Package: tidytreatment (via r-universe)

October 22, 2024

Type Package

Title Tidy Methods for Bayesian Treatment Effect Models

Version 0.3.0.1

Description Functions for extracting tidy data from Bayesian treatment effect models, in particular BART, but extensions are possible. Functionality includes extracting tidy posterior summaries as in 'tidybayes' <https://github.com/mjskay/tidybayes>, estimating (average) treatment effects, common support calculations, and plotting useful summaries of these.

Encoding UTF-8

LazyData true

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URL https://github.com/bonStats/tidytreatment

BugReports https://github.com/bonStats/tidytreatment/issues

Language en-US

Depends R (>= 3.1.0)

Suggests knitr, rmarkdown, BART, stan4bart, bartCause, ggplot2, testthat (>= 3.0.0), withr

VignetteBuilder knitr

RoxygenNote 7.2.3

Imports tidybayes, purrr, tidyr, dplyr, readr, rlang, dbarts, coda, magrittr

Enhances bartMachine

Config/testthat/edition 3

Repository https://bonstats.r-universe.dev

RemoteUrl https://github.com/bonstats/tidytreatment

RemoteRef HEAD

RemoteSha e740bcad6659fcbab52a16e1b809374ee4f4d8ba

Contents

`avg_treatment_effects` *Get (conditional) average treatment effect draws from posterior*

Description

(C)ATE = (Conditional) Average Treatment Effects `newdata` specifies the conditions, if unspecified it defaults to the original data. Assumes treated column is either a integer column of 1's (treated) and 0's (nontreated) or logical indicating treatment if TRUE.

Usage

```
avg_treatment_effects(
  model,
  treatment,
  newdata,
  subset = "all",
  common_support_method,
  cutoff,
  ...
)
```

Arguments

`model`	A supported Bayesian model fit that can provide fits and predictions.
`treatment`	A character string specifying the name of the treatment variable.
`newdata`	Data frame to generate fitted values from. If omitted, defaults to the data used to fit the model.
`subset`	Either "treated", "nontreated", or "all". Default is "all".
`common_support_method`	Either "sd", or "chisq". Default is unspecified, and no common support calculation is done.
`cutoff`	Cutoff for common support (if in use).
`...`	Arguments to be passed to `tidybayes::fitted_draws` typically scale for `BART` models.

Value

A tidy data frame (tibble) with treatment effect values.

bartmodel1 *Example model 1*

Description

Model fit with simulated data from simulated dataset `suhillsim1`.

Usage

```
bartmodel1
```

Format

Object of type `BART::wbart`

Details

Propensity score estimated and included `suhillsim1` for fitting the model.

Source

https://github.com/bonStats/tidytreatment/tree/master/data-raw

bartmodel1_modelmatrix *Model matrix used for* `bartmodel1`

Description

Useful for testing tidytreatment package functions.

Usage

```
bartmodel1_modelmatrix
```

Format

Object of type `BART::wbart`

Source

https://github.com/bonStats/tidytreatment/tree/master/data-raw

covariate_importance *Counts of variable overall inclusion*

Description

Inclusion metric for bartMachine and BART are scaled differently. bartMachine averaged over number of trees, in addition to number of MCMC draws.

Usage

```
covariate_importance(model, ...)
```

Arguments

model	Model
...	Arguments to pass to particular methods.

Value

Tidy data with counts of variable inclusion, when interacting with treatment variable.

covariate_with_treatment_importance *Counts of variable inclusion when interacting with treatment*

Description

Counts of variable inclusion when interacting with treatment

Usage

```
covariate_with_treatment_importance(model, treatment, ...)
```

Arguments

model	Model
treatment	A character string specifying the name of the treatment variable.
...	Arguments to pass to particular methods.

Value

Tidy data with counts of variable inclusion, when interacting with treatment variable.

epred_draws.bartcFit *Get expected prediction draws from posterior of* bartCause*-package objects*

Description

Typically referred to as fitted value draws on response scale, where appropriate.

