Package 'mapping'

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Type Package

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Title Automatic Download, Linking, Manipulating Coordinates for Maps

Description Maps are an important tool to visualise variables distribution across different spatial objects. The mapping process requires to link the data with coordinates and then generate the correspondent map. This package provide coordinates, linking and mapping functions for an automatic, flexible and easy approach of external functions. The package provides an easy, flexible and automatic unit. Geographical coordinates are provided in the package and automatically linked with the input data to generate maps with internal provided functions or external functions. Provide an easy, flexible and automatic approach to potentially download updated coordinates, to link statistical units with coordinates and to aggregate variables based on the spatial hierarchy of units. The object returned from the package can be used for thematic maps with the build-in functions provided in mapping or with other packages already available.

Depends R (>= 3.5)

Imports tmap (>= 3.3-3), cartography (>= 2.3.0), graphics(>= 3.6.1), ggplot2 (>= 3.2.1), sf(>= 1.0-0), utils, stats, dplyr(>= 0.8.3), leaflet(>= 2.0.3), tmaptools(>= 2.0-2), viridisLite(>= 0.3.0), grid(>= 3.6.1), httr(>= 1.4.1), curl(>= 4.3), htmltools(>= 0.5.0), leafpop(>= 0.0.5), leafsync(>= 0.1.0), mapview(>= 2.7.8), geojsonio(>= 0.9.2), jsonlite(>= 1.7.1), stringr(>= 1.4.0), s2(>= 1.0.6), stringi(>= 1.6.2)

Suggests knitr, DiagrammeR(>= 1.0.6.1), rmarkdown, validate, unrepx

Repository CRAN

URL https://mappinguniverse.github.io/mapping/index.html

BugReports https://github.com/mappinguniverse/mapping/issues

LazyData yes

LazyDataCompression xz

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RoxygenNote 6.1.1

License GPL (>= 2)

NeedsCompilation no

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R topics documented:

`checkNamesDE` *Check Germany names*

Description

Check the differences between the names (or codes) given in input and the names (or codes), of the corresponding selected Germany statistical unit.

Usage

```
checkNamesDE(id, unit = c("state", "district", "municipal", "municipality"),
             matchWith = c("name", "code", "code_full"), return_logical = FALSE,
              print = TRUE, use_internet = TRUE)
```

Arguments

`id`	character vector with names or codes
`unit`	the type of European statistical unit to check
`matchWith`	the type of id to check: `"name"` if unit names `"code"` if unit code `"code_full"` if unit complete code
`return_logical`	a logical value indicating whether nomatched id are returned.
`print`	a logical value indicating whether print the nomatched names
`use_internet`	a logical value indicating wheter the coordinates are downloaded from https://github.com/mappinguniverse/geospatial. If `FALSE` the maps downloaded during package installation will be used.

Details

The function provides a check between id name or code in the dataset and the corresponding selected Germany statistical unit. `unit` starts from the largest aggregate, "state", to the smallest, "municipality".

Value

Returns a string vector with nomatched names or a boolean vector indicating whether or not the id matched.

Author(s)

Alessio Serafini

See Also

checkNamesEU, checkNamesUS, checkNamesWR, checkNamesUK

Examples

```
data("popDE")
ck <- checkNamesDE(popDE$code_state, unit = "state", matchWith = "code_full")
str(ck)
```

---

checkNamesEU *Check European names*

Description

Check the differences between the names (or codes) given in input and the names (or codes), as provided by Eurostat, of the corresponding selected European statistical unit.

