

# Package ‘tidytreatment’

December 7, 2025

**Type** Package

**Title** Tidy Methods for Bayesian Treatment Effect Models

**Version** 0.3.2

**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

**License** MIT + file LICENSE

**URL** <https://github.com/bonstats/tidytreatment>

**BugReports** <https://github.com/bonstats/tidytreatment/issues>

**Language** en-US

**Depends** R (>= 3.1.0)

**Suggests** knitr, rmarkdown, stan4bart, bartCause, ggplot2, testthat (>= 3.0.0), withr, lme4

**VignetteBuilder** knitr

**RoxygenNote** 7.3.3

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

**Enhances** bartMachine

**Config/testthat/edition** 3

**NeedsCompilation** no

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**Repository** CRAN

**Date/Publication** 2025-12-07 00:40:08 UTC

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---

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

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

---

bartmodel1\_modelmatrix

*Model matrix used for bartmodel1*

---

**Description**

Useful for testing tidyreatment package functions.

**Usage**

```
bartmodel1_modelmatrix
```

**Format**

Object of type BART::wbart

**Source**

<https://github.com/bonStats/tidyreatment/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.bartMachine  
*Get fitted draws from posterior of bartMachine model*

---

### Description

Get fitted draws from posterior of bartMachine model

**Usage**

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

**Arguments**

object	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 epred_draws; default ".value".
...	Not currently in use.
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**

A tidy data frame (tibble) with fitted values.

---

epred_draws.lbart	<i>Get fitted draws from posterior of lbart model</i>
-------------------	-------------------------------------------------------

---

**Description**

Get fitted draws from posterior of lbart model

**Usage**

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

**Arguments**

object	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 epred_draws; default ".value".
...	Not currently in use.
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**

A tidy data frame (tibble) with fitted values.

---

epred_draws.mbart	<i>Get fitted draws from posterior of mbart model</i>
-------------------	-------------------------------------------------------

---

**Description**

Get fitted draws from posterior of mbart model

**Usage**

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

**Arguments**

object	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 epred_draws; default ".value".
...	Not currently in use.
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**

A tidy data frame (tibble) with fitted values.

---

epred\_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'
epred_draws(
  object,
  newdata,
  value = ".value",
  ...,
  ndraws = NULL,
  include_newdata = TRUE,
  include_sigsqs = FALSE
)
```

**Arguments**

object	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 epred_draws; default ".value".
...	Not currently in use.
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**

A tidy data frame (tibble) with fitted values.

---

epred\_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'  
epred_draws(  
  object,  
  newdata,  
  value = ".value",  
  ...,  
  ndraws = NULL,  
  include_newdata = TRUE,  
  include_sigsqs = FALSE  
)
```

## Arguments

object	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 epred_draws; default ".value".
...	Not currently in use.
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

A tidy data frame (tibble) with fitted values.

---

```
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")
```

### 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.

---

```
epred_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'
epred_draws(
  object,
  newdata,
  value = ".value",
  ...,
  ndraws = NULL,
  include_newdata = TRUE,
  include_sigsqs = FALSE
)
```

**Arguments**

object	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 epred_draws; default ".value".
...	Not currently in use.
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**

A tidy data frame (tibble) with fitted values.

---

epred_draws_BART	<i>Get fitted draws from posterior of BART-package models</i>
------------------	---------------------------------------------------------------

---

**Description**

Get fitted draws from posterior of BART-package models

**Usage**

```
epred_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 epred_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	<i>Evaluate if observations have common support.</i>
--------------------	------------------------------------------------------

---

**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 counterfactual 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 treatment 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\_tidyreatment\_methods

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

---

### Description

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

### Usage