Usage

```
## S3 method for class 'bartcFit'
epred_draws(
  object,
  ...,
  value = ".epred",
  re_formula = NULL,
  fitstage = c("response", "assignment")
)
```

Arguments

object	A bartCauseFit object.
...	Additional arguments (e.g. newdata) passed to the underlying prediction method for the type of model given.
value	The name of the output column.
re_formula	If NULL (default), include all group-level effects; if NA, include no group-level effects.
fitstage	If is.null(type), return posterior from response or treatment assignment model.

epred_draws.stan4bartFit *Get expected prediction draws from posterior of* stan4bart*-package models*

Description

Typically referred to as fitted value draws on response scale, where appropriate.

Usage

```
## S3 method for class 'stan4bartFit'
epred_draws(object, newdata, ..., value = ".epred", re_formula = NULL)
```

Arguments

object	A stan4bartFit object.
newdata	Data frame to generate predictions from [optional].
...	Additional arguments passed to the underlying prediction method for the type of model given.
value	The name of the output column.
re_formula	If NULL (default), include all group-level effects; if NA, include no group-level effects.

---

fitted_draws.bartMachine

Get fitted draws from posterior of bartMachine *model*

Description

Get fitted draws from posterior of bartMachine model

Usage

```
## S3 method for class 'bartMachine'
fitted_draws(
  model,
  newdata,
  value = ".value",
  ...,
  n = NULL,
  include_newdata = TRUE,
  include_sigsqs = FALSE
)
```

Arguments

model	A bartMachine model.
newdata	Data frame to generate fitted values from. If omitted, defaults to the data used to fit the model.
value	The name of the output column for fitted_draws; default ".value".
...	Not currently in use.
n	Not currently implemented.
include_newdata	Should the newdata be included in the tibble?
include_sigsqs	Should the posterior sigma-squared draw be included?

Value

A tidy data frame (tibble) with fitted values.

`fitted_draws.lbart` *Get fitted draws from posterior of* `lbart` *model*

Description

Get fitted draws from posterior of `lbart` model

Usage

```
## S3 method for class 'lbart'
fitted_draws(
  model,
  newdata,
  value = ".value",
  ...,
  n = NULL,
  include_newdata = TRUE,
  include_sigsqs = FALSE
)
```

Arguments

`model`	A model from `BART` package.
`newdata`	Data frame to generate fitted values from. If omitted, defaults to the data used to fit the model.
`value`	The name of the output column for `fitted_draws`; default `".value"`.
`...`	Not currently in use.
`n`	Not currently implemented.
`include_newdata`	Should the newdata be included in the tibble?
`include_sigsqs`	Should the posterior sigma-squared draw be included?

Value

A tidy data frame (tibble) with fitted values.

`fitted_draws.mbart` *Get fitted draws from posterior of* `mbart` *model*

Description

Get fitted draws from posterior of `mbart` model

Usage

```
## S3 method for class 'mbart'
fitted_draws(
  model,
  newdata,
  value = ".value",
  ...,
  n = NULL,
  include_newdata = TRUE,
  include_sigsqs = FALSE
)
```

Arguments

`model`	A model from `BART` package.
`newdata`	Data frame to generate fitted values from. If omitted, defaults to the data used to fit the model.
`value`	The name of the output column for `fitted_draws`; default `".value"`.
`...`	Not currently in use.
`n`	Not currently implemented.
`include_newdata`	Should the newdata be included in the tibble?
`include_sigsqs`	Should the posterior sigma-squared draw be included?

Value

A tidy data frame (tibble) with fitted values.

`fitted_draws.mbart2` *Get fitted draws from posterior of* `mbart2` *model*

Description

Get fitted draws from posterior of `mbart2` model

Usage

```
## S3 method for class 'mbart2'
fitted_draws(
  model,
  newdata,
  value = ".value",
  ...,
  n = NULL,
  include_newdata = TRUE,
  include_sigsqs = FALSE
)
```

Arguments

`model`	A model from `BART` package.
`newdata`	Data frame to generate fitted values from. If omitted, defaults to the data used to fit the model.
`value`	The name of the output column for `fitted_draws`; default `".value"`.
`...`	Not currently in use.
`n`	Not currently implemented.
`include_newdata`	Should the newdata be included in the tibble?
`include_sigsqs`	Should the posterior sigma-squared draw be included?

