Package: GiniDecompLY (via r-universe)

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Title Gini Decomposition by Income Sources

Version 1.0.1

Description Estimation of the effect of each income source on income inequalities based on the decomposition of Lerman and Yitzhaki (1985) <doi:10.2307/1928447>.

License GPL-3

Encoding UTF-8

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BugReports https://github.com/aambarek/GiniDecompLY/issues

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`gini_corr` *Gini correlation index*

Description

This function calculates the Gini correlation between two distributions.

Usage

```
gini_corr(x, y, weights = NULL)
```

Arguments

`x`	a numeric vector containing at least non-negative elements.
`y`	a numeric vector containing the distribution with the rank information.
`weights`	an optional vector of weights to apply in computation. Should be NULL or a numeric vector.

Value

The value of the Gini correlation, should be between -1 and 1.

References

E. Schechtman and S. Yitzhaki (1999) *On the proper bounds of the Gini correlation*, Economics Letters,Volume 63, Issue 2, p. 133-138, ISSN 0165-1765

Handcock, M. (2016), *Relative Distribution Methods in the Social Sciences*, Springer-Verlag, Inc., New York, 1999 ISBN 0387987789

Examples

```
# Calculate the gini correlation between the salary and total income distributions


Salary_distribution = sample_income_data$wage
Total_income_distribution = rowSums(sample_income_data[3:6])

gini_corr(Salary_distribution, Total_income_distribution)
```

`gini_decomp_source` *Gini decomposition by income sources*

Description

This function provides a decomposition of Gini index by income sources based on the approach of Lerman and Yitzhaki (1985) doi:10.2307/1928447 . It provides a set of indicators :

- `income_source`: Column indicating each income source passed into the function call.
- `Share`: Column indicating the share of the income source to the total income.
- `Gini`: Column showing the Gini index for each income source.
- `Gini_corr`: Column showing the Gini correlation between the income source and the total income.
- `Absolute_Contribution`: Column showing the absolute contribution of each income source to the global Gini index.
- `Relative_Contribution`: Column indicating the relative contribution of each income source to the global Gini index.

Usage

```
gini_decomp_source(.data, ..., .by = NULL, .wgt = NULL)
```

Arguments

`.data`	A data frame, or data frame extension (e.g. a tibble)
`...`	One or more unquoted expressions separated by commas indicating income sources to consider in the decomposition. Variable names can be used as if they were positions in the data frame.
`.by`	A column to group the calculations by.
`.wgt`	an optional vector of weights to apply in computation. Should be NULL or a numeric vector.

Value

An object of class `data.frame` containing all the calculated indicators. The data.frame is grouped by the columns passed into `.by` argument.

Examples

```
sample_income_data %>%
  gini_decomp_source(wage, self_employment_rev, farming_rev, other_rev)

gini_decomp_source(sample_income_data, 3:6, .by = region, .wgt = sample_wgt)
```

gini_income_elasticity *Gini income elasticity*

Description

This function computes the elasticity of Gini index associated with a percentage change in the mean income (for each income source). It provides a set of indicators :

- `income_source`: Column indicating each income source passed into the function call.
- `Share`: Column indicating the share of the income source to the total income.
- `Gini`: Column showing the Gini index for each income source.
- `Gini_corr`: Column showing the Gini correlation between the income source and the total income.
- `Elasticity`: Column indicating the elasticity of Gini index associated with a percentage change in the mean income source.
- `Marginal_Impact`: Column indicating the marginal impact of a change in the mean income source on the overall Gini index.

Usage

```
gini_income_elasticity(.data, ..., .by = NULL, .wgt = NULL)
```

Arguments

`.data`	A data frame, or data frame extension (e.g. a tibble)
`...`	One or more unquoted expressions separated by commas indicating income sources to consider in the decomposition. Variable names can be used as if they were positions in the data frame.
`.by`	A column to group the calculations by.
`.wgt`	an optional vector of weights to apply in computation. Should be NULL or a numeric vector.

Value

An object of class `data.frame` containing all the calculated indicators. The data.frame is grouped by the columns passed into `.by` argument.

Examples

```
sample_income_data %>%
  gini_income_elasticity(wage, self_employment_rev, farming_rev, other_rev,
  .by = region)

gini_income_elasticity(sample_income_data, 3:6, .by = region, .wgt = sample_wgt)
```

sample_income_data *Sample income data*

Description

A simulated data for households income sources

Usage

```
sample_income_data
```

Format

A data frame with 200 rows and 6 columns:

region Whether the households residence is urban or rural

sample_wgt Sample weight

wage Wage and salary

self_employment_rev Earnings from self-employment

farming_rev Income derived from agricultural activities

other_rev Other income sources ...

social_welfare_impact *Growth-redistribution impacts on social welfare function.*

Description

This function provides a Growth-redistribution decomposition of effects (for each income source) on social welfare function defined by Amartya Sen (1970, ISBN:978-0-444-85127-7).

Usage

```
social_welfare_impact(.data, ..., .by = NULL, .wgt = NULL)
```

Arguments

.data	A data frame, or data frame extension (e.g. a tibble)
...	One or more unquoted expressions separated by commas indicating income sources to consider in the decomposition. Variable names can be used as if they were positions in the data frame.
.by	A column to group the calculations by.
.wgt	an optional vector of weights to apply in computation. Should be NULL or a numeric vector.

Details

It provides a set of indicators :

- `income_source`: Column indicating each income source passed into the function call.
- `Share`: Column indicating the share of the income source to the total income.
- `Gini`: Column showing the Gini index for each income source.
- `Gini_corr`: Column showing the Gini correlation between the income source and the total income.
- `Growth_Effect`: Column indicating the effect of growth in the income source on the Social Welfare Function.
- `Redistribution_Effect`: Column indicating the effect of redistribution of the income source on the Social Welfare Function.
- `Total_Variation`: Column adding up both effects to calculate the overall effect of each income source on the Social Welfare Function.

Value

An object of class `data.frame` containing all the calculated indicators. The data.frame is grouped by the columns passed into `.by` argument.

Examples

```
sample_income_data %>%
  social_welfare_impact(wage, self_employment_rev, farming_rev, other_rev,
  .wgt = sample_wgt)

social_welfare_impact(sample_income_data, 3:6, .by = region, .wgt = sample_wgt)
```

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