Usage

```
checkNamesEU(id,
             unit = c("nuts0", "nuts1", "nuts2", "nuts3", "urau"),
             year = c("2021","2016", "2013", "2010", "2006", "2003"),
             matchWith = c("nuts", "id", "iso2", "iso3", "country_code"),
             scale = c("20", "60"), return_logical = FALSE,
             print = TRUE, use_internet = TRUE)
```

Arguments

id	character vector with names or codes
unit	the type of European statistical unit to check
year	year of the analysis
matchWith	the type of id to check:

"nuts"	if nuts names
"id"	if nuts id
"iso2"	if iso2 code
"iso3"	if iso3 code
"country_code"	if Eurostat code

scale	the scale of the map.
return_logical	a logical value indicating whether nomatched id are returned.
print	a logical value indicating whether print the nomatched names
use_internet	a logical value indicating wheter the coordinates are downloaded from https://github.com/mappinguniverse/geospatial. If FALSE the maps downloaded during package installation will be used.

Details

The function provides a check between id name in the dataset and the European statistical unit. unit starts from the largest aggregate, "nuts0" (European country), to the smallest, "nuts3". Since unit can change over the years, the year of the data has to be provided.

The single unit can be coded in different ways, with names, id or iso standard.

Value

Returns a string vector with nomatched names or a boolean vector indicating whether or not the id matched.

Author(s)

Alessio Serafini

See Also

checkNamesIT, checkNamesUS, checkNamesWR

Examples

```
data("popEU")
data("popEUnuts2")

# Chech only the country
ck <- checkNamesEU(id = popEU$GEO,
                   unit = "nuts0", matchWith = "id")
ck1 <- checkNamesEU(id = popEU$GEO, unit = "nuts0",
                    matchWith = "id", return_logical = TRUE,
                    print = FALSE)

popEU[ck1,]

ck2 <- checkNamesEU(id = popEUnuts2$GEO,
                    unit = "nuts2",
                    matchWith = "id")
```

checkNamesIT *Check Italian names*

Description

Check the differences between the names (or codes) given in input and the corresponding names (or codes), as provided by ISTAT, of the selected Italian statistical unit.

Usage

```
checkNamesIT(id,
             unit = c("ripartizione", "regione", "provincia","comune"),
             year = c("2021","2020", "2019", "2018", "2017"),
             matchWith = c("name", "code", "number"),
             return_logical = FALSE, print = TRUE, use_internet = TRUE)
```

Arguments

`id`	character vector with names or codes
`unit`	the type of Italian statistical unit to check
`year`	year of the analysis
`matchWith`	the type of id to check:

`"name"`	if unit names
`"code"`	if unit code
`"number"`	if unit number code

`return_logical`	a logical value indicating whether nomatched id are returned
`print`	a logical value indicating whether print the nomatched names
`use_internet`	a logical value indicating wheter the coordinates are downloaded from https://github.com/mappinguniverse/geospatial. If FALSE the maps downloaded during package installation will be used.

Details

The function provides a check between id name or code in the dataset and the corresponding selected Italian statistical unit. `unit` starts from the largest aggregate, "ripartizione", to the smallest, "comune". Since unit can change over the years, the year of the data has to be provided.

Value

Returns a string vector with nomatched names or a boolean vector indicating whether or not the id matched.

Author(s)

Alessio Serafini

See Also

checkNamesEU, checkNamesUS, checkNamesWR

Examples

```
data("popIT")
ck <- checkNamesIT(popIT$ID, unit = "provincia")
str(ck)


ck <- checkNamesIT(popIT$ID, unit = "provincia", return_logical = TRUE)
str(ck)
```

---

checkNamesUK *Check United Kingdom names*

Description

Check the differences between the names (or codes) given in input and the names (or codes) of the corresponding selected United Kingdom statistical unit.

Usage

```
checkNamesUK(id, unit = c("country", "county"),
             year = c("2020", "2019"),
             matchWith = c("name", "code"),
             scale = c("500", "20"), return_logical = FALSE,
             print = TRUE, use_internet = TRUE)
```

Arguments

id	character vector with names or codes
unit	the type of European statistical unit to check
year	year of the analysis
matchWith	the type of id to check:

"name"	if unit names
"code"	if unit code

scale	the scale of the map.
return_logical	a logical value indicating whether nomatched id are returned.
print	a logical value indicating whether print the nomatched names
use_internet	a logical value indicating wheter the coordinates are downloaded from https://github.com/mappinguniverse/geospatial. If FALSE the maps downloaded during package installation will be used.