Value

A tidy data frame (tibble) with fitted values.

`fitted_draws.pbart` *Get fitted draws from posterior of* `pbart` *model*

Description

Get fitted draws from posterior of `pbart` model

Usage

```
## S3 method for class 'pbart'
fitted_draws(
  model,
  newdata,
  value = ".value",
  ...,
  n = NULL,
  include_newdata = TRUE,
  include_sigsqs = FALSE
)
```

Arguments

`model`	A model from `BART` package.
`newdata`	Data frame to generate fitted values from. If omitted, defaults to the data used to fit the model.
`value`	The name of the output column for `fitted_draws`; default `".value"`.
`...`	Not currently in use.
`n`	Not currently implemented.
`include_newdata`	Should the newdata be included in the tibble?
`include_sigsqs`	Should the posterior sigma-squared draw be included?

Value

A tidy data frame (tibble) with fitted values.

`fitted_draws.wbart` *Get fitted draws from posterior of* `wbart` *model*

Description

Get fitted draws from posterior of `wbart` model

Usage

```
## S3 method for class 'wbart'
fitted_draws(
  model,
  newdata,
  value = ".value",
  ...,
  n = NULL,
  include_newdata = TRUE,
  include_sigsqs = FALSE
)
```

Arguments

`model`	A model from `BART` package.
`newdata`	Data frame to generate fitted values from. If omitted, defaults to the data used to fit the model.
`value`	The name of the output column for `fitted_draws`; default `".value"`.
`...`	Not currently in use.
`n`	Not currently implemented.
`include_newdata`	Should the newdata be included in the tibble?
`include_sigsqs`	Should the posterior sigma-squared draw be included?

Value

A tidy data frame (tibble) with fitted values.

fitted_draws_BART *Get fitted draws from posterior of* BART*-package models*

Description

Get fitted draws from posterior of BART-package models

Usage

```
fitted_draws_BART(
  model,
  newdata = NULL,
  value = ".value",
  ...,
  include_newdata = TRUE,
  include_sigsqs = FALSE,
  scale = "real"
)
```

Arguments

model	A model from BART package.
newdata	Data frame to generate fitted values from. If omitted, defaults to the data used to fit the model.
value	The name of the output column for fitted_draws; default ".value".
...	Arguments to pass to predict (e.g. BART:::predict.wbart).
include_newdata	Should the newdata be included in the tibble?
include_sigsqs	Should the posterior sigma-squared draw be included?
scale	Should the fitted values be on the real, probit or logit scale?

Value

A tidy data frame (tibble) with fitted values.

has_common_support *Evaluate if observations have common support.*

Description

The common support identification methods are based on Hill and Su (2013). Loosely speaker, an individuals treatment effect estimate has common support if the counter factual estimate is not too uncertain. The estimates are uncertain when the prediction is 'far away' from other observations. Removing estimates without common support can be beneficial for treat effect estimates.

Usage

```
has_common_support(model, treatment, method, cutoff, modeldata = NULL)
```

Arguments

model	A supported Bayesian model fit that can provide fits and predictions.
treatment	A character string specifying the name of the treatment variable.
method	Method to use in determining common support. 'chisq', or 'sd'.
cutoff	Cutoff point to use for method.
modeldata	Manually provide model data for some models (e.g. from BART package)

Details

Hill, Jennifer; Su, Yu-Sung. Ann. Appl. Stat. 7 (2013), no. 3, 1386–1420. doi:10.1214/13-AOAS630. https://projecteuclid.org/euclid.aoas/1380804800

Value

Tibble with a row for each observation and a column indicating whether common support exists.

---

has_tidytreatment_methods

Check if a model class has required generic methods for tidytreatment functions.

Description

Check if a model class has required generic methods for tidytreatment functions.

Usage

```
has_tidytreatment_methods(model)
```

Arguments

model	Model to be checked.

