Package ‘waywiser’

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Type Package

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https://mikemahoney218.github.io/waywiser/

BugReports https://github.com/mikemahoney218/waywiser/issues

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Author Michael Mahoney [aut, cre] (<https://orcid.org/0000-0003-2402-304X>),

RStudio [cph, fnd]

Maintainer Michael Mahoney <mike.mahoney.218@gmail.com>
**Description**

Make ‘nb’ objects from sf objects

**Usage**

ww_build_neighbors(data, nb = NULL, ..., call = rlang::caller_env())

**Arguments**

- **data**
  An sf object (of class "sf" or "sfc").
- **nb**
  An object of class "nb" (in which case it will be returned unchanged), or a function to create an object of class "nb" from data and ... or NULL. See details.
- **...**
  Arguments passed to the neighbor-creating function.
- **call**
  The execution environment of a currently running function, e.g. call = caller_env(). The corresponding function call is retrieved and mentioned in error messages as the source of the error.
  You only need to supply call when throwing a condition from a helper function which wouldn’t be relevant to mention in the message.
  Can also be NULL or a **defused function call** to respectively not display any call or hard-code a code to display.
  For more information about error calls, see Including function calls in error messages.
ww_build_weights

Details

When nb = NULL, the method used to create neighbors from data is dependent on what geometry type data is:

- If nb = NULL and data is a point geometry (classes "sfc_POINT" or "sfc_MULTIPOINT") the "nb" object will be created using ww_make_point_neighbors().
- If nb = NULL and data is a polygon geometry (classes "sfc_POLYGON" or "sfc_MULTIPOLYGON") the "nb" object will be created using ww_make_polygon_neighbors().
- If nb = NULL and data is any other geometry type, the "nb" object will be created using the centroids of the data as points, with a warning.

Value

An object of class "nb".

Description

Build "listw" objects of spatial weights

Usage

ww_build_weights(x, wt = NULL, include_self = FALSE, ...)

Arguments

x Either an sf object or a "nb" neighbors list object. If an sf object, will be converted into a neighbors list via ww_build_neighbors().

wt Either a "listw" object (which will be returned unchanged), a function for creating a "listw" object from x, or NULL, in which case weights will be constructed via spdep::nb2listw().

include_self Include each region itself in its own list of neighbors?

Value

A listw object.
**Description**

Calculate the global Geary’s C statistic for model residuals. `ww_global_geary_c()` returns the statistic itself, while `ww_global_geary_pvalue()` returns the associated p value. `ww_global_geary()` returns both.

**Usage**

`ww_global_geary_c(data, ...)`

`ww_global_geary_c_vec(
    truth,
    estimate,
    wt = NULL,
    alternative = "greater",
    randomization = TRUE,
    na_rm = TRUE,
    ...
)

`ww_global_geary_pvalue(data, ...)`

`ww_global_geary_pvalue_vec(
    truth,
    estimate,
    wt = NULL,
    alternative = "greater",
    randomization = TRUE,
    na_rm = TRUE,
    ...
)

`ww_global_geary(
    data,
    truth,
    estimate,
    wt = NULL,
    alternative = "greater",
    randomization = TRUE,
    na_rm = TRUE,
    ...
)"
Arguments

data  A data.frame containing the columns specified by the truth and estimate arguments.
...
truth  The column identifier for the true results (that is numeric). This should be an unquoted column name although this argument is passed by expression and supports quasiquotation (you can unquote column names). For _vec() functions, a numeric vector.
estimate  The column identifier for the predicted results (that is also numeric). As with truth this can be specified different ways but the primary method is to use an unquoted variable name. For _vec() functions, a numeric vector.
wt  A "listw" object, for instance as created with ww_build_weights().
alternative  a character string specifying the alternative hypothesis, must be one of "greater" (default), "less" or "two.sided".
randomization  variance of I calculated under the assumption of randomisation, if FALSE normality
na_rm  A logical value indicating whether NA values should be stripped before the computation proceeds.

Value

A tibble with columns .metric, .estimator, and .estimate and nrow(data) rows of values. For grouped data frames, the number of rows returned will be the same as the number of groups. For _vec() functions, a single value (or NA).

Examples

data(guerry, package = "sfdep")

guerry_modeled <- guerry
guerry_lm <- lm(crime_pers ~ literacy, guerry_modeled)
guerry_modeled$predictions <- predict(guerry_lm, guerry_modeled)

## Not run:
ww_global_geary(guerry_modeled, crime_pers, predictions)

## End(Not run)
Description

Calculate the global Moran’s I statistic for model residuals. `ww_global_moran_i()` returns the statistic itself, while `ww_global_moran_pvalue()` returns the associated p value. `ww_global_moran()` returns both.