Details

The function provides a check between id name or code in the dataset and the corresponding selected United Kingdom statistical unit. `unit` starts from the largest aggregate, "country", to the smallest, "county". Since unit can change over the years, the year of the data has to be provided.

Value

Returns a string vector with nomatched names or a boolean vector indicating whether or not the id matched.

Author(s)

Alessio Serafini

See Also

checkNamesEU, checkNamesUS, checkNamesWR, checkNamesDE

Examples

```
data("popUK")
ck <- checkNamesUK(popUK$name, unit = "country")
str(ck)
```

---

checkNamesUS *Check USA names*

Description

Check the differences between the names given in input and the names, as provided by United States Census of Bureau, of the corresponding USA statistical unit.

Usage

```
checkNamesUS(id,
             unit = c("country", "region", "division", "state",
                      "county", "district",
                      "district_county", "urban_area"),
             year = c("2018"), matchWith = c("name", "id", "number"),
             scale = c("20", "50", "500"), return_logical = FALSE,
             print = TRUE, use_internet = TRUE)
```

Arguments

id	character vector with names
unit	the type of USA statistical unit to check
year	year of the analysis
matchWith	the type of id to check if unit is set to "states"
scale	the scale of the map
return_logical	a logical value indicating whether nomatched id are returned.
print	a logical value indicating whether print the nomatched names
use_internet	a logical value indicating wheter the coordinates are downloaded from https://github.com/mappinguniverse/geospatial. If FALSE the maps downloaded during package installation will be used.

Details

The function provides a check between id names in the dataset and the USA unit. unit starts from the largest aggregate, "country", to the smallest, "district". Since unit can change over the years, the year of the data has to be provided.

The single state can be coded in different ways, with names, id or number.

Value

Returns a string vector with nomatched names or a boolean vector indicating whether or not the id matched.

See Also

checkNamesIT, checkNamesEU, checkNamesWR

Examples

```
data("popUS")


ck <- checkNamesUS(popUS$id, unit = "state")
```

---

checkNamesWR *Check World country names*

Description

Check the differences between the names (or codes) given in input and the names (or codes) of the worldwide countries.

Usage

```
checkNamesWR(id,
             unit = c("country", "nato", "ocde",
                      "continent", "region", "subregion",
                      "region_wb", "type_income", "type_economy"),
             matchWith = c("country", "iso2", "iso3", "iso3_eh",
                           "iso3_numeric", "iso3_un", "iso2_wb",
                           "iso3_wb", "name_formal", "name_wb"),
             res = c("low", "hi"), return_logical = FALSE,
             print = TRUE, use_internet = TRUE)
```

Arguments

id	character vector with names or codes
unit	the type of world statistical unit
matchWith	the type of id to check:

"country"	if country names
"iso2"	if iso2 code
"iso3"	if iso3 code.
"iso3_eh"	if iso3_eh code
"iso3_numeric"	if iso3 numeric code
"iso3_un"	if iso3 United Nations
"iso2_wb"	if iso2 World Bank
"iso3_wb"	if iso3 World Bank
"name_formal"	if formal names
"name_wb"	if World Bank names

res	map resolution
return_logical	a logical value indicating whether nomatched id are returned
print	a logical value indicating whether print the nomatched names
use_internet	a logical value indicating wheter the coordinates are downloaded from https://github.com/mappinguniverse/geospatial. If FALSE the maps downloaded during package installation will be used.

Details

The function provides a check between id name in the dataset and the worldwide country names. The single unit can be coded in different ways, with names, id or iso standards.

Value

Returns a string vector with no matched names or a boolean vector indicating whether or not the id matched.

Author(s)

Alessio Serafini

See Also

checkNamesIT, checkNamesEU, checkNamesUS

Examples

```
data("popWR")

ck <- checkNamesWR(id = popWR$country, matchWith = "country")
ck
ck1 <- checkNamesWR(id = popWR$country_code, matchWith = "iso3", return_logical = TRUE)
ck1
```

DE *Object of class* UK

Description

Creates an object with data and coordinates of class DE for Germany statistical units to use with mapping functions or available in other R "maps" packages.