Value

Boolean

highDim_testdataset3 *ACIC2019 High Dimensional Test Dataset*

Description

Dataset from the "Data Challenge" for the Atlantic Causal Inference Conference 2019.

Usage

```
highDim_testdataset3
```

Format

A data frame with 2000 observations, and 187 variables.

Y Outcome variable

A Treatment variable

V1,V2,V3,V4,V5,V6,V7,V8,V9,V10,V11,V12,V13,V14,V15,V16,V17,V18,V19,V20,V21,V22,V23,V24,V25,V26,V27,V
Other covariates ...

Source

https://www.mcgill.ca/epi-biostat-occh/seminars-events/atlantic-causal-inference-conference-2019/data-challenge

linpred_draws.bartcFit *Get expected prediction draws (on linear scale) from posterior of* bartCause*-package objects*

Description

Typically referred to as fitted value draws on linear scale, where appropriate.

Usage

```
## S3 method for class 'bartcFit'
linpred_draws(
  object,
  ...,
  value = ".linpred",
  re_formula = NULL,
  fitstage = c("response", "assignment")
)
```

Arguments

object	A bartCauseFit object.
...	Additional arguments (e.g. newdata) passed to the underlying prediction method for the type of model given.
value	The name of the output column.
re_formula	If NULL (default), include all group-level effects; if NA, include no group-level effects.
fitstage	If is.null(type), return posterior from response or treatment assignment model.

---

linpred_draws.stan4bartFit

Get expected prediction draws (on linear scale) from posterior of stan4bart*-package models*

Description

Typically referred to as fitted value draws on linear scale, where appropriate.

Usage

```
## S3 method for class 'stan4bartFit'
linpred_draws(object, newdata, ..., value = ".linpred", re_formula = NULL)
```

Arguments

object	A stan4bartFit object.
newdata	Data frame to generate predictions from [optional].
...	Additional arguments passed to the underlying prediction method for the type of model given.
value	The name of the output column.
re_formula	If NULL (default), include all group-level effects; if NA, include no group-level effects.

`posterior_trees_BART` *Get posterior tree draws into tibble format from BART model*

Description

Tibble grouped by iteration (‘iter‘) and tree id (‘tree_id‘). All information calculated by method is included in output.

Usage

```
posterior_trees_BART(model, label_digits = 2)
```

Arguments

`model`	BART model.
`label_digits`	Rounding for labels.

Value

A tibble with columns to

iter Integer describing unique MCMC iteration.

tree_id Integer. Unique tree id with each ‘iter‘.

node Integer describing node in tree. Unique to each ‘tree‘-‘iter‘.

parent Integer describing parent node in tree.

label Label for the node.

tier Position in tree hierarchy.

var Variable for split.

cut Numeric. Value of decision rule for ‘var‘.

is_leaf Logical. ‘TRUE‘ if leaf, ‘FALSE‘ if stem.

leaf_value

child_left Integer. Left child of node.

child_right Integer. Right child of node.

predicted_draws.bartcFit *Get prediction draws from posterior of* bartCause*-package objects*

Description

Get prediction draws from posterior of bartCause-package objects

Usage

```
## S3 method for class 'bartcFit'
predicted_draws(
  object,
  ...,
  value = ".prediction",
  re_formula = NULL,
  fitstage = c("response", "assignment")
)
```

Arguments

object	A bartCauseFit object.
...	Additional arguments (e.g. newdata) passed to the underlying prediction method for the type of model given.
value	The name of the output column.
re_formula	If NULL (default), include all group-level effects; if NA, include no group-level effects.
fitstage	If is.null(type), return posterior from response or treatment assignment model.

predicted_draws.bartMachine *Get predict draws from posterior of* bartMachine *model*

Description

Get predict draws from posterior of bartMachine model

Usage

```
## S3 method for class 'bartMachine'
predicted_draws(
  object,
  newdata,
  value = ".prediction",
  ...,
  ndraws = NULL,
  include_newdata = TRUE,
  include_fitted = FALSE,
  include_sigsqs = FALSE
)
```

Arguments

object	A bartMachine model.
newdata	Data frame to generate predictions from. If omitted, most model types will generate predictions from the data used to fit the model.
value	The name of the output column for predicted_draws; default ".prediction".
...	Not currently in use.
ndraws	Not currently implemented.
include_newdata	Should the newdata be included in the tibble?
include_fitted	Should the posterior fitted values be included in the tibble?
include_sigsqs	Should the posterior sigma-squared draw be included?

