Package: ethnoecologyR (via r-universe)

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Type Package

Title Quantitative Ethnoecology Analysis and Landscape Knowledge Modeling

Version 0.1.4

Description A comprehensive toolkit for quantitative ethnoecology analysis and landscape knowledge modeling. Implements core indices including Landscape Use (LU), Cultural Importance in Ecology (CIE), Frequency of Citation (FC), Fidelity Level (FL), Number of Uses (NU), and Cultural Value of Ecolandscape (CVe). Provides visualization tools for chord diagrams, alluvial plots, and radial plots, as well as Bayesian consensus modeling and bootstrap resampling to support reproducible research in Local Ecological Knowledge (LEK) and participatory land-use decision analysis. Methods are based on Tardío and Pardo-de-Santayana (2008) <doi:10.1007/s12231-007-9004-5>, Reyes-García et al. (2006) <https://www.jstor.org/stable/4257061>, and Friedman et al. (1986) <doi:10.1037/0022-3514.51.6.1173>.

License GPL (>= 3)

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LazyData true

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Suggests knitr, rmarkdown, testthat

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VignetteBuilder knitr

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`CIEs` *Cultural Importance in Ecology (CIE)*

Description

Calculates the Cultural Importance in Ecology (CIE) index per landscape unit. CIE = LU / N, where N is the number of informants.

Usage

```
CIEs(data)
```

Arguments

`data`	an ethnoecology data set with columns 'informant' and 'landscape_unit'.

Value

Data frame with CIE values per landscape unit.

References

Tardío, J., and Pardo-de-Santayana, M. 2008. "Cultural Importance Indices: A Comparative Analysis Based on the Useful Wild Plants of Southern Cantabria (Northern Spain)." *Economic Botany* 62(1): 24-39.

Examples

```
data(ethnoecology_data)
CIEs(ethnoecology_data)
```

`CVe_eco` *Cultural Value of Ecolandscape (CVe)*

Description

Calculates the Cultural Value (CVe) per landscape unit. CVe = (LU / N) * (FC / N) where N = number of informants.

Usage

```
CVe_eco(data)
```

Arguments

`data`	an ethnoecology data set with columns 'informant' and 'landscape_unit'.

Value

Data frame with CVe values per landscape unit.

References

Reyes-García, V., Huanca, T., Vadez, V., Leonard, W., and Wilkie, D. 2006. "Cultural, Practical, and Economic Value of Wild Plants: A Quantitative Study in the Bolivian Amazon." *Economic Botany* 60(1): 62-74.

Examples

```
data(ethnoecology_data)
CVe_eco(ethnoecology_data)
```

ethno_bayes_land *Bayesian Consensus Model for Landscape Knowledge*

Description

Fits a Bayesian model to estimate consensus among informants regarding landscape use and ecological knowledge.

Usage

```
ethno_bayes_land(data, iter = 2000, chains = 4)
```

Arguments

data	an ethnoecology data set with columns 'informant' and 'landscape_unit'.
iter	number of MCMC iterations.
chains	number of MCMC chains.

Value

A Bayesian model object (Stan).

Examples

```
data(ethnoecology_data)
ethno_bayes_land(ethnoecology_data, iter = 1000, chains = 2)
```

ethno_boot_land *Bootstrap Analyses of Ethnoecology Indices*

Description

Performs bootstrap resampling to calculate confidence intervals for ethnoecology indices.

Usage

```
ethno_boot_land(data, index_function, R = 1000)
```

Arguments

data	an ethnoecology data set.
index_function	a function that calculates an ethnoecology index (e.g., LUs, CIEs).
R	number of bootstrap replicates.

Value

A list containing bootstrap results.

Examples

```
data(ethnoecology_data)
ethno_boot_land(ethnoecology_data, LUs, R = 100)
```

---

ethno_landscape_alluvial

Alluvial Plot of Landscape Uses

Description

Creates an alluvial diagram showing flows between informants, landscape units, and ecological uses.

Usage

```
ethno_landscape_alluvial(data)
```

Arguments

`data`	an ethnoecology data set with columns 'informant', 'landscape_unit', and use categories.

Value

A ggplot2 alluvial plot.

Examples

```
data(ethnoecology_data)
ethno_landscape_alluvial(ethnoecology_data)
```

ethno_landscape_chord *Chord Diagram of Landscape Uses*

Description

Creates a chord diagram showing relationships between informants, landscape units, and ecological uses.

Usage

```
ethno_landscape_chord(data, by = "landscape_unit")
```

Arguments

data	an ethnoecology data set with columns 'informant' and 'landscape_unit'.
by	grouping variable: "landscape_unit" or "informant".

Value

A chord diagram plot.

