stdca{}

Decision Curve Analysis

Description

Diagnostic and prognostic models are typically evaluated with measures of accuracy that do not address clinical consequences. Decision-analytic techniques allow assessment of clinical outcomes but often require collection of additional information may be cumbersome to apply to models that yield a continuous result. Decision curve analysis is a method for evaluating and comparing prediction models that incorporates clinical consequences, requires only the data set on which the models are tested, and can be applied to models that have either continuous or dichotomous results. The stdca function performs decision curve analysis for time to event or survival outcomes.

See http://www.decisioncurveanalysis.org for more information.

Usage

stdca(data, outcome, predictors, timepoint, xstart=0.01, xstop=0.99, xby=0.01, ymin=-0.05, probability=NULL, harm=NULL, graph=TRUE, intervention=FALSE, interventionper=100, smooth=FALSE, loess.span=0.10, cmprsk=FALSE)

Arguments

data	a data frame containing the variables in the model.
outcome	the outcome, response variable. Must be a variable contained within the data frame specified in data=.
predictors	the predictor variables. Must be a variable contained within the data frame specified in data=.
timepoint	specifies the time point at which the decision curve analysis is performed.
probability	specifies whether or not each of the independent variables are probabilities. The default is TRUE.
xstart	starting value for x-axis (threshold probability) between 0 and 1. The default is 0.01.
xstop	stopping value for x-axis (threshold probability) between 0 and 1. The default is 0.99.
xby	increment for threshold probability. The default is 0.01.
ymin	minimum bound for graph. The default is -0.05.
harm	specifies the harm(s) associated with the independent variable(s). The default is none.
graph	specifies whether or not to display graph of net benefits. The default is TRUE.
intervention	plot net reduction in interventions.
interventionper	number of net reduction in interventions per interger. The default is 100.
smooth	specifies whether or not to smooth net benefit curve. The default is FALSE.
loess.span	specifies the degree of smoothing. The default is 0.10.
cmprsk	if evaluating outcome in presence of a competing risk. The default is FALSE

Example

Setup

library(MASS)

data.set <- Melanoma

data.set$diedcancer = ifelse(data.set$status==1, 1, 0)

Decision Curve Analysis

stdca(data=data.set, outcome="diedcancer", ttoutcome="time", timepoint=545, predictors="thickness", probability=FALSE, xstop=.25)

stdca(data=data.set, outcome="diedcancer", ttoutcome="time", timepoint=545, predictors="thickness", probability="FALSE", xstop=.25, intervention="TRUE")