Usage

```
DE(data, colID = NULL,
   unit = c("state", "district", "municipal", "municipality"),
   matchWith = c("name", "code", "code_full"), subset = NULL,
   add = NULL, new_var_names = NULL, aggregation_fun = sum,
   aggregation_unit = NULL, aggregation_var = NULL, facets = NULL,
   check.unit.names = TRUE, dir = NULL, use_cache = TRUE,
   print = FALSE, use_internet = TRUE, crs = NULL)
```

Arguments

data	a data.frame object with variables to display
colID	character value or columns number indicating the column with unit names or codes
unit	the type of Italian statistical unit
matchWith	the type of id to check:

"name"	if unit names
"code"	if unit code
"code_full"	if unit complete code

subset	a formula indicating the condition to subset the data, see the Details
add	a formula to add new transformed variables starting from the variables in the data
new_var_names	a character value or vector indicating the names of the new variables created in

	add
aggregation_fun	function to use when data are aggregated
aggregation_unit	variable name by which the unit are aggregated
aggregation_var	variable name with value to aggregate
facets	variable(s) name to split the data
check.unit.names	a logical value indicating if the colID names are checked with unit names
dir	local directory in which shape files are stored
use_cache	a logical value indicating whether use the cache
print	a logical value indicating whether print the nomatched names
use_internet	a logical value indicating wheter the coordinates are downloaded from https://github.com/mappinguniverse/geospatial. If FALSE the maps downloaded during package installation will be used
crs	coordinate reference system. Look at st_crs

Details

The function links (automatically) the id in the data and the coordinates for the given unit.

Since the names (or codes) provided in the data given in input must be checked with the unit names (or codes) available in the package, the check.unit.names provides a preliminary check.

subset provide an expression to subset the data, using a formula with the logical operators. For example, sub-samples of the data can be selected as follows: ~I("Variable 1" == "condition 1" & "Variable 2" != "condition 2") or for example, ~I("Variable 1" > "condition 1" | "Variable 2" != "condition 2").

Value

An object of class DE, with data and coordinates to use in functions which perform map.

See Also

EU, WR, US, UK

Examples

```
data("popDE")
de <- DE(data = popDE, colID = "code_state", unit = "state", matchWith = "code_full")


### Adding two varaibles


de2 <- DE(data = popDE, colID = "code_state", unit = "state", matchWith = "code_full",
```

```
          add = ~I(population_2020/1000) + I(population_2020/100) )


### Adding to variables and names
de3 <- DE(data = popDE, colID = "code_state", unit = "state", matchWith = "code_full",
          add = ~I(population_2020/1000) + I(population_2020/100),
          new_var_names = c("ratio1", "ratio2"))
```

EU *Object of class* EU

Description

Creates an object with data and coordinates of class EU for European countries to use with mapping functions or available in other R "maps" packages.

Usage

```
EU(data, colID = NULL,
               unit = c("nuts0","nuts1", "nuts2", "nuts3", "urau"),
               year = c("2021","2016", "2013", "2010", "2006", "2003"),
               matchWith = c("nuts", "id", "iso2", "iso3", "country_code"),
               scale = c("20", "60"), show_eu = TRUE,
               subset = NULL, add = NULL, new_var_names = NULL,
          aggregation_fun = sum, aggregation_unit = NULL, aggregation_var = NULL,
               facets = NULL, check.unit.names = TRUE, dir = NULL,
              use_cache = TRUE, print = FALSE, use_internet = TRUE, crs = NULL)
```

Arguments

data	a data.frame object with variables to display
colID	character value or columns number indicating the column with unit names
unit	the type of European statistical unit
year	year of the analysis
matchWith	the type of id to check:

