

Package ‘concstats’

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Type Package

Title Market Structure, Concentration and Inequality Measures

Version 0.1.6

Description Based on individual market shares of all participants in a market or space, the package offers a set of different structural and concentration measures frequently - and not so frequently - used in research and in practice. Measures can be calculated in groups or individually. The calculated measure or the resulting vector in table format should help practitioners make more informed decisions. Methods used in this package are from:

1. Chang, E. J., Guerra, S. M., de Souza Penaloza, R. A. & Tabak, B. M. (2005) ``Banking concentration: the Brazilian case".
2. Cobham, A. and A. Summer (2013). ``Is It All About the Tails? The Palma Measure of Income Inequality".
3. Garcia Alba Idunate, P. (1994). ``Un Indice de dominancia para el analisis de la estructura de los mercados".
4. Ginevicius, R. and S. Cirba (2009). ``Additive measurement of market concentration" <doi:10.3846/1611-1699.2009.10.191-198>.
5. Herfindahl, O. C. (1950), ``Concentration in the steel industry" (PhD thesis).
6. Hirschmann, A. O. (1945), ``National power and structure of foreign trade".
7. Melnik, A., O. Shy, and R. Stenbacka (2008), ``Assessing market dominance" <doi:10.1016/j.jebo.2008.03.010>.
8. Palma, J. G. (2006). ``Globalizing Inequality: 'Centrifugal' and 'Centripetal' Forces at Work".
9. Shannon, C. E. (1948). ``A Mathematical Theory of Communication".
10. Simpson, E. H. (1949). ``Measurement of Diversity" <doi:10.1038/163688a0>.

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<https://docs.ropensci.org/concstats/> (website)

BugReports <https://github.com/ropensci/concstats/issues/>

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concstats_all_comp *A wrapper for the proposed concentration measures*

Description

A wrapper for the proposed concentration measures

Usage

```
concstats_all_comp(x, normalized = FALSE, na.rm = TRUE, digits = NULL)
```

Arguments

<code>x</code>	A non-negative numeric vector.
<code>normalized</code>	Logical. Argument specifying whether or not a normalized value is required. Must be either TRUE or FALSE. Defaults to FALSE.
<code>na.rm</code>	A logical vector that indicates whether NA values should be excluded or not. Must be either TRUE or FALSE. The default is TRUE. If set to FALSE the computation yields NA if NA values are present.
<code>digits</code>	A non-null value for digits specifies the minimum number of significant digits to be printed in values. The default is NULL and will use base R print option. Significant digits defaults to 7.

Details

`concstats_all_comp` returns all proposed group measures in a one step procedure with default settings if not otherwise specified.

Value

A data.frame.

See Also

[concstats_all_mstruct\(\)](#), [concstats_all_inequ\(\)](#)

Examples

```
# a vector of market shares
x <- c(0.35, 0.4, 0.05, 0.1, 0.06, 0.04)
concstats_all_comp(x, digits = 2)
```

constats_all_inequ *A wrapper for the proposed inequality measures*

Description

A wrapper for the proposed inequality measures

Usage

```
constats_all_inequ(x, normalized = FALSE, na.rm = TRUE, digits = NULL)
```

Arguments

x	A non-negative numeric vector.
normalized	Logical. Argument specifying whether or not a normalized value is required. Must be either TRUE or FALSE. The default is FALSE.
na.rm	A logical vector that indicates whether NA values should be excluded or not. Must be either TRUE or FALSE. The default is FALSE. If set to FALSE the computation yields NA if NA values are present.
digits	A non-null value for digits specifies the minimum number of significant digits to be printed in values. The default is NULL and will use base R print option. Significant digits defaults to 7.

Details

constats_all_inequ returns all proposed group measures in a one step procedure with default settings if not otherwise specified.

Value

A data.frame.

