

Package ‘fca’

July 22, 2025

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).

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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

Date/Publication 2021-12-06 08:30:02 UTC

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dist_normalize	<i>Distance weight methods</i>
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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	<i>Two-Step Floating Catchment Area method</i>
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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)
```

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

<code>p</code>	numeric vector, number of population at origin locations
<code>s</code>	numeric vector, capacity of services at supply locations
<code>W</code>	numeric matrix, distance or time matrix
<code>step</code>	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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