Value

A tidy data frame (tibble) with predicted values.

---

predicted_draws.stan4bartFit

Get prediction draws from posterior of stan4bart*-package models*

Description

Get prediction draws from posterior of stan4bart-package models

Usage

```
## S3 method for class 'stan4bartFit'
predicted_draws(object, newdata, ..., value = ".prediction", re_formula = NULL)
```

Arguments

object	A stan4bartFit object.
newdata	Data frame to generate predictions from [optional].
...	Additional arguments passed to the underlying prediction method for the type of model given.
value	The name of the output column.
re_formula	If NULL (default), include all group-level effects; if NA, include no group-level effects.

---

predicted_draws.wbart *Get predict draws from posterior of* wbart *model*

Description

Get predict draws from posterior of wbart model

Usage

```
## S3 method for class 'wbart'
predicted_draws(
  object,
  newdata,
  value = ".prediction",
  ...,
  ndraws = NULL,
  include_newdata = TRUE,
  include_fitted = FALSE,
  include_sigsqs = FALSE
)
```

Arguments

object	A wbart model.
newdata	Data frame to generate predictions from. If omitted, most model types will generate predictions from the data used to fit the model.
value	The name of the output column for predicted_draws; default ".prediction".
...	Use to specify random number generator, default is rng=stats::rnorm.
ndraws	Not currently implemented.
include_newdata	Should the newdata be included in the tibble?
include_fitted	Should the posterior fitted values be included in the tibble?
include_sigsqs	Should the posterior sigma-squared draw be included?

Value

A tidy data frame (tibble) with predicted values.

predicted_draws_BART *Get predict draws from posterior of* BART*-package models*

Description

Get predict draws from posterior of BART-package models

Usage

```
predicted_draws_BART(
  object,
  newdata = NULL,
  value = ".prediction",
  ...,
  rng = stats::rnorm,
  include_newdata = TRUE,
  include_fitted = FALSE,
  include_sigsqs = FALSE
)
```

Arguments

object	A BART-package model.
newdata	Data frame to generate predictions from. If omitted, most model types will generate predictions from the data used to fit the model.
value	The name of the output column for predicted_draws; default ".prediction".
...	Arguments to pass to predict (e.g. BART:::predict.wbart).
rng	Random number generator function. Default is rnorm for models with Gaussian errors.
include_newdata	Should the newdata be included in the tibble?
include_fitted	Should the posterior fitted values be included in the tibble?
include_sigsqs	Should the posterior sigma-squared draw be included?

Value

A tidy data frame (tibble) with predicted values.

`residual_draws.bartMachine` *Get residual draw for* `bartMachine` *model*

Description

Get residual draw for `bartMachine` model

Usage

```
## S3 method for class 'bartMachine'
residual_draws(
  object,
  newdata,
  value = ".residual",
  ...,
  ndraws = NULL,
  include_newdata = TRUE,
  include_sigsqs = FALSE
)
```

Arguments

`object`	`bartMachine` model.
`newdata`	Data frame to generate predictions from. If omitted, original data used to fit the model.
`value`	Name of the output column for residual_draws; default is `.residual`.
`...`	Additional arguments passed to the underlying prediction method for the type of model given.
`ndraws`	Not currently implemented.
`include_newdata`	Should the newdata be included in the tibble?
`include_sigsqs`	Should the posterior sigma-squared draw be included?

Value

Tibble with residuals.