See Also

[constats_all_mstruct\(\)](#), [constats_all_comp\(\)](#)

Examples

```
# a vector of market shares
x <- c(0.35, 0.4, 0.05, 0.1, 0.06, 0.04)
constats_all_inequ(x, digits = 2)
```

concstats_all_mstruct *A wrapper for the proposed structural measures*

Description

A wrapper for the proposed structural measures

Usage

```
concstats_all_mstruct(x, na.rm = TRUE, digits = NULL)
```

Arguments

x	A non-negative numeric vector.
na.rm	A logical vector that indicates whether NA values should be excluded or not. Must be either TRUE or FALSE. The default is TRUE. If set to FALSE the computation yields NA if the vector contains NA values.
digits	A non-null value for digits specifies the minimum number of significant digits to be printed in values. The default is NULL and will use base R print option. Significant digits defaults to 7.

Details

concstats_all_mstruct returns all proposed group measures in a one step procedure with default settings if not otherwise specified.

Value

A data.frame.

See Also

[concstats_all_comp\(\)](#), [concstats_all_inequ\(\)](#)

Examples

```
# a vector of market shares
x <- c(0.4, 0.2, 0.25, 0.1, 0.05)
concstats_all_mstruct(x, digits = 2)
```

constats_comp

*Group of Concentration Measures***Description**

A set of different concentration measures.

Usage

```
constats_comp(x, normalized = FALSE, type = c("hhi", "hhi_d", "hhi_min",
  "dom", "sten", "all"), na.rm = TRUE, digits = NULL)
```

Arguments

<code>x</code>	A non-negative numeric vector.
<code>normalized</code>	Logical. Argument specifying whether or not a normalized value is required. Ranges from (0, 1) and often used for comparison over time. Must be either TRUE or FALSE. The default is FALSE.
<code>type</code>	A character string of the measure to be calculated, can be abbreviated with the first letter. Defaults to "hhi". Input is not case-sensitive.
<code>na.rm</code>	A logical vector that indicates whether NA values should be excluded or not. If set to FALSE the computation yields NA if vector contains NA values. Must be either TRUE or FALSE. Defaults to TRUE.
<code>digits</code>	A non-null value for digits specifies the minimum number of significant digits to be printed in values. The default is NULL and will use base R print option. Significant digits defaults to 7.

Details

constats_comp is a wrapper for the proposed concentration measures [constats_hhi\(\)](#), [constats_hhi_d\(\)](#), [constats_dom\(\)](#), [constats_hhi_min\(\)](#), [constats_sten\(\)](#), [constats_all_comp\(\)](#). If no measure is specified "hhi" will be the default. constats_hhi, can be calculated individually as a normalized measure changing the default setting to TRUE. constats_all_comp computes all measures in a one step procedure. For more details or references please see the help page of the respective function.

Value

A single numeric measure in decimal form or data frame.

Note

The vector of market shares should be in a decimal form corresponding to total shares of individual firms/units. The vector should sum up to 1.

See Also

[concstats_concstats\(\)](#), [concstats_mstruct\(\)](#), [concstats_inequ\(\)](#)

Examples

```
# a vector of market shares
x <- c(0.35, 0.4, 0.05, 0.1, 0.06, 0.04)
# the Herfindahl-Hirschman index of the vector
concstats_comp(x, type = "hhi")
# individual measure
concstats_sten(x)
# complete group measures
concstats_comp(x, type = "all", digits = 2)
```

concstats_concstats *A set of Market Structure, Concentration, and Inequality Measures*

Description

A convenience function which calculates a selected set of different market structure, inequality and concentration measures more or less commonly used, e.g. k-firm ratios, Entropy, HHI, Palma ratio, and others in a one step procedure to provide a first overview.

Usage

```
concstats_concstats(x, na.rm = TRUE, digits = NULL)
```

Arguments

<code>x</code>	A non-negative numeric vector.
<code>na.rm</code>	A logical vector that indicates whether NA values should be excluded or not. Must be either TRUE or FALSE. Defaults to TRUE. If set to FALSE the computation yields NA if vector contains NA values.
<code>digits</code>	A non-null value for digits specifies the minimum number of significant digits to be printed in values. The default is NULL and will use base R print option. Significant digits defaults to 7.

