Package 'sshicm'

July 23, 2025

Title Information Consistency-Based Measures for Spatial Stratified Heterogeneity

Version 0.1.0

Description Spatial stratified heterogeneity (SSH) denotes the coexistence of within-strata homogeneity and between-strata heterogeneity. Information consistency-based methods provide a rigorous approach to quantify SSH and evaluate its role in spatial processes, grounded in principles of geographical stratification and information theory (Bai, H. et al. (2023) <doi:10.1080/24694452.2023.2223700>; Wang, J. et al. (2024) <doi:10.1080/24694452.2023.228

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Encoding UTF-8

RoxygenNote 7.3.2

URL https://stscl.github.io/sshicm/, https://github.com/stscl/sshicm

BugReports https://github.com/stscl/sshicm/issues

Depends R (>= 4.1.0)

LinkingTo Rcpp, RcppThread

Imports dplyr, purrr, sdsfun (>= 0.5.0), sf

Suggests gdverse, knitr, rmarkdown

VignetteBuilder knitr

NeedsCompilation yes

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Repository CRAN

Date/Publication 2024-12-03 19:00:02 UTC

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`sshic` *Measurement of Spatial Stratified Heterogeneity Based on Information Consistency for Continuous Variables*

Description

Measurement of Spatial Stratified Heterogeneity Based on Information Consistency for Continuous Variables

Usage

```
sshic(d, s, seed = 42, permutation_number = 999, bin_method = "Sturges")
```

Arguments

`d`	The target variable.
`s`	The stratification.
`seed`	(optional) Random number seed, default is `42`.
`permutation_number`	(optional) Number of Random Permutations, default is `999`.
`bin_method`	(optional) Histogram binning method for probability density estimation, default is `Sturges`.

Value

A two-element numerical vector.

Examples

```
# This code may take a bit longer to execute:
baltim = sf::read_sf(system.file("extdata/baltim.gpkg",package = "sshicm"))
sshic(baltim$PRICE,baltim$DWELL)
```

sshicm *Information Consistency-Based Measures for Spatial Stratified Heterogeneity*

Description

Information Consistency-Based Measures for Spatial Stratified Heterogeneity

Usage

```
sshicm(
  formula,
  data,
  type = "IC",
  seed = 42,
  permutation_number = 999,
  bin_method = "Sturges"
)
```

Arguments

formula	A formula.
data	A data.frame, tibble or sf object of observation data.
type	(optional) Measure type, default is IC.
seed	(optional) Random number seed, default is 42.
permutation_number	(optional) Number of Random Permutations, default is 999.
bin_method	(optional) Histogram binning method for probability density estimation, default is Sturges.

Value

A tibble.

Examples

```
# This code may take a bit longer to execute:
baltim = sf::read_sf(system.file("extdata/baltim.gpkg",package = "sshicm"))
sshicm(PRICE ~ .,baltim,type = "IC")
cinc = sf::read_sf(system.file("extdata/cinc.gpkg",package = "sshicm"))
sshicm(THEFT_D ~ .,cinc,type = "IN")
```

sshin *Measurement of Spatial Stratified Heterogeneity Based on Information Consistency for Nominal Variables*

Description

Measurement of Spatial Stratified Heterogeneity Based on Information Consistency for Nominal Variables

Usage

```
sshin(d, s, seed = 42, permutation_number = 999)
```

Arguments

d	The target variable.
s	The stratification.
seed	(optional) Random number seed, default is 42.
permutation_number	(optional) Number of Random Permutations, default is 999.

Value

A two-element numerical vector.

Examples

```
# This code may take a bit longer to execute:
cinc = sf::read_sf(system.file("extdata/cinc.gpkg",package = "sshicm"))
sshin(cinc$THEFT_D,cinc$MALE)
```

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