`residual_draws.pbart` *Get residual draw for* `pbart` *model*

Description

The original response variable must be passed as an argument to this function. e.g. 'response = y'

Usage

```
## S3 method for class 'pbart'
residual_draws(
  object,
  newdata,
  value = ".residual",
  ...,
  ndraws = NULL,
  include_newdata = TRUE,
  include_sigsqs = FALSE
)
```

Arguments

`object`	`wbart` model.
`newdata`	Data frame to generate predictions from. If omitted, original data used to fit the model.
`value`	Name of the output column for residual_draws; default is `.residual`.
`...`	Additional arguments passed to the underlying prediction method for the type of model given.
`ndraws`	Not currently implemented.
`include_newdata`	Should the newdata be included in the tibble?
`include_sigsqs`	Should the posterior sigma-squared draw be included?

Value

Tibble with residuals.

`residual_draws.wbart` *Get residual draw for* `wbart` *model*

Description

The original response variable must be passed as an argument to this function. e.g. 'response = y'

Usage

```
## S3 method for class 'wbart'
residual_draws(
  object,
  newdata,
  value = ".residual",
  ...,
  ndraws = NULL,
  include_newdata = TRUE,
  include_sigsqs = FALSE
)
```

Arguments

`object`	`wbart` model.
`newdata`	Data frame to generate predictions from. If omitted, original data used to fit the model.
`value`	Name of the output column for residual_draws; default is `.residual`.
`...`	Additional arguments passed to the underlying prediction method for the type of model given.
`ndraws`	Not currently implemented.
`include_newdata`	Should the newdata be included in the tibble?
`include_sigsqs`	Should the posterior sigma-squared draw be included?

Value

Tibble with residuals.

residual_draws_BART *Get residual draw for BART model*

Description

Classes from BART-package models

Usage

```
residual_draws_BART(
  object,
  response,
  newdata = NULL,
  value = ".residual",
  include_newdata = TRUE,
  include_sigsqs = FALSE
)
```

Arguments

object	model from BART package.
response	Original response vector.
newdata	Data frame to generate predictions from. If omitted, original data used to fit the model.
value	Name of the output column for residual_draws; default is .residual.
include_newdata	Should the newdata be included in the tibble?
include_sigsqs	Should the posterior sigma-squared draw be included?

Value

Tibble with residuals.

simulate_su_hill_data *Simulate data with scenarios from Hill and Su (2013)*

Description

Sample n observations with the following scheme:

1. Covariates: X_j $N(0, 1)$.
2. Assignment: Z $Bin(n, p)$ with $p = logit^{-1}(a + X\gamma^L + Q\gamma^N)$ where $a = \omega - mean(X\gamma^L + Q\gamma^N)$.
3. Mean response: $E(Y(0)|X) = X\beta_0^L + Q\beta_0^N$ and $E(Y(1)|X) = X\beta_1^L + Q\beta_1^N$.
4. Observation: Y $N(\mu, \sigma_y^2)$).

Superscript L denotes the linear components, whilst N denotes the non-linear components.

Usage

```
simulate_su_hill_data(
  n,
  treatment_linear = TRUE,
  response_parallel = TRUE,
  response_aligned = TRUE,
  y_sd = 1,
  tau = 4,
  omega = 0,
  add_categorical = FALSE,
  n_subjects = 0,
  sd_subjects = 1,
  coef_categorical_treatment = NULL,
  coef_categorical_nontreatment = NULL
)
```

Arguments

n	Size of simulated sample.
treatment_linear	Treatment assignment mechanism is linear?
response_parallel	Response surface is parallel?
response_aligned	Response surface is aligned?
y_sd	Observation noise.
tau	Treatment effect for parallel response surfaces. Not applicable if surface is non-parallel.
omega	Offset to control treatment assignment ratios.
add_categorical	Should a categorical variable be added? (Not in Hill and Su)
n_subjects	How many subjects are there? For repeated observations. (Hill and Su = 0, default)
sd_subjects	Random effect intercept standard deviation for subjects. (Not in Hill and Su. Used if n_subjects > 0)
coef_categorical_treatment	What are the coefficients of the categorical variable under treatment? (Not in Hill and Su)
coef_categorical_nontreatment	What are the coefficients of the categorical variable under nontreatment? (Not in Hill and Su)

Details

Coefficients used are returned in the list this function creates. See Table 1 in Su and Hill (2013) for the table of coefficients. The X_j are in a data.frame named `data` in the returned list. The

formula for the model matrix $[X, Q]$ is named `su_hill_formula` in the returned list. The coefficients used for the model matrix are contained in `coefs`. The Su and Hill (2013) simulations did not include categorical variables, but you can add them here using arguments: `add_categorical`, `coef_categorical_treatment`, `coef_categorical_nontreatment`.