Details

`concstats_concstats` computes a set of different and selected structural, inequality, and concentration measures in a one step procedure. The resulting data frame contains eight measures: number of firms with market share, numbers equivalent, the cumulative share of the top (top 3 and top 5) firm(s) in percentage, the hhi index, the entropy index, and the palma ratio. However, all measures can be computed individually or in groups.

Value

A data frame of numeric measures with default settings.

Note

The vector of market shares should be in a decimal form corresponding to the total share of individual firms/units. The vector should sum up to 1.

See Also

[concstats_mstruct\(\)](#), [concstats_comp\(\)](#), [concstats_inequ\(\)](#)

Examples

```
# a vector of market shares
x <- c(0.35, 0.4, 0.05, 0.1, 0.06, 0.04)
# a selected set of different structural, concentration, and inequality
# measures
concstats_concstats(x, digits = 2)
```

concstats_dom

Dominance Index

Description

Dominance Index

Usage

```
concstats_dom(x, na.rm = TRUE)
```

Arguments

<code>x</code>	A non-negative numeric vector.
<code>na.rm</code>	A logical vector that indicates whether NA values should be excluded or not. Must be either TRUE or FALSE. The default is TRUE. If set to FALSE the computation yields NA if the vector contains NA values.

Details

`concstats_dom` calculates a dominance index, which measures the concentration within the Herfindahl-Hirschman index, that is, the concentration within the concentration.

Value

A single numeric measure in decimal form.

References

García Alba Idunáte, P. (1994). "Un Índice de dominancia para el análisis de la estructura de los mercados". *El Trimestre Económico*, 61: 499-524.

Examples

```
# a vector of market shares
x <- c(0.35, 0.4, 0.05, 0.1, 0.06, 0.04)
concstats_dom(x)
# a vector with NA values
x <- c(0.4, 0.2, 0.25, 0.1, 0.05, NA)
concstats_dom(x, na.rm = FALSE)
```

concstats_entropy	<i>Shannon Entropy</i>
-------------------	------------------------

Description

Shannon Entropy

Usage

```
concstats_entropy(x, normalized = TRUE, na.rm = TRUE)
```

Arguments

x	A non-negative numeric vector.
normalized	Logical. Argument specifying whether or not a normalized value is required. Must be either TRUE or FALSE. The default is TRUE.
na.rm	A logical vector that indicates whether NA values should be excluded or not. Must be either TRUE or FALSE. The default is TRUE. If set to FALSE the computation yields NA if vector contains NA values.

Value

A single numeric measure.

References

Shannon, C. E. (1948). "A Mathematical Theory of Communication", *The Bell System Technical Journal* (Nokia Bell Labs).

Examples

```
# a vector of market shares
x <- c(0.4, 0.2, 0.25, 0.1, 0.05)
concstats_entropy(x, normalized = TRUE)
# a vector with NA values
x <- c(0.4, 0.2, 0.25, 0.1, 0.05, NA)
concstats_entropy(x, na.rm = FALSE)
```

concstats_firm	<i>Number of firms</i>
----------------	------------------------

Description

Number of firms

Usage

```
concstats_firm(x, na.rm = TRUE)
```

Arguments

- x A non-negative numeric vector.
- na.rm Logical vector that indicates whether NA values should be excluded or not. Must be either TRUE or FALSE. The default is TRUE. If set to FALSE the computation yields NA if the vector contains NA values.

Value

A positive numeric integer.

Examples

```
# a vector of market shares
x <- c(0.4, 0.2, 0.25, 0.1, 0.05)
concstats_firm(x)
```

concstats_gini	<i>Gini Index</i>
----------------	-------------------

Description

Gini Index

Usage

```
concstats_gini(x, normalized = TRUE, na.rm = TRUE)
```

Arguments

x	A non-negative numeric vector.
normalized	Logical. Argument specifying whether or not a normalized value is required. Must be either TRUE or FALSE. The default is FALSE.
na.rm	A logical vector that indicates whether NA values should be excluded or not. Must be either TRUE or FALSE. The default is TRUE. If set to FALSE the computation yields NA if vector contains NA values.

