Package 'MPI'

Type Package

Title Computation of Multidimensional Poverty Index (MPI)

Version 0.1.0

Description Computing package for Multidimensional Poverty Index (MPI) using Alkire-Foster method. Given N individuals, each person has D indicators of deprivation, the package compute MPI value to represent the degree of poverty in a population. The inputs are 1) an N by D matrix, which has the element (i,j) represents whether an individual i is deprived in an indicator j (1 is deprived and 0 is not deprived), and 2) the deprivation threshold. The main output is the MPI value, which has the range between zero and one. MPI value is approaching one if almost all people are deprived in all indicators, and it is approaching zero if almost no people are deprived in any indicator. Please see Alkire S., Chatterjee, M., Conconi, A., Seth, S. and Ana Vaz (2014) <doi:10.35648/20.500.12413/11781/ii039> for The Alkire-Foster methodology.

License MIT + file LICENSE

URL https://github.com/9POINTEIGHT/MPI

BugReports https://github.com/9POINTEIGHT/MPI/issues

Encoding UTF-8

LazyData true

Depends R (>= 3.5.0)

Imports dplyr, tidyr, utils, doParallel, foreach, purrr

Suggests knitr, rmarkdown, markdown, kableExtra

VignetteBuilder knitr

RoxygenNote 7.1.2

NeedsCompilation no

Author Kittiya Kukiattikun [aut, cre],
Chainarong Chainarong [aut]

Maintainer Kittiya Kukiattikun <kittiya.contact@gmail.com>

Repository CRAN

Date/Publication 2022-04-05 09:40:10 UTC

R topics documented:

AF_Par *Alkire-Foster (AF) method in parallel mode*

Description

Multidimensional Poverty Index using Alkire-Foster (AF) method computes in parallel mode.

Usage

```
AF_Par(df, g = NULL, w = NULL, k = 1)
```

Arguments

df	A poverty data frame
g	A column name will be used to divide data into groups. When the value is NULL, the entire data is not separated into groups.(default as NULL)
w	An indicator weight vectors (default as 1)
k	A poverty cut-off. If an aggregate value of indicators of a specific person is above or equal the value of k, then this person is considered to be a poor.(default as 1)

Value

returns a `list` of `list` contains

groupname	A Grouped value from column input 'g'
total	Number of population in each group
poors	Number of deprived people in each group
H	Head count ratio, the proportion of the population that is multidimensionally deprived calculated by dividing the number of poor people with the total number of people.
A	Average deprivation share among poor people, by aggregating the proportion of total deprivations each person and dividing by the total number of poor people.
M0	Multidimensional Poverty Index (MPI)

DimentionalContribution

        indnames is poverty indicator vectors.diCont Dimensional contributions denotes the magnitude of each indicator impacts on MPI. UncensoredHCount Uncensored head count of indicator denotes the population that are deprived in that indicator. UncensoredHRatio Uncensored head count ratio of indicator denotes the proportion of the population deprived in that indicator.CensoredHCount Censored head count of indicator denotes the population that are multidimensionally poor and deprived in that indicator at the same time. CensoredHRatio Censored head count ratio of indicator denotes the proportion that is multidimensionally poor and deprived in that indicator at the same time.

pov_df   poverty data frame associated with each group.Cvector is a vector of total values of deprived indicators adjusted by weight of indicators. Each element in Cvector represents a total value of each individual. IsPoverty is a binary variable (1 and 0). 1 indicates that a person does not meet the threshold (poor person) and 0 indicates the opposite. Intensity, The intensity of a deprived indication among impoverished people is computed by dividing the number of deprived indicators by the total number of indicators.

Examples

```
# Run this function
## Not run:
output <- MPI::AF_Par(df = MPI::examplePovertydf, g = "Region")

## End(Not run)
```

AF_Seq   *Alkire-Foster (AF) method in sequential mode*

Description

Multidimensional Poverty Index using Alkire-Foster (AF) method computes in sequential mode

Usage

```
AF_Seq(df, g = NULL, w = NULL, k = 1)
```

Arguments

df   A poverty data frame

g   A column name will be used to divide data into groups. When the value is NULL, the entire data is not separated into groups.(default as NULL)

w   An indicator weight vectors (default as 1)

k   A poverty cut-off. If an aggregate value of indicators of a specific person is above or equal the value of k, then this person is considered to be a poor.(default as 1)

Value

returns a `list` of `list` contains

`groupname`	A Grouped value from column input 'g'
`total`	Number of population in each group
`poors`	Number of deprived people in each group
`H`	Head count ratio, the proportion of the population that is multidimensionally deprived calculated by dividing the number of poor people with the total number of people.
`A`	Average deprivation share among poor people, by aggregating the proportion of total deprivations each person and dividing by the total number of poor people.
`M0`	Multidimensional Poverty Index (MPI)
`DimentionalContribution`	
	`indnames` is poverty indicator vectors.`diCont` Dimensional contributions denotes the magnitude of each indicator impacts on MPI. `UncensoredHCount` Uncensored head count of indicator denotes the population that are deprived in that indicator. `UncensoredHRatio` Uncensored head count ratio of indicator denotes the proportion of the population deprived in that indicator.`CensoredHCount` Censored head count of indicator denotes the population that are multidimensionally poor and deprived in that indicator at the same time. `CensoredHRatio` Censored head count ratio of indicator denotes the proportion that is multidimensionally poor and deprived in that indicator at the same time.
`pov_df`	poverty data frame associated with each group.`Cvector` is a vector of total values of deprived indicators adjusted by weight of indicators. Each element in `Cvector` represents a total value of each individual. `IsPoverty` is a binary variable (1 and 0). 1 indicates that a person does not meet the threshold (poor person) and 0 indicates the opposite. `Intensity`, The intensity of a deprived indication among impoverished people is computed by dividing the number of deprived indicators by the total number of indicators.

Examples

```
# Run this function

output <- MPI::AF_Seq(df = MPI::examplePovertydf, g = "Region")
```

---

examplePovertydf   *A simulation poverty data frame*

Description

A simulation poverty data frame

Usage

```
examplePovertydf
```

Format

A data frame with 30 rows of individuals and 17 variables:

The first 16 variables are deprivation indicators where any indicators is equal to 1 means deprived and 0 means not deprived.

- Access.to.health.care
- Child.Mortality
- Access.to.clean.source.of.water
- Access.to.an.improve.sanatation
- Electricity
- Asset.ownership
- Cooking.Fuel
- Housing.Materials
- School.lag
- School.attendance
- Years.of.education

The last variable is simulated region from France (forth-level administrative division).

- Region

Index