"nuts"	if nuts names
"id"	if nuts id
"iso2"	if iso2 code
"iso3"	if iso3 code
"country_code"	if Eurostat code

scale	the scale of the map

show_eu	logical value set to TRUE indicating if the entire map is drawn or only the coordinates linked to the input data
subset	a formula indicating the condition to subset the data, see the Details
add	a formula to add new transformed variables starting from the variables in the data
new_var_names	a character value or vector indicating the names of the new variables created in add
aggregation_fun	function to use when data are aggregated
aggregation_unit	variable name by which the unit are aggregated
aggregation_var	variable name with value to aggregate
facets	variable(s) name to split the data
check.unit.names	a logical value indicating if the colID names are checked with unit names
dir	local directory in which shape files are stored
use_cache	a logical value indicating whether use the cache
print	a logical value indicating whether print the nomatched names
use_internet	a logical value indicating wheter the coordinates are downloaded from https://github.com/mappinguniverse/geospatial. If FALSE the maps downloaded during package installation will be used.
crs	coordinate reference system. Look at st_crs

Details

The function links (automatically) the id in the data and the coordinates for the given unit.

Since the names (or codes) provided in the data given in input must be checked with the unit names (or codes) available in the package (as provided by Eurostat), the check.unit.names provides a preliminary check.

subset provide an expression to subset the data, using a formula with the logical operators. For example, sub-samples of the data can be selected as follows: ~I("Variable 1" == "condition 1" & "Variable 2" != "condition 2") or for example, ~I("Variable 1" > "condition 1" | "Variable 2" != "condition 2").

Value

An object of class EU, with data and coordinates to use in functions which perform map.

See Also

WR, IT, US, DE, UK

Examples

```
data("popEU")

popEU <- popEU

euNuts2 <- EU(data = popEU, colID = "GEO",
              unit = "nuts2",matchWith = "id")
str(euNuts2)



euNuts2_1 <- EU(data = popEU, colID = "GEO",
                unit = "nuts2",matchWith = "id",
                add = ~I(male/total) + I(female/total))
str(euNuts2_1)

euNuts2_2 <- EU(data = popEU, colID = "GEO",
                unit = "nuts2",matchWith = "id",
                add = ~I(male/total) + I(female/total),
                new_var_names = c("Per_Male", "Per_Female"))
str(euNuts2_2)
```

FR *Object of class* FR

Description

Creates an object with data and coordinates of class FR for France statistical units to use with mapping functions or available in other R "maps" packages.

Usage

```
FR(data, colID = NULL, unit = c("region"),
   year = c("2021", "2020", "2019"), matchWith = c("name", "code"),
   subset = NULL, add = NULL, new_var_names = NULL,
   aggregation_fun = sum, aggregation_unit = NULL, aggregation_var = NULL,
   facets = NULL, check.unit.names = TRUE, dir = NULL, use_cache = TRUE,
   print = FALSE, use_internet = TRUE, crs = NULL)
```

Arguments

data	a data.frame object with variables to display
colID	character value or columns number indicating the column with unit names or codes
unit	the type of Italian statistical unit

year	year of the analysis
matchWith	the type of id to check: "name" if unit names "code" if unit code
subset	a formula indicating the condition to subset the data, see the Details
add	a formula to add new transformed variables starting from the variables in the data
new_var_names	a character value or vector indicating the names of the new variables created in add
aggregation_fun	function to use when data are aggregated
aggregation_unit	variable name by which the unit are aggregated
aggregation_var	variable name with value to aggregate
facets	variable(s) name to split the data
check.unit.names	a logical value indicating if the colID names are checked with unit names
dir	local directory in which shape files are stored
use_cache	a logical value indicating whether use the cache
print	a logical value indicating whether print the nomatched names
use_internet	a logical value indicating wheter the coordinates are downloaded from https://github.com/mappinguniverse/geospatial. If FALSE the maps downloaded during package installation will be used
crs	coordinate reference system. Look at st_crs

Details

The function links (automatically) the id in the data and the coordinates for the given unit.