Value

A single numeric measure.

Examples

```
# a vector of market shares
x <- c(0.4, 0.2, 0.25, 0.1, 0.05)
concstats_gini(x, normalized = TRUE)
# a vector with NA values
x <- c(0.4, 0.2, 0.25, 0.1, 0.05, NA)
concstats_gini(x, na.rm = FALSE)
```

concstats_grs	<i>GRS measure</i>
---------------	--------------------

Description

GRS measure

Usage

```
concstats_grs(x, na.rm = TRUE)
```

Arguments

<code>x</code>	A non-negative numeric vector.
<code>na.rm</code>	a logical vector that indicates whether NA values should be excluded or not. Must be either TRUE or FALSE. The default is TRUE. If set to FALSE the computation yields NA if vector contains NA values.

Value

A single numeric measure in decimal form.

References

Ginevicius, R. and S. Cirba (2009). "Additive measurement of market concentration", *Journal of Business Economics and Management*, 10(3), 191-198.

Examples

```
# a vector of market shares
x <- c(0.4, 0.2, 0.25, 0.1, 0.05)
conconstats_grs(x)
# a vector with NA values
x <- c(0.4, 0.2, 0.25, 0.1, 0.05, NA)
conconstats_grs(x, na.rm = FALSE)
```

conconstats_hhi	<i>Herfindahl-Hirschman Index</i>
-----------------	-----------------------------------

Description

Herfindahl-Hirschman Index

Usage

```
conconstats_hhi(x, normalized = FALSE, na.rm = TRUE)
```

Arguments

<code>x</code>	A non-negative numeric vector.
<code>normalized</code>	Logical. Argument specifying whether or not a normalized value is required. Ranges from 0, 1 and often used for comparison over time. Must be either TRUE or FALSE. The default is FALSE.
<code>na.rm</code>	A logical vector that indicates whether NA values should be excluded or not. Must be either TRUE or FALSE. The default is TRUE. If set to FALSE the computation yields NA if NA values are present.

Details

constats_hhi calculates the widely used Herfindahl-Hirschman Index (Herfindahl, 1950 and Hirschman, 1945). The index is calculated by squaring the market share of each firm competing in the market and then summing the resulting numbers.

Value

A single numeric measure in decimal form.

References

Herfindahl, O. C. (1950), "Concentration in the steel industry" (PhD thesis), Columbia University.
Hirschmann, A. O. (1945), "National power and structure of foreign trade". Berkeley, CA: University of California Press.

Examples

```
# a vector of market shares
x <- c(0.35, 0.4, 0.05, 0.1, 0.06, 0.04)
constats_hhi(x)
# a vector with NA values
x <- c(0.4, 0.2, 0.25, 0.1, 0.05, NA)
constats_hhi(x, na.rm = FALSE)
```

constats_hhi_d	<i>Dual of the Herfindahl-Hirschman Index</i>
----------------	---

Description

Dual of the Herfindahl-Hirschman Index

Usage

```
constats_hhi_d(x, na.rm = TRUE)
```

Arguments

x	A non-negative numeric vector.
na.rm	A logical vector that indicates whether NA values should be excluded or not. Must be either TRUE or FALSE. The default is TRUE. If set to FALSE the computation yields NA if the vector contains NA values.

Details

constats_hhi_d is the dual of the HHI index, which indicates the percentage which represents the fraction of the banks that do not have market participation.

Value

A single numeric measure in decimal form.

References

Chang, E. J., Guerra, S. M., de Souza Penalzoa, R. A. & Tabak, B. M. (2005) Banking concentration: the Brazilian case. *In Financial Stability Report*. Brasilia: Banco Central do Brasil, 4: 109-129.

