Package 'ExpectedRepresentationCalculator'

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Title Descriptive Representation Calculator from 'The Composition of Descriptive Representation'

Version 2.0

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Description This package contains two main functions. The first computes the expected degree of representation for a given group in a political body under a random sampling model. The second computes the residual standard deviation in using the expected value as a prediction for observed values under the model.

Depends R (>= 3.3.3)

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Encoding UTF-8

LazyData true

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RoxygenNote 7.2.1

R topics documented:

`ExpectedRepresentation` *Compute the expected degree of representation for any group in a political body*

Description

Finds the degree of expected representation for any group in a political body under a random sampling model as described in Gerring, Jerzak and Oncel, 2023+.

Usage

```
ExpectedRepresentation(PopShares, BodyN)
```

Arguments

PopShares	A numeric vector containing the group-level population proportions.
BodyN	A positive integer denoting the size of the political body in question.
a=-0.5, b=1	Parameters controlling the affine transformation for how the representation measure is summarized. That is, a and b control how the expected L1 deviation of the population shares from the body shares is re-weighted. The expected L1 deviation is the average value of the absolute deviation of the population from body shares under a random sampling model. This expected L1 deviation is multiplied by a; b is as an additive re-scaling term: a*E[L1]+b. By default, a=-0.5 and b=1 so that the expected Rose Index of Proportionality is returned.

Value

The expected degree of representation (a scalar).

Examples

```
ExpectedRep <- ExpectedRepresentation(PopShares = c(1/3, 2/3, 1/3),
                                      BodyN = 50)

print( ExpectedRep )
```

ResidualRepresentation

Compute the amount of representation left unexplained by a random sampling model.

Description

Finds the residual standard deviation when using the expected representation for any group in a political body to predict observed representation as described in Gerring, Jerzak and Oncel, 2023+.

Usage

```
ResidualRepresentation(PopShares, BodyN)
```

Arguments

PopShares	A numeric vector containing the group-level population proportions.
BodyN	A positive integer denoting the size of the political body in question.
a=-0.5, b=1	Parameters controlling the affine transformation for how the representation measure is summarized. That is, a and b control how the expected L1 deviation of the population shares from the body shares is re-weighted. The expected L1 deviation is the average value of the absolute deviation of the population from body shares under a random sampling model. This expected L1 deviation is multiplied by a; b is as an additive re-scaling term: a*E[L1]+b. By default, a=-0.5 and b=1 so that the expected Rose Index of Proportionality is used in the calculation.

Value

A scalar summary of the amount of representation not explained by a random sampling model. More precisely, this function returns the the residual standard deviation when using the expected degree of representation to predict observed representation under a random sampling model.

Examples

```
ResidualRep <- ResidualRepresentation(PopShares = c(1/3, 2/3, 1/3),
                                      BodyN = 50)

print( ResidualRep )
```

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