```
has_tidyreatment_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,V28,V29,V30,V31,V32,V33,V34,V35,V36,V37,V38,V39,V40,V41,V42,V43,V44,V45,V46,V47,V48,V49,V50,V51,V52,V53,V54,V55,V56,V57,V58,V59,V60,V61,V62,V63,V64,V65,V66,V67,V68,V69,V70,V71,V72,V73,V74,V75,V76,V77,V78,V79,V80,V81,V82,V83,V84,V85,V86,V87,V88,V89,V90,V91,V92,V93,V94,V95,V96,V97,V98,V99,V100,V101,V102,V103,V104,V105,V106,V107,V108,V109,V110,V111,V112,V113,V114,V115,V116,V117,V118,V119,V120,V121,V122,V123,V124,V125,V126,V127,V128,V129,V130,V131,V132,V133,V134,V135,V136,V137,V138,V139,V140,V141,V142,V143,V144,V145,V146,V147,V148,V149,V150,V151,V152,V153,V154,V155,V156,V157,V158,V159,V160,V161,V162,V163,V164,V165,V166,V167,V168,V169,V170,V171,V172,V173,V174,V175,V176,V177,V178,V179,V180,V181,V182,V183,V184,V185,V186,V187**  
Other covariates ...

### Source

<https://www.mcgill.ca/epi-biostat-occh/seminars-events/event-archive/atlantic-causal-inference-conf/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 linear predictor draws 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")
```

**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.

---

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**

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

**Value**

A tidy data frame (tibble) with predicted values.

---

`predicted_draws.lbart` *Get predict draws from posterior of lbart model*

---

**Description**

Get predict draws from posterior of lbart model

**Usage**

```
## S3 method for class 'lbart'
predicted_draws(
  object,
  newdata,
  value = ".prediction",
  ...,

```

```

  ndraws = NULL,
  include_newdata = TRUE
)

```

### Arguments

object	A lbart 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?

### Value

A tidy data frame (tibble) with predicted values.

---

predicted\_draws.pbart *Get predict draws from posterior of pbart model*

---

### Description

Get predict draws from posterior of pbart model

### Usage

```

## S3 method for class 'pbart'
predicted_draws(
  object,
  newdata,
  value = ".prediction",
  ...,
  ndraws = NULL,
  include_newdata = TRUE
)

```

### Arguments

object	A pbart 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?

**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",
  sample_new_levels = TRUE
)
```

**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.
sample_new_levels	logical; if TRUE, levels out of the training sample will have random effects drawn from their posterior predictive distribution. If FALSE, their random effects will be fixed to 0.

---

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 <code>rng=stats::rnorm</code> .
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: :wbart models*

---

**Description**

Get predict draws from posterior of BART: :wbart 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 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".
...	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:  $X_j \sim N(0, 1)$ .
2. Assignment:  $Z \sim \text{Bin}(n, p)$  with  $p = \text{logit}^{-1}(a + X\gamma^L + Q\gamma^N)$  where  $a = \omega - \text{mean}(X\gamma^L + Q\gamma^N)$ .
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:  $Y \sim N(\mu, \sigma_y^2)$ .

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

<code>data</code>	Simulated data in <code>data.frame</code>
<code>mean_y</code>	The mean <code>y</code> values for each individual (row)
<code>args</code>	List of arguments passed to function
<code>formulas</code>	Response formulas used to generate data
<code>coefs</code>	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/tidyreatment/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.

**Author(s)**

**Maintainer:** Joshua J Bon <joshua.jbon@gmail.com> ([ORCID](#))

**See Also**

Useful links:

- <https://github.com/bonstats/tidytreatment>
- Report bugs at <https://github.com/bonstats/tidytreatment/issues>

---

tidy_ate	<i>Get average treatment effect draws from posterior</i>
----------	----------------------------------------------------------

---

**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 <code>tidybayes::epred_draws</code> typically scale for BART models.

**Value**

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

---

tidy_att	<i>Get average treatment effect on treated draws from posterior</i>
----------	---------------------------------------------------------------------

---

**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::epred_draws typically scale for BART models.

**Value**

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

---

`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(model, type = NULL, fitstage = c("response", "assignment"), ...)
```

**Arguments**

model	A bartCauseFit object.
type	Posterior quantity to return. See <a href="#">bartc-generics</a> .
fitstage	If <code>is.null(type)</code> , return posterior from response or treatment assignment model.
...	Additional parameters passed up the generic method chain.

---

treatment_effects	<i>Get (individual) treatment effect draws from posterior</i>
-------------------	---------------------------------------------------------------

---

## 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 <code>tidybayes::epred_draws</code> 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::epred_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 <code>tidybayes::epred_draws</code> typically scale for BART models.

## Value

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

---

variance_draws	<i>Get variance draws from posterior of BART models</i>
----------------	---------------------------------------------------------

---

**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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