Examples

```
# a vector of market shares
x <- c(0.35, 0.4, 0.05, 0.1, 0.06, 0.04)
constats_hhi_d(x)
# a vector with NA values
x <- c(0.4, 0.2, 0.25, 0.1, 0.05, NA)
constats_hhi_d(x, na.rm = FALSE)
```

constats_hhi_min	<i>Minimum of Herfindahl-Hirschman Index</i>
------------------	--

Description

Minimum of Herfindahl-Hirschman Index

Usage

```
constats_hhi_min(x, na.rm = TRUE)
```

Arguments

x	A non-negative numeric vector.
na.rm	A logical vector that indicates whether NA values should be excluded or not. Must be either TRUE or FALSE. The default is TRUE. If set to FALSE the computation yields NA if the vector contains NA values.

Details

Calculates the minimum of the Herfindahl-Hirschman index, that is, the equivalent of all participants in the market with equal market shares.

Value

A single numeric measure in decimal form.

Examples

```
# a vector of market shares
x <- c(0.35, 0.4, 0.05, 0.1, 0.06, 0.04)
concstats_hhi_min(x)
# a vector with NA values
x <- c(0.4, 0.2, 0.25, 0.1, 0.05, NA)
concstats_hhi_min(x, na.rm = FALSE)
```

concstats_inequ	<i>Inequality and Diversity Measures</i>
-----------------	--

Description

A set of different inequality and diversity measures.

Usage

```
concstats_inequ(x, normalized = FALSE, type = c("entropy", "gini",
  "simpson", "palma", "grs", "all"), na.rm = TRUE, digits = NULL)
```

Arguments

x	A non-negative numeric vector.
normalized	Logical. Argument of the functions <code>concstats_entropy</code> , <code>concstats_gini</code> specifying whether or not a normalized value is required. Ranges from (0, 1) and often used for comparison over time. Must be either TRUE or FALSE. The default is FALSE.
type	A character string of the measure to be calculated, defaults to <code>concstats_entropy</code> . Input is not case-sensitive.
na.rm	A logical vector that indicates whether NA values should be excluded or not. If set to FALSE the computation yields NA if vector contains NA values. Must be either TRUE or FALSE. The default is TRUE.
digits	A non-null value for digits specifies the minimum number of significant digits to be printed in values. The default is NULL and will use base R print option. Significant digits defaults to 7.

Details

`concstats_inequ` is a wrapper for the proposed inequality measures `concstats_entropy()`, `concstats_gini()`, `concstats_simpson()`, `concstats_palma()`, `concstats_grs()`, `concstats_all_inequ()`. If no measure is specified, `concstats_entropy` is the default. `concstats_entropy` returns the Shannon Entropy (Shannon, 1948), `concstats_gini` is the Gini coefficient. You can normalize the Entropy and Gini measures by setting `normalized = TRUE`. `concstats_palma` measures the ratio of inequality (normally used in the context of measuring income inequality) of the top 10 percent to the bottom 40 percent (Palma, 2006). `concstats_grs` is an alternative inequality measure (Ginevicius, 2009) and `concstats_all_inequ` returns all measures in a one step procedure. For more details or references please see the help page of the respective function.

Value

The calculated numeric measure or a data frame

See Also

`concstats_concstats()`, `concstats_mstruct()`, `concstats_comp()`

Examples

```
# a vector of market shares
x <- c(0.4, 0.2, 0.25, 0.1, 0.05)
# Calculate the Palma ratio
concstats_inequ(x, type = "palma")
# Calculate the entropy measure directly
concstats_entropy(x, normalized = TRUE)
# Calculate the group measures
concstats_inequ(x, type = "all", digits = 2)
```

concstats_mstruct	<i>Market Structure Measures</i>
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Description

Set of different market structure measures to reflect a given market structure.

