Package 'nhs.predict'

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Type Package

Title Breast Cancer Survival and Therapy Benefits

Version 1.2.0

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Description Calculate Overall Survival or Recurrence-
Free Survival for breast cancer patients, using 'NHS Predict'.
The time interval for the estimation can be set up to 15 years, with default at 10.
Incremental therapy benefits are estimated for hormone therapy, chemotherapy, trastuzumab, and bisphosphonates.
This work is not affiliated with the development of 'NHS Predict' and its underlying statistical model.
Details on 'NHS Predict' can be found at: <doi:10.1186/bcr2464>.
The web version of 'NHS Predict': <https://breast.predict.nhs.uk/>.
A small dataset of 50 fictional patient observations is provided for the purpose of running examples.

License GPL-2

Encoding UTF-8

LazyData True

RoxygenNote 7.1.0

NeedsCompilation no

Depends R (>= 3.5.0)

Repository CRAN

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R topics documented:

example_data 2
os.predict 2
rfs.predict 4

Index **6**

example_data *Example patient data*

Description

Example of a brief list of breast cancer patient records with the necessary variables to calculate Predict v2.1 scores.

Usage

```
data(example_data)
```

Format

A dataframe with 50 patient observations and 13 variables.

os.predict *os.predict*

Description

Calculates 'NHS Predict' v2.1 Overall survival and therapy benefits

Usage

```
os.predict(
  data,
  year = 10,
  age.start,
  screen,
  size,
  grade,
  nodes,
  er,
  her2,
  ki67,
  generation,
  horm,
  traz,
  bis
)
```

Arguments

data	A dataframe containg patient data with the necessary variables.
year	Numeric, Specify the year since surgery for which the predictions are calculated, ranges between 1 and 15. Default at 10.
age.start	Numeric, Age at diagnosis of the patient. Range between 25 and 85.
screen	Numeric, Clinically detected = 0, Screen detected = 1.
size	Numeric, Tumour size in millimiters.
grade	Numeric, Tumour grade. Values: 1,2,3. Missing=9.
nodes	Numeric, Number of positive nodes.
er	Numeric, ER status, ER+ = 1, ER- = 0.
her2	Numeric, HER2 status, HER2+ = 1, HER2- = 0. Unknown = 9.
ki67	Numeric, ki67 status, KI67+ = 1, KI67- = 0, Unknown = 9.
generation	Numeric, Chemotherapy generation. Values: 0,2,3.
horm	Numeric, Hormone therapy, Yes = 1, No = 0.
traz	Numeric, Trastuzumab therapy, Yes = 1, No = 0.
bis	Numeric, Bisphosphonate therapy, Yes = 1, No = 0.

Value

The function attaches additional columns to the dataframe, matched for patient observation, containing Overall survival at the specified year, plus the additional benefit for each type of therapy.

Examples

```
data(example_data)

example_data <- os.predict(example_data,age.start = age,screen = detection,size = t.size,
                    grade = t.grade, nodes = nodes, er = er.status, her2 = her2.status,
                    ki67 = ki67.status, generation = chemo.gen, horm = horm.t,
                    traz = trastuzumab, bis = bis.t)

data(example_data)

example_data <- os.predict(example_data,year = 15, age,detection,t.size,t.grade,
                           nodes,er.status,her2.status,ki67.status,chemo.gen,horm.t,
                           trastuzumab,bis.t)
```

rfs.predict *rfs.predict*

Description

Calculates 'NHS Predict' v2.1 Recurrence-free survival and therapy benefits

Usage

```
rfs.predict(
  data,
  year = 10,
  age.start,
  screen,
  size,
  grade,
  nodes,
  er,
  her2,
  ki67,
  generation,
  horm,
  traz,
  bis
)
```

Arguments

data	A dataframe containg patient data with the necessary variables.
year	Numeric, Specify the year since surgery for which the predictions are calculated, ranges between 1 and 15. Default at 10.
age.start	Numeric, Age at diagnosis of the patient. Range between 25 and 85.
screen	Numeric, Clinically detected = 0, Screen detected = 1.
size	Numeric, Tumour size in millimiters.
grade	Numeric, Tumour grade. Values: 1,2,3. Missing=9.
nodes	Numeric, Number of positive nodes.
er	Numeric, ER status, ER+ = 1, ER- = 0.
her2	Numeric, HER2 status, HER2+ = 1, HER2- = 0. Unknown = 9.
ki67	Numeric, ki67 status, KI67+ = 1, KI67- = 0, Unknown = 9.
generation	Numeric, Chemotherapy generation. Values: 0,2,3.
horm	Numeric, Hormone therapy, Yes = 1, No = 0.
traz	Numeric, Trastuzumab therapy, Yes = 1, No = 0.
bis	Numeric, Bisphosphonate therapy, Yes = 1, No = 0.

Value

The function attaches additional columns to the dataframe, matched for patient observation, containing recurrence-free survival at the specified year, plus the additional benefit for each type of therapy.

Examples

```
data(example_data)

example_data <- rfs.predict(example_data,age.start = age,screen = detection,size = t.size,
                     grade = t.grade, nodes = nodes, er = er.status, her2 = her2.status,
                     ki67 = ki67.status, generation = chemo.gen, horm = horm.t,
                     traz = trastuzumab, bis = bis.t)

data(example_data)

example_data <- rfs.predict(example_data,year = 15, age,detection,t.size,t.grade,
                           nodes,er.status,her2.status,ki67.status,chemo.gen,horm.t,
                           trastuzumab,bis.t)
```

Index

∗Topic **datasets**
example_data, 2

example_data, 2

os.predict, 2

rfs.predict, 4