Usage

```r
ww_global_moran_i(data, ...)

ww_global_moran_i_vec(
  truth,
  estimate,
  wt = NULL,
  alternative = "greater",
  randomization = TRUE,
  na_rm = TRUE,
  ...)

ww_global_moran_pvalue(data, ...)

ww_global_moran_pvalue_vec(
  truth,
  estimate,
  wt = NULL,
  alternative = "greater",
  randomization = TRUE,
  na_rm = TRUE,
  ...)

ww_global_moran(
  data,
  truth,
  estimate,
  wt = NULL,
  alternative = "greater",
  randomization = TRUE,
  na_rm = TRUE,
  ...)
```

Arguments

- `data`: A `data.frame` containing the columns specified by the `truth` and `estimate` arguments.
- `...`: Additional arguments passed to `spdep::moran.test()`.
truth

The column identifier for the true results (that is numeric). This should be an unquoted column name although this argument is passed by expression and supports quasiquotation (you can unquote column names). For _vec() functions, a numeric vector.

estimate

The column identifier for the predicted results (that is also numeric). As with truth this can be specified different ways but the primary method is to use an unquoted variable name. For _vec() functions, a numeric vector.

wt

A "listw" object, for instance as created with ww_build_weights().

alternative

A character string specifying the alternative hypothesis, must be one of greater (default), less or two.sided.

randomization

variance of I calculated under the assumption of randomisation, if FALSE normality

na_rm

A logical value indicating whether NA values should be stripped before the computation proceeds.

Value

A tibble with columns .metric, .estimator, and .estimate and nrow(data) rows of values. For grouped data frames, the number of rows returned will be the same as the number of groups. For _vec() functions, a single value (or NA).

Examples

data(guerry, package = "sfdep")
guerry_modeled <- guerry
guerry_lm <- lm(crime_pers ~ literacy, guerry_modeled)
guerry_modeled$predictions <- predict(guerry_lm, guerry_modeled)

ww_global_moran_i(guerry_modeled, crime_pers, predictions)
ww_global_moran(guerry_modeled, crime_pers, predictions)

ww_local_geary_c

Local Geary’s C statistic

Description

Calculate the local Geary’s C statistic for model residuals. ww_local_geary_c() returns the statistic itself, while ww_local_geary_pvalue() returns the associated p value. ww_local_geary() returns both.
ww_local_geary_c

Usage

ww_local_geary_c(data, ...)

ww_local_geary_c_vec(truth, estimate, wt, na_rm = TRUE, ...)

ww_local_geary_pvalue(data, ...)

ww_local_geary_pvalue_vec(
  truth,
  estimate,
  wt = NULL,
  alternative = "two.sided",
  nsim = 499,
  na_rm = TRUE,
  ...
)

ww_local_geary(
  data,
  truth,
  estimate,
  wt = NULL,
  alternative = "two.sided",
  nsim = 499,
  na_rm = TRUE,
  ...
)

Arguments

data
  A data.frame containing the columns specified by the truth and estimate arguments.

...  Additional arguments passed to spdep::localC_perm().

truth  The column identifier for the true results (that is numeric). This should be an unquoted column name although this argument is passed by expression and supports quasiquotation (you can unquote column names). For _vec() functions, a numeric vector.

estimate  The column identifier for the predicted results (that is also numeric). As with truth this can be specified different ways but the primary method is to use an unquoted variable name. For _vec() functions, a numeric vector.

wt  A "listw" object, for instance as created with ww_build_weights().

na_rm  A logical value indicating whether NA values should be stripped before the computation proceeds.

alternative  A character defining the alternative hypothesis. Must be one of "two.sided", "less" or "greater".

nsim  The number of simulations to be used for permutation test.
Value

A tibble with columns .metric, .estimator, and .estimate and nrow(data) rows of values. For grouped data frames, the number of rows returned will be the same as the number of groups. For _vec() functions, a numeric vector of length(truth) (or NA).

Examples

data(guerry, package = "sfdep")

guerry_modeled <- guerry
guerry_lm <- lm(crime_pers ~ literacy, guerry_modeled)
guerry_modeled$predictions <- predict(guerry_lm, guerry_modeled)

ww_local_geary_c(guerry_modeled, crime_pers, predictions)
ww_local_geary(guerry_modeled, crime_pers, predictions)

Description

Calculate the local Getis-Ord G and G* statistic for model residuals. ww_local_getis_ord_g() returns the statistic itself, while ww_local_getis_ord_pvalue() returns the associated p value. ww_local_getis_ord() returns both.

Usage

ww_local_getis_ord_g(data, ...)

ww_local_getis_ord_g_vec(
  truth,
  estimate,
  wt = NULL,
  alternative = "two.sided",
  nsim = 499,
  na.rm = TRUE,
  ..., 
  include_self = FALSE
)

ww_local_getis_ord_pvalue(data, ...)

ww_local_getis_ord_pvalue_vec(
  truth,
  estimate,
ww_local_getis_ord_g

```r
ww_local_getis_ord(g, 
  wt = NULL, 
  alternative = "two.sided", 
  nsim = 499, 
  na_rm = TRUE, 
  ..., 
  include_self = FALSE
)

ww_local_getis_ord(data, 
  truth, 
  estimate, 
  wt = NULL, 
  alternative = "two.sided", 
  nsim = 499, 
  na_rm = TRUE, 
  ..., 
  include_self = FALSE
)
```

