Package 'fca'

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Title Floating Catchment Area (FCA) Methods to Calculate Spatial Accessibility

Version 0.1.0

Description Perform various floating catchment area methods to calculate a spatial accessibility index (SPAI) for demand point data. The distance matrix used for weighting is normalized in a preprocessing step using common functions (gaussian, gravity, exponential or logistic).

License GPL (>= 3)

URL https://egrueebler.github.io/fca/, https://github.com/egrueebler/fca/

BugReports https://github.com/egrueebler/fca/issues/

Encoding UTF-8

RoxygenNote 7.1.2

Suggests covr, knitr, rmarkdown, testthat

Config/testthat/edition 3

VignetteBuilder knitr

NeedsCompilation no

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Repository CRAN

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`dist_normalize` *Distance weight methods*

Description

Distance weight methods

Usage

```
dist_normalize(D, d_max, imp_function, function_d_max = 0.01)
```

Arguments

`D`	numeric matrix, distance or time values
`d_max`	numeric, threshold for max distance
`imp_function`	character, type of distance weights method
`function_d_max`	numeric, condition for the result of the function(d_max) used to calculate beta (default = 0.01, is considered optimal for the Gaussian function)

Value

matrix, normalized distance or time values

Examples

```
dist_normalize(matrix(10), 10, "gaussian")
```

`spai_2sfca` *Two-Step Floating Catchment Area method*

Description

Two-Step Floating Catchment Area method

Usage

```
spai_2sfca(p, s, W, step = 2)
```

Arguments

`p`	numeric vector, number of population at origin locations
`s`	numeric vector, capacity of services at supply locations
`W`	numeric matrix, distance or time matrix
`step`	numeric, number of the steps of the method to perform

Value

data.frame, depending on selected step

Examples

```
p <- 1:4
s <- 1:6
W <- matrix(1:24, ncol = 4, nrow = 6)
spai <- spai_2sfca(p, s, W, step = 2)
```

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spai_3sfca *Three-Step Floating Catchment Area method*

Description

Three-Step Floating Catchment Area method

Usage

```
spai_3sfca(p, s, W, step = 3)
```

Arguments

p	numeric vector, number of population at origin locations
s	numeric vector, capacity of services at supply locations
W	numeric matrix, distance or time matrix
step	numeric, number of the steps of the method to perform

Value

data.frame, depending on selected step

Examples

```
p <- 1:4
s <- 1:6
W <- matrix(1:24, ncol = 4, nrow = 6)
spai <- spai_3sfca(p, s, W, step = 3)
```

spai_mh3sfca *Modified-Huff-Three-Step Floating Catchment Area method*

Description

Modified-Huff-Three-Step Floating Catchment Area method

Usage

```
spai_mh3sfca(p, s, W, step = 3)
```

Arguments

p	numeric vector, number of population at origin locations
s	numeric vector, capacity of services at supply locations
W	numeric matrix, distance or time matrix
step	numeric, number of the steps of the method to perform

Value

data.frame, depending on selected step

Examples

```
p <- 1:4
s <- 1:6
W <- matrix(1:24, ncol = 4, nrow = 6)
spai <- spai_mh3sfca(p, s, W, step = 3)
```

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