Package ‘sabre’

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Title Spatial Association Between Regionalizations


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Encoding UTF-8

LazyData true

ByteCompile true

Suggests testthat, covr, knitr, rmarkdown

RoxygenNote 6.1.0

Depends R (>= 3.3.0)

Imports sf, entropy, tidyr, dplyr, rlang, tibble

VignetteBuilder knitr

URL https://github.com/Nowosad/sabre

BugReports https://github.com/Nowosad/sabre/issues

NeedsCompilation no

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Description

Bailey's Ecoregions of the Conterminous United States

Usage

eco_us

Format

An object of class sf (inherits from data.frame) with 330 rows and 5 columns.

Source

https://www.sciencebase.gov/catalog/item/54244abde4b037b608f9e23d

mapcurves

Description

Mapcurves: a quantitative method for comparing categorical maps.

Usage

mapcurves(x, y, z = NULL)
Arguments

x  A numeric vector, representing a categorical values.
y  A numeric vector, representing a categorical values.
z  A numeric matrix. The goodness of fit (GOF) value for each pair of classes in x and y. By default this argument is set to NULL, and the value of z is calculated based on x and y.

Value

A list with two elements:

• "ref_map" - the map to be used as reference ("x" or "y")
• "gof" - the Mapcurves’s goodness of fit value

References


Examples

```r
set.seed(2018-03-21)
A = floor(matrix(runif(100, 0, 9), 10))
B = floor(matrix(runif(100, 0, 9), 10))
mapcurves(A, B)
```

Description

It calculates the Mapcurves's goodness-of-fit (GOF)

Usage

```r
mapcurves_calc(x, x_name, y, y_name, precision = NULL)
```

Arguments

x  An object of class sf with a POLYGON or MULTIPOLYGON geometry type.
x_name  A name of the column with regions/clusters names.
y  An object of class sf with a POLYGON or MULTIPOLYGON geometry type.
y_name  A name of the column with regions/clusters names.
precision  numeric; see st_as_binary for how to do this.
Value

A list with four elements:

- "map1" - the sf object containing the first map used for calculation of GOF
- "map2" - the sf object containing the second map used for calculation of GOF
- "ref_map" - the map used as a reference ("x" or "y")
- "gof" - the Mapcurves’s goodness of fit value

References


Examples

```r
library(sf)
data("regions1")
data("regions2")

mc = mapcurves_calc(regions1, z, regions2, z)
mc

plot(mc$map1)
plot(mc$map2)
```

---

**regions1**

*Red regionalization*

Description

Data of the red regionalization used in Figure 1 of Stepinski and Nowosad (2018)

Usage

regions1

Format

An object of class sf (inherits from data.frame) with 4 rows and 2 columns.

References

Stepinski, Tomasz, and Jakub Nowosad. "Assessing a degree of spatial association between regionalizations or categorical maps using the information-theoretical V-measure."
regions2

Blue regionalization

Description
Data of the blue regionalization used in Figure 1 of Stepinski and Nowosad (2018)

Usage
regions2

Format
An object of class sf (inherits from data.frame) with 3 rows and 2 columns.

References
Stepinski, Tomasz, and Jakub Nowosad. "Assessing a degree of spatial association between regionalizations or categorical maps using the information-theoretical V-measure."

vmeasure V-measure

Description
A conditional entropy-based external cluster evaluation measure.

Usage
vmeasure(x, y, z = NULL, B = 1)

Arguments
x A numeric vector, representing a categorical values.
y A numeric vector, representing a categorical values.
z A numeric matrix. A contingency table of the counts at each combination of categorical levels. By default this argument is set to NULL, and the value of z is calculated based on x and y.
B A numeric value. If B > 1 then completeness is weighted more strongly than homogeneity, and if B < 1 then homogeneity is weighted more strongly than completeness. By default this value is 1.
Value

A list with three elements:

- "v_measure"
- "homogeneity"
- "completeness"

References


Examples

```r
x = c(1L, 1L, 1L, 2L, 2L, 3L, 3L, 3L, 1L, 1L, 2L, 2L, 3L, 3L)
y = c(rep(1L, 5L), rep(2L, 5L), rep(3L, 5L))
vmeasure(x, y)
```

---

vmeasure_calc  

**V-measure calculation**

Description

It calculates a degree of spatial association between regionalizations using an information-theoretical measure called the V-measure.

Usage

```r
vmeasure_calc(x, x_name, y, y_name, B = 1, precision = NULL)
```

Arguments

- `x`: An object of class `sf` with a `POLYGON` or `MULTIPOLYGON` geometry type.
- `x_name`: A name of the column with regions/clusters names.
- `y`: An object of class `sf` with a `POLYGON` or `MULTIPOLYGON` geometry type.
- `y_name`: A name of the column with regions/clusters names.
- `B`: A numeric value. If \( B > 1 \) then completeness is weighted more strongly than homogeneity, and if \( B < 1 \) then homogeneity is weighted more strongly than completeness. By default this value is 1.
- `precision`: numeric; see `st_as_binary` for how to do this.
vmeasure_calc

Value

A list with five elements:

- "map1" - the sf object containing the first preprocessed map used for calculation of GOF with two attributes - map1 (name of the category) and rih (region inhomogeneity)
- "map2" - the sf object containing the second preprocessed map used for calculation of GOF with two attributes - map1 (name of the category) and rih (region inhomogeneity)
- "v_measure"
- "homogeneity"
- "completeness"

References


Examples

library(sf)
data("regions1")
data("regions2")
vm = vmeasure_calc(regions1, z, regions2, z)
vm

plot(vm$map1["rih"])
plot(vm$map2["rih"])
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