Hill, Jennifer; Su, Yu-Sung. Ann. Appl. Stat. 7 (2013), no. 3, 1386–1420. doi:10.1214/13-AOAS630. https://projecteuclid.org/euclid.aoas/1380804800

Value

An object of class `suhillsim` that is a list with elements

`data`	Simulated data in data.frame
`mean_y`	The mean y values for each individual (row)
`args`	List of arguments passed to function
`formulas`	Response formulas used to generate data
`coefs`	Coefficients for the formulas

---

suhillsim1 *Example simulated dataset 1*

Description

Simulated with `simulate_su_hill_data(...)`, see details. Includes propensity score estimated using BART (`prop_score`), see source.

Usage

```
suhillsim1
```

Format

See `?simulate_su_hill_data` for output format.

Details

```
set.seed(101)
 suhillsim1 <- simulate_su_hill_data(n = 100, treatment_linear = FALSE,  omega = 0, add_categorical = TR
   coef_categorical_treatment = c(0,0,1),
   coef_categorical_nontreatment = c(-1,0,-1))
```

Source

https://github.com/bonStats/tidytreatment/tree/master/data-raw

suhillsim2_ranef *Example simulated dataset 2: with subject specific random effects*

Description

Simulated with `simulate_su_hill_data(...)`, see details.

Usage

```
suhillsim2_ranef
```

Format

See `?simulate_su_hill_data` for output format.

Details

```
set.seed(101)
 suhillsim1 <- simulate_su_hill_data(n = 100, treatment_linear = FALSE,  omega = 0, add_categorical = TR
   coef_categorical_treatment = c(0,0,1),
   coef_categorical_nontreatment = c(-1,0,-1), sd_subjects = 2, n_subjects = 10)
```

Source

https://github.com/bonStats/tidytreatment/tree/master/data-raw

tidytreatment *tidytreatment: Tidy methods for Bayesian treatment effect models*

Description

tidytreatment provides functions for extracting tidy data from Bayesian treatment effect models, estimating treatment effects, and plotting useful summaries of these.

tidy_ate *Get average treatment effect draws from posterior*

Description

ATE = Average Treatment Effects Assumes treated column is either a integer column of 1's (treated) and 0's (nontreated) or logical indicating treatment if TRUE.

Usage

```
tidy_ate(model, treatment, common_support_method, cutoff, ...)
```

Arguments

model	A supported Bayesian model fit that can provide fits and predictions.
treatment	A character string specifying the name of the treatment variable.
common_support_method	Either "sd", or "chisq". Default is unspecified, and no common support calculation is done.
cutoff	Cutoff for common support (if in use).
...	Arguments to be passed to tidybayes::fitted_draws typically scale for BART models.

Value

A tidy data frame (tibble) with treatment effect values.

tidy_att *Get average treatment effect on treated draws from posterior*

Description

ATT = average Treatment Effects on Treated Assumes treated column is either a integer column of 1's (treated) and 0's (nontreated) or logical indicating treatment if TRUE.

Usage

```
tidy_att(model, treatment, common_support_method, cutoff, ...)
```

Arguments

model	A supported Bayesian model fit that can provide fits and predictions.
treatment	A character string specifying the name of the treatment variable.
common_support_method	Either "sd", or "chisq". Default is unspecified, and no common support calculation is done.
cutoff	Cutoff for common support (if in use).
...	Arguments to be passed to tidybayes::fitted_draws typically scale for BART models.

Value

A tidy data frame (tibble) with treatment effect values.

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tidy_draws.bartcFit *Tidy access to posterior of* bartCause*-package objects*

Description

Tidy access to posterior of bartCause-package objects

Usage

```
## S3 method for class 'bartcFit'
tidy_draws(object, type = NULL, fitstage = c("response", "assignment"), ...)
```

Arguments

object	A bartCauseFit object.
type	Posterior quantity to return. See bartc-generics.
fitstage	If is.null(type), return posterior from response or treatment assignment model.
...	Additional parameters passed up the generic method chain.