Since the names (or codes) provided in the data given in input must be checked with the unit names (or codes) available in the package, the check.unit.names provides a preliminary check.

subset provide an expression to subset the data, using a formula with the logical operators. For example, sub-samples of the data can be selected as follows: ~I("Variable 1" == "condition 1" & "Variable 2" != "condition 2") or for example, ~I("Variable 1" > "condition 1" | "Variable 2" != "condition 2").

Value

An object of class FR, with data and coordinates to use in functions which perform map.

See Also

EU, WR, US, DE

Examples

```
data("popFR")



fr <- FR(data = popFR)

### Adding two varaibles


fr2 <- FR(data = popFR,
          add = ~I(population/1000) + I(population/100) )


### Adding to variables and names
fr3 <- FR(data = popFR,
          add = ~I(population/1000) + I(population/100),
          new_var_names = c("ratio1", "ratio2"))
```

---

getNamesDE *Germany names*

Description

Retrieves Germany statistical unit names.

Usage

```
getNamesDE(unit = c("state", "district", "municipal", "municipality"),
       all_levels = TRUE)
```

Arguments

`unit`	the type of statistical units
`all_levels`	a logical value indicating if all levels are returned or only the unit names

Value

A character vector or a data frame with unit names and corresponding associated levels

See Also

`getNamesIT`, `getNamesEU`, `getNamesWR`, `getNamesUK`

Examples

```
getNamesDE()


getNamesDE(unit = "district")
getNamesDE(unit = "district", all_levels = FALSE)
```

`getNamesEU` *European names*

Description

Retrieves European statistical unit names.

Usage

```
getNamesEU(year = c("2021","2016", "2013", "2010", "2006", "2003"),
       unit = c("nuts0", "nuts1", "nuts2", "nuts3"), id = FALSE, all_levels = TRUE)
```

Arguments

`year`	year of the analysis
`unit`	the type of statistical unit
`id`	boolean value indicating whether the ids are returned instead of names
`all_levels`	a logical value indicating if all levels are returned or only the unit names

Value

A character vector or a data frame with unit names and corresponding associated levels.

See Also

`getNamesIT`, `getNamesUS`, `getNamesWR`, `getNamesUK`, `getNamesDE`

Examples

```
getNamesEU()

getNamesEU(unit = "nuts1")
getNamesEU(unit = "nuts1", all_levels = FALSE, id = FALSE)
getNamesEU(unit = "nuts1", all_levels = FALSE, id = TRUE)
```

getNamesFR *France names*

Description

Retrieves France statistical unit names.

Usage

```
getNamesFR(year = c("2021", "2020", "2019"),
           unit = c("region"), all_levels = TRUE)
```

Arguments

year	year of the analysis
unit	the type of statistical units
all_levels	a logical value indicating if all levels are returned or only the unit names

Value

A character vector or a data frame with unit names and corresponding associated levels

See Also

getNamesIT, getNamesEU, getNamesWR, getNamesDE

Examples

```
getNamesFR()
```

```
getNamesFR(all_levels = FALSE)
```

getNamesIT *Italian names*

Description

Retrieves Italian statistical unit names.

Usage

```
getNamesIT(year = c("2021","2020", "2019", "2018", "2017"),
       unit = c("ripartizione", "regione", "provincia", "comune"), all_levels = TRUE)
```

Arguments

year	year of the analysis
unit	the type of Italian statistical unit
all_levels	a logical value indicating if all levels are returned or only the unit names

Value

A character vector or a data frame with unit names and corresponding associated levels.

See Also

getNamesEU, getNamesUS, getNamesWR, getNamesUK, getNamesDE

Examples

```
getNamesIT()
getNamesIT(unit = "provincia")
getNamesIT(unit = "provincia", all_levels = FALSE)
```

getNamesUK *United Kingdom names*

Description

Retrieves United Kingdom statistical unit names.