Usage

```
concstats_mstruct(x, type = c("firm", "nrs_eq", "top", "top3", "top5",
  "all"), na.rm = TRUE, digits = NULL)
```

Arguments

<code>x</code>	A non-negative numeric vector.
<code>type</code>	A character string of the measure to be calculated, can be abbreviated with the first letter. Defaults to "firm". Input is not case-sensitive.
<code>na.rm</code>	A logical vector that indicates whether NA values should be excluded or not. Must be either TRUE or FALSE. The default is TRUE. If set to FALSE the computation yields NA if vector contains NA values.
<code>digits</code>	A non-null value for digits specifies the minimum number of significant digits to be printed in values. The default is NULL and will use base R print option. Significant digits defaults to 7.

Details

concstats_mstruct is a wrapper for the proposed structural measures `concstats_firm()`, returns the number of firms with a given market share `concstats_nrs_eq()` computes the reciprocal of the HHI, which indicates the equivalent number of firms of the same size, `concstats_top()`, `concstats_top3()`, and `concstats_top5()` calculate the share of the top (top 3 and top 5) firm(s) and returns the value in percentage. `concstats_all_mstruct()` computes all measures in a one step procedure. All measures can be computed individually.

Value

A single calculated numeric measure or data frame.

Note

The vector of market shares should be in a decimal form corresponding to total share of individual firms/units. The sum of the vector should sum up to 1.

See Also

`concstats_concstats()`, `concstats_comp()`, `concstats_inequ()`

Examples

```
# a vector of market shares
x <- c(0.35, 0.4, 0.05, 0.1, 0.06, 0.04)
# the number of firms with market share
concstats_mstruct(x, type = "firm")
# Calculate top market share individually
concstats_top(x)
# Calculate the market structure group measures
concstats_mstruct(x, type = "all", digits = 2)
```

concstats_nrs_eq	<i>Numbers equivalent</i>
------------------	---------------------------

Description

Numbers equivalent

Usage

```
concstats_nrs_eq(x, na.rm = TRUE)
```

Arguments

x	A non-negative numeric vector.
na.rm	A logical vector that indicates whether NA values should be excluded or not. Must be either TRUE or FALSE. The default is TRUE. If set to FALSE the computation yields NA if NA values are present.

Value

A positive numeric value.

Examples

```
# a vector of market shares
x <- c(0.4, 0.2, 0.25, 0.1, 0.05)
concstats_nrs_eq(x)
```

concstats_palma	<i>Palma ratio</i>
-----------------	--------------------

Description

Palma ratio

Usage

```
concstats_palma(x, na.rm = TRUE)
```

Arguments

x	A non-negative numeric vector.
na.rm	A logical vector that indicates whether NA values should be excluded or not. Must be either TRUE or FALSE. The default is TRUE. If set to FALSE the computation yields NA if NA values are present.

Details

concstats_palma measures the ratio of inequality (normally used with income inequality) of the top 10 percent to the bottom 40 percent.

Value

A single numeric measure.

References

Palma, J. G. (2006). "Globalizing Inequality: 'Centrifugal' and 'Centripetal' Forces at Work", DESA Working Paper No. 35.

Examples

```
# a vector of market shares
x <- c(0.4, 0.2, 0.25, 0.1, 0.05)
concstats_palma(x)
# a vector with NA values
x <- c(0.4, 0.2, 0.25, 0.1, 0.05, NA)
concstats_palma(x, na.rm = FALSE)
```

constats_simpson	<i>Gini-Simpson Index</i>
------------------	---------------------------

Description

Gini-Simpson Index

Usage

```
constats_simpson(x, na.rm = TRUE)
```

Arguments

x	A non-negative numeric vector.
na.rm	A logical vector that indicates whether NA values should be excluded or not. Must be either TRUE or FALSE. The default is TRUE. If set to FALSE the computation yields NA if NA values are present.

Details

constats_simpson is the Gini-Simpson index, also known as the Gini impurity (Gini's diversity index) in Machine Learning, Gibbs-Martin index or Blau index in sociology and management studies. This index ranges from (0, 1).

Value

A single numeric value in decimal form.