**Arguments**

- `data` A `data.frame` containing the columns specified by the `truth` and `estimate` arguments.
- `...` Arguments passed to `spdep::localG_perm()`.
- `truth` The column identifier for the true results (that is numeric). This should be an unquoted column name although this argument is passed by expression and supports quasiquotation (you can unquote column names). For _vec()_ functions, a numeric vector.
- `estimate` The column identifier for the predicted results (that is also numeric). As with `truth` this can be specified different ways but the primary method is to use an unquoted variable name. For _vec()_ functions, a numeric vector.
- `wt` A "listw" object, for instance as created with `ww_build_weights()`.
- `alternative` a character string specifying the alternative hypothesis, must be one of "two.sided" (default), "greater" or "less".
- `nsim` default 499, number of conditional permutation simulations
- `na_rm` A logical value indicating whether NA values should be stripped before the computation proceeds.
- `include_self` Include each region itself in its own list of neighbors? Only used when `wt` is `NULL`, and if `TRUE` means this function calculates G* instead of G.

**Value**

A tibble with columns `.metric`, `.estimator`, and `.estimate` and `nrow(data)` rows of values. For grouped data frames, the number of rows returned will be the same as the number of groups. For _vec()_ functions, a numeric vector of length(`truth`) (or NA).
Examples

```r
data(guerry, package = "sfdep")

guerry_modeled <- guerry
guerry_lm <- lm(crime_pers ~ literacy, guerry_modeled)
guerry_modeled$predictions <- predict(guerry_lm, guerry_modeled)

ww_local_getis_ord_g(guerry_modeled, crime_pers, predictions)
ww_local_getis_ord(guerry_modeled, crime_pers, predictions)
ww_local_getis_ord(guerry_modeled, crime_pers, predictions, include_self = TRUE)
```

---

**ww_local_moran_i**  
**Local Moran's I statistic**

Description

Calculate the local Moran’s I statistic for model residuals. `ww_local_moran_i()` returns the statistic itself, while `ww_local_moran_pvalue()` returns the associated p value. `ww_local_moran()` returns both.

Usage

```r
ww_local_moran_i(data, ...)

ww_local_moran_i_vec(
  truth,
  estimate,
  wt = NULL,
  alternative = "two.sided",
  na.rm = TRUE,
  ...
)

ww_local_moran_pvalue(data, ...)

ww_local_moran_pvalue_vec(
  truth,
  estimate,
  wt = NULL,
  alternative = "two.sided",
  na.rm = TRUE,
  ...
)

ww_local_moran(
```
Arguments

data A data.frame containing the columns specified by the truth and estimate arguments.

... Additional arguments passed to spdep::localmoran().

truth The column identifier for the true results (that is numeric). This should be an unquoted column name although this argument is passed by expression and supports quasiquotation (you can unquote column names). For _vec() functions, a numeric vector.

estimate The column identifier for the predicted results (that is also numeric). As with truth this can be specified different ways but the primary method is to use an unquoted variable name. For _vec() functions, a numeric vector.

wt A "listw" object, for instance as created with ww_build_weights().

alternative a character string specifying the alternative hypothesis, must be one of greater, less or two.sided (default).

na_rm A logical value indicating whether NA values should be stripped before the computation proceeds.

Value

A tibble with columns .metric, .estimator, and .estimate and nrow(data) rows of values. For grouped data frames, the number of rows returned will be the same as the number of groups. For _vec() functions, a numeric vector of length(truth) (or NA).

Examples

data(guerry, package = "sfdep")

    guerry_modeled <- guerry
    guerry_lm <- lm(crime_pers ~ literacy, guerry_modeled)
    guerry_modeled$predictions <- predict(guerry_lm, guerry_modeled)

    ww_local_moran_i(guerry_modeled, crime_pers, predictions)
    ww_local_moran(guerry_modeled, crime_pers, predictions)
ww_make_point_neighbors

Make 'nb' objects from point geometries

**Description**

This function uses `spdep::knearneigh()` and `spdep::knn2nb()` to create a "nb" neighbors list.

**Usage**

```r
ww_make_point_neighbors(data, k = 1, sym = FALSE, ...)
```

**Arguments**

- `data`: An sfc_POINT or sfc_MULTIPOINT object.
- `k`: How many nearest neighbors to use in `spdep::knearneigh()`.
- `sym`: Force the output neighbors list (from `spdep::knn2nb()`) to symmetry.
- `...`: Other arguments passed to `spdep::knearneigh()`.

**Value**

An object of class "nb"

---

ww_make_polygon_neighbors

Make 'nb' objects from polygon geometries

**Description**

This function is an extremely thin wrapper around `spdep::poly2nb()`, renamed to use the way-wiser "ww" prefix.

**Usage**

```r
ww_make_polygon_neighbors(data, ...)
```

**Arguments**

- `data`: An sfc_POLYGON or sfc_MULTIPOLYGON object.
- `...`: Additional arguments passed to `spdep::poly2nb()`.

**Value**

An object of class "nb"
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