Usage

```
getNamesUK(year = c("2020", "2019"),
           unit = c("country", "county"),
           all_levels = TRUE)
```

Arguments

year	year of the analysis
unit	the type of statistical units
all_levels	a logical value indicating if all levels are returned or only the unit names

Value

A character vector or a data frame with unit names and corresponding associated levels

See Also

getNamesIT, getNamesEU, getNamesWR, getNamesDE

Examples

```
getNamesUK()


getNamesUS(unit = "county")
getNamesUK(unit = "county", all_levels = FALSE)
```

---

getNamesUS *USA names*

Description

Retrieves USA statistical unit names.

Usage

```
getNamesUS(year = "2018",
           unit = c("region", "division","state", "county",
                    "district", "district_county", "urban_area"),
           id = FALSE, all_levels = TRUE)
```

Arguments

year	year of the analysis
unit	the type of statistical units
id	boolean value indicating whether the ids are returned instead of names
all_levels	a logical value indicating if all levels are returned or only the unit names

Value

A character vector or a data frame with unit names and corresponding associated levels

See Also

getNamesIT, getNamesEU, getNamesWR, getNamesUK, getNamesDE

Examples

```
getNamesUS()


getNamesUS(unit = "state")
getNamesUS(unit = "state", all_levels = FALSE)

getNamesUS(unit = "county")
getNamesUS(unit = "county", all_levels = FALSE)
```

---

getNamesWR *World countries names*

Description

Retrieves world country names, ids and iso.

Usage

```
getNamesWR(unit = c("all","country", "name_formal",
                    "name_wb", "iso2", "iso3",
                    "iso3_eh", "iso3_numeric", "iso3_un",
                    "iso2_wb", "iso3_wb"))
```

Arguments

unit	the type of names

Value

A character vector or a data frame with unit names and corresponding associated levels.

See Also

getNamesIT, getNamesUS, getNamesEU, getNamesUK, getNamesDE

Examples

```
getNamesWR()
getNamesWR("iso3")
```

IT *Object of class* IT

Description

Creates an object with data and coordinates of class IT for Italy to use with mapping functions or available in other R "maps" packages.

Usage

```
IT(data, colID = NULL,
              unit = c("none","ripartizione", "regione", "provincia", "comune"),
               year = c("2021","2020","2019", "2018", "2017"),
               matchWith = c("name", "code","number"),
               show_it = TRUE, subset = NULL, add = NULL,
               new_var_names = NULL, aggregation_fun = sum,
               aggregation_unit = NULL, aggregation_var = NULL,
               facets = NULL, check.unit.names = TRUE, dir = NULL,
              use_cache = TRUE, print = FALSE, use_internet = TRUE, crs = NULL)
```

Arguments

data	a data.frame object with variables to display
colID	character value or columns number indicating the column with unit names or codes
unit	the type of Italian statistical unit
year	year of the analysis
matchWith	the type of id to check:

"name"	if unit names
"code"	if unit code
"number"	if unit number code

show_it	logical value set to TRUE indicating if the entire map is drawn or only the coordinates linked to the input data
subset	a formula indicating the condition to subset the data, see the Details
add	a formula to add new transformed variables starting from the variables in the data
new_var_names	a character value or vector indicating the names of the new variables created in add

`aggregation_fun`
: function to use when data are aggregated

`aggregation_unit`
: variable name by which the unit are aggregated

`aggregation_var`
: variable name with value to aggregate

`facets`
: variable(s) name to split the data

`check.unit.names`
: a logical value indicating if the `colID` names are checked with `unit` names

`dir`
: local directory in which shape files are stored

`use_cache`
: a logical value indicating whether use the cache

`print`
: a logical value indicating whether print the nomatched names

`use_internet`
: a logical value indicating wheter the coordinates are downloaded from https://github.com/mappinguniverse/geospatial. If `FALSE` the maps downloaded during package installation will be used

`crs`
: coordinate reference system. Look at `st_crs`

Details

The function links (automatically) the id in the `data` and the coordinates for the given `unit`.

Since the names (or codes) provided in the `data` given in input must be checked with the `unit` names (or codes) available in the package (as provided by ISTAT), the `check.unit.names` provides a preliminary check.