`treatment_effects` *Get (individual) treatment effect draws from posterior*

Description

CTE = Conditional Treatment Effects (usually used to generate (C)ATE or ATT) `newdata` specifies the conditions, if unspecified it defaults to the original data. Assumes treated column is either a integer column of 1's (treated) and 0's (nontreated) or logical indicating treatment if TRUE.

Usage

```
treatment_effects(
  model,
  treatment,
  newdata,
  subset = "all",
  common_support_method,
  cutoff,
  ...
)
```

Arguments

`model`	A supported Bayesian model fit that can provide fits and predictions.
`treatment`	A character string specifying the name of the treatment variable.
`newdata`	Data frame to generate fitted values from. If omitted, defaults to the data used to fit the model.
`subset`	Either "treated", "nontreated", or "all". Default is "all".
`common_support_method`	Either "sd", or "chisq". Default is unspecified, and no common support calculation is done.
`cutoff`	Cutoff for common support (if in use).
`...`	Arguments to be passed to `tidybayes::fitted_draws` typically scale for `BART` models.

Value

A tidy data frame (tibble) with treatment effect values.

`treatment_effects.bartcFit` *Get (individual) treatment effect draws from bartcFit posterior*

Description

CTE = Conditional Treatment Effects (usually used to generate (C)ATE or ATT) `newdata` specifies the conditions, if unspecified it defaults to the original data. Assumes treated column is either a integer column of 1's (treated) and 0's (nontreated) or logical indicating treatment if TRUE.

Usage

```
## S3 method for class 'bartcFit'
treatment_effects(
  model,
  treatment = NULL,
  newdata = NULL,
  subset = "all",
  common_support_method,
  cutoff,
  ...
)
```

Arguments

`model`	A supported Bayesian model fit that can provide fits and predictions.
`treatment`	Not used. Treatment variable specified by `bartcFit` object.
`newdata`	Not used. extracts treatment effects already calculated by `bartcFit` object.
`subset`	Either "treated", "nontreated", or "all". Default is "all".
`common_support_method`	Either "sd", or "chisq". Default is unspecified, and no common support calculation is done.
`cutoff`	Cutoff for common support (if in use).
`...`	Arguments to be passed to `tidybayes::fitted_draws` typically scale for `BART` models.

Value

A tidy data frame (tibble) with treatment effect values.

`treatment_effects.default` *Get treatment effect draws from posterior*

Description

CTE = Conditional Treatment Effects (or CATE, the average effects) `newdata` specifies the conditions, if unspecified it defaults to the original data. Assumes treated column is either a integer column of 1's (treated) and 0's (nontreated) or logical indicating treatment if TRUE.

Usage

```
## Default S3 method:
treatment_effects(
  model,
  treatment,
  newdata,
  subset = "all",
  common_support_method,
  cutoff,
  ...
)
```

Arguments

`model`	A supported Bayesian model fit that can provide fits and predictions.
`treatment`	A character string specifying the name of the treatment variable.
`newdata`	Data frame to generate fitted values from. If omitted, defaults to the data used to fit the model.
`subset`	Either "treated", "nontreated", or "all". Default is "all".
`common_support_method`	Either "sd", or "chisq". Default is unspecified, and no common support calculation is done.
`cutoff`	Cutoff for common support (if in use).
`...`	Arguments to be passed to `tidybayes::fitted_draws` typically scale for `BART` models.

Value

A tidy data frame (tibble) with treatment effect values.

variance_draws *Get variance draws from posterior of BART models*

Description

Models from BART-package include warm-up and skipped MCMC draws.

Usage

```
variance_draws(model, value = ".sigma_sq", ...)
```

Arguments

model	A model from a supported package.
value	The name of the output column for variance parameter; default ".sigma_sq".
...	Additional arguments.

Value

A tidy data frame (tibble) with draws of variance parameter

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