Examples

```
data(ethnoecology_data)
ethno_landscape_chord(ethnoecology_data, by = "landscape_unit")
```

ethnoecology_data *Data Uji Coba untuk ethnoecologyR*

Description

Dataset sintetis untuk menguji fungsi-fungsi dalam paket ethnoecologyR. Berisi 15 informan, 6 unit lanskap, dan 6 kategori penggunaan (0/1).

Usage

```
ethnoecology_data
```

Format

Data frame dengan 90 baris dan 8 kolom:

informant ID informan (karakter)

landscape_unit Nama unit lanskap (karakter)

use_forest Penggunaan hutan (0/1)

use_water Penggunaan air (0/1)

use_agriculture Penggunaan pertanian (0/1)

use_hunting Penggunaan perburuan (0/1)

use_fishing Penggunaan perikanan (0/1)

use_gathering Penggunaan pengumpulan (0/1)

Source

Data sintetis buatan.

FCs_eco *Frequency of Citation (FC) for Ethnoecology*

Description

Calculates the Frequency of Citation (FC) per landscape unit. FC = number of informants who mention the landscape unit for any use.

Usage

```
FCs_eco(data)
```

Arguments

`data`	an ethnoecology data set with columns 'informant' and 'landscape_unit'.

Value

Data frame with FC values per landscape unit.

References

Friedman, J., Yaniv, Z., Dafni, A., and Palevitch, D. 1986. "A Preliminary Classification of the Healing Potential of Medicinal Plants, Based on a Rational Analysis of an Ethnopharmacological Field Survey among Bedouins in the Negev Desert, Israel." *Journal of Ethnopharmacology* 16(2-3): 275-287.

Examples

```
data(ethnoecology_data)
FCs_eco(ethnoecology_data)
```

FLs_eco — *Fidelity Level (FL) for Ethnoecology*

Description

Calculates the Fidelity Level (FL) per landscape unit for a specific use category. FL = (number of informants who mention the landscape unit for a specific use / total number of informants who mention the landscape unit for any use) * 100.

Usage

```
FLs_eco(data, use_category)
```

Arguments

`data`	an ethnoecology data set with columns 'informant' and 'landscape_unit'.
`use_category`	a character string specifying the use category column name.

Value

Data frame with FL values per landscape unit.

References

Friedman, J., Yaniv, Z., Dafni, A., and Palevitch, D. 1986. "A Preliminary Classification of the Healing Potential of Medicinal Plants, Based on a Rational Analysis of an Ethnopharmacological Field Survey among Bedouins in the Negev Desert, Israel." *Journal of Ethnopharmacology* 16(2-3): 275-287.

Examples

```
data(ethnoecology_data)
FLs_eco(ethnoecology_data, "use_forest")
```

landscape_radial_plot — *Radial Bar Plot of Ethnoecology Indices*

Description

Creates a radial bar plot to visualize multiple ethnoecology indices per landscape unit.

Usage

```
landscape_radial_plot(data, indices_list)
```

Arguments

`data`	an ethnoecology data set.
`indices_list`	a list of index functions to apply (e.g., list(LUs, CIEs)).

Value

A ggplot2 radial plot.

Examples

```
data(ethnoecology_data)
landscape_radial_plot(ethnoecology_data, list(LUs, CIEs))
```

LUs *Landscape Use (LU)*

Description

Calculates the Landscape Use (LU) per landscape unit, a common metric for ethnoecology studies. This is the sum of all use reports for each landscape unit.

Usage

```
LUs(data)
```

Arguments

`data`	an ethnoecology data set with column 1 'informant' and column 2 'landscape_unit' as row identifiers of informants and of landscape units respectively. The rest of the columns are the identified ethnoecology use categories. The data should be populated with counts of uses per person (0 or 1 values).

Value

Data frame of landscape units and Landscape Use (LU) values.

Warning

Identification for informants and landscape units must be listed by the names 'informant' and 'landscape_unit' respectively in the data set. The rest of the columns should all represent separate identified ethnoecology use categories.

References

Tardío, J., and Pardo-de-Santayana, M. 2008. "Cultural Importance Indices: A Comparative Analysis Based on the Useful Wild Plants of Southern Cantabria (Northern Spain)." *Economic Botany* 62(1): 24-39.

Whitney, C. W., Bahati, J., and Gebauer, J. 2018. "Ethnobotany and Agrobiodiversity: Valuation of Plants in the Homegardens of Southwestern Uganda." *Ethnobiology Letters* 9(2): 1-12.

Examples

```
data(ethnoecology_data)
LUs(ethnoecology_data)
```

`NUs_eco` *Number of Uses (NU) for Ethnoecology*

Description

Calculates the Number of Uses (NU) per landscape unit. NU = total number of use categories reported for each landscape unit.

Usage

```
NUs_eco(data)
```

Arguments

`data`	an ethnoecology data set with columns 'informant' and 'landscape_unit'.

Value

Data frame with NU values per landscape unit.

Examples

```
data(ethnoecology_data)
NUs_eco(ethnoecology_data)
```

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