at=24, fun.lab="Prob of 2 Yr OS")
plot(mynom$nomog)
```

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`svycox.validate` *Validating a nomogram for a survey-weighted Cox model*

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## Description

Validates a nomogram for a survey-weighted Cox model using bootstrap.

## Usage

```
svycox.validate(.boot.index, .nom, .data)
```

## Arguments

| | |
|---|---|
| `.boot.index` | a matrix of bootstrap sample indicators with the number of rows the same as the number of rows in the data on which the nomogram was created and the number of columns being the number of bootstrap samples |
| `.nom` | a nomogram object returned from svycox.nomogram |
| `.data` | contains the dataset on which the validation will take place |

## Details

Note that generating the bootstrap sample is design dependent and it is not part of the function. The user has to generate the bootstrap samples consistent with the design used. An example of how the bootstrap sample was generated for the dataset is presented in the reference below.

## Value

prints the estimated optimism and returns the vector of optimism values for each bootstrap sample which can be used to summarize the validation with the measure of choice

## References

Marinela Capanu, Mithat Gonen (2015). Building a Nomogram for Survey-Weighted Cox Models Using R. Journal of Statistical Software, Code Snippets, 64(1), 1-17. URL https://www.jstatsoft.org/v64/c01/.

## Examples

```
bootit=200
library(survey)
library(rms)
data(noNA)
dd=datadist(noNA)
options(datadist="dd")
dstr2=svydesign(id=~1, strata=~group, prob=~inv_weight, fpc=~ssize, data=noNA)
mynom=svycox.nomogram(.design=dstr2, .model=Surv(survival,surv_cens)~ECOG+liver_only+Alb+Hb+Age+
Differentiation+Gt_1_m1site+lymph_only, .data=noNA, pred.at=24, fun.lab="Prob of 2 Yr OS")

cases=which(noNA$group=="long")
controls=which(noNA$group=="<24")
boot.index=matrix(NA,nrow(noNA),bootit)
for(i in 1:bootit){
boot.index[,i]=c(sample(cases,replace=TRUE),sample(controls,replace=TRUE))
}
myval=svycox.validate(boot.index,mynom,noNA)
```

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