References

Simpson, E. H. (1949). "Measurement of Diversity", *Nature*, 163, 688.
Jost, L. (2006). "Entropy and Diversity". *Oikos*, 113(2), 363-375.

Examples

```
# a vector of market shares
x <- c(0.4, 0.2, 0.25, 0.1, 0.05)
constats_simpson(x)
# a vector with NA values
x <- c(0.4, 0.2, 0.25, 0.1, 0.05, NA)
constats_simpson(x, na.rm = FALSE)
```

concstats_sten	<i>Stenbacka Index</i>
----------------	------------------------

Description

Stenbacka Index

Usage

```
concstats_sten(x, na.rm = TRUE)
```

Arguments

x	A non-negative numeric vector.
na.rm	A logical vector that indicates whether NA values should be excluded or not. Must be either TRUE or FALSE. The default is TRUE. If set to FALSE the computation yields NA if NA values are present.

Details

concstats_sten calculates the Stenbacka index, which indicates the market share of a dominant position.

Value

A single numeric measure in decimal form.

References

Melnik, A., Shy, Oz, Stenbacka, R., (2008), "Assessing market dominance", *Journal of Economic Behavior and Organization*, 68: pp. 63-72.

Examples

```
# a vector of market shares
x <- c(0.35, 0.4, 0.05, 0.1, 0.06, 0.04)
concstats_sten(x)
# a vector with NA values
x <- c(0.4, 0.2, 0.25, 0.1, 0.05, NA)
concstats_sten(x, na.rm = FALSE)
```

concstats_top	<i>Top market share</i>
---------------	-------------------------

Description

Top market share

Usage

```
concstats_top(x, na.rm = TRUE)
```

Arguments

x	A non-negative numeric vector.
na.rm	A logical vector that indicates whether NA values should be excluded or not. Must be either TRUE or FALSE. The default is TRUE. If set to FALSE the computation yields NA if NA values are present.

Value

A positive numeric value, which indicates the top market share in percent.

Examples

```
# a vector of market shares
x <- c(0.4, 0.2, 0.25, 0.1, 0.05)
concstats_top(x)
```

concstats_top3	<i>Top 3 market share</i>
----------------	---------------------------

Description

Top 3 market share

Usage

```
concstats_top3(x, na.rm = TRUE)
```

Arguments

x	A non-negative numeric vector.
na.rm	A logical vector that indicates whether NA values should be excluded or not. Must be either TRUE or FALSE. The default is TRUE. If set to FALSE the computation yields NA if the vector contains NA values.

Value

A positive numeric value, which indicates the sum of the top 3 market shares as a percentage.

Examples

```
# a vector of market shares
x <- c(0.4, 0.2, 0.25, 0.1, 0.05)
concstats_top3(x)
```

concstats_top5	<i>Top 5 market share</i>
----------------	---------------------------

Description

Top 5 market share

Usage

```
concstats_top5(x, na.rm = TRUE)
```

Arguments

x	A non-negative numeric vector.
na.rm	A logical vector that indicates whether NA values should be excluded or not. Must be either TRUE or FALSE. The default is TRUE. If set to FALSE the computation yields NA if NA values are present.

Value

A positive numeric value, which indicates the sum of the top 5 market shares as a percentage.

Examples

```
# a vector of market shares
x <- c(0.4, 0.2, 0.25, 0.1, 0.05)
concstats_top5(x)
```

`creditcoops`*Creditcoops*

Description

data set with 22 paired Paraguayan credit cooperatives (2016, 2018)

Usage

```
creditcoops
```

Format

A data frame with 44 rows and 5 variables:

`coop_id` double, ID of the credit cooperative

`year` integer, sample year

`total_loans` double, total loans granted (USD) per year and cooperative

`paired` integer, paires of cooperatives

`total_loans_log` double, the natural log of total loans

Note

real names of the cooperatives have been purposely omitted, but are available on request.

Author(s)

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Source

<http://www.incoop.gov.py/v2/>

Examples

```
data("creditcoops")  
head(creditcoops)
```

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