`subset` provide an expression to subset the `data`, using a formula with the logical operators. For example, sub-samples of the data can be selected as follows: `~I("Variable 1" == "condition 1" & "Variable 2" != "condition 2")` or for example, `~I("Variable 1" > "condition 1" | "Variable 2" != "condition 2")`.

Value

An object of class `IT`, with data and coordinates to use in functions which perform map.

See Also

`EU`, `WR`, `US`, `DE`, `UK`

Examples

```
data("popIT")

it <- IT(data = popIT, unit = "provincia", year = "2019")

### Adding two varaibles


it2 <- IT(data = popIT, unit = "provincia", year = "2019",
```

```
          add = ~I(maschi/totale) + I(femmine/totale) )


### Adding to variables and names
it3 <- IT(data = popIT, unit = "provincia", year = "2019",
          add = ~I(maschi/totale) + I(femmine/totale),
          new_var_names = c("Per_Maschi", "Per_Femmine") )
```

`loadCoordDE` *Get Germany coordinates*

Description

Loads and returns names, id, and coordinates for Germany statistical unit, to use with `mapping` functions and other "map" functions that accept an `sf` object.

Usage

```
loadCoordDE(unit = c("state", "district", "municipal", "municipality"),
            unit_subset = NULL, matchWith = NULL, dir = NULL,
            use_cache = TRUE, use_internet = TRUE, crs = NULL)
```

Arguments

`unit`	the type of Italian statistical unit to link
`unit_subset`	character vector of unit names to extract
`matchWith`	the type of id
`dir`	local directory in which shape files are stored
`use_cache`	a logical value indicating whether to use the cache
`use_internet`	a logical value indicating wheter the coordinates are downloaded from https://github.com/mappinguniverse/geospatial. If `FALSE` the maps downloaded during package installation will be used
`crs`	coordinate reference system. Look at `st_crs`

Details

Coordinates are download from the Github repo https://github.com/mappinguniverse/geospatial from DE folder https://github.com/mappinguniverse/geospatial/tree/master/DE.

If `unit` is not specified, state borders are loaded.

Value

A data.frame object with column indicating names, id, and the geometry to map.

Author(s)

Alessio Serafini

References

https://github.com/mappinguniverse/geospatial

See Also

loadCoordEU, loadCoordWR, loadCoordUS, loadCoordUK

Examples

```
DE_coords = loadCoordDE(unit = "state")
str(DE_coords)



## Load subset

coords_de <- loadCoordDE(unit = "district",
                         unit_subset = "bayern",
                         matchWith = "state")
```

---

loadCoordEU *Get European coordinates*

Description

Loads and returns names, id, and coordinates for European countries, to use with `mapping` functions and other "map" functions that accept an `sf` object.

Usage

```
loadCoordEU(unit = c("nuts0", "nuts1", "nuts2", "nuts3", "urau"),
            year = c("2021","2016", "2013", "2010", "2006", "2003"),
            scale = c("20", "60"), unit_subset = NULL,
            matchWith = NULL, dir = NULL,
            use_cache = TRUE, use_internet = TRUE, crs = NULL)
```

Arguments

unit	the type of European statistical unit to link
year	year of the analysis
scale	the scale of the map
unit_subset	character vector of unit names to extract
matchWith	the type of id
dir	local directory in which shape files are stored
use_cache	a logical value indicating whether to use the cache
use_internet	a logical value indicating wheter the coordinates are downloaded from https://github.com/mappinguniverse/geospatial. If FALSE the maps downloaded during package installation will be used
crs	coordinate reference system. Look at st_crs

Details

Coordinates are download from the Github repo https://github.com/mappinguniverse/geospatial from EU folder https://github.com/mappinguniverse/geospatial/tree/master/EU.

If unit is not specified, borders of the European countries are loaded.

Value

A data.frame object with columns indicating names, ids, iso and the geometries to map.

Author(s)

Alessio Serafini

References

https://github.com/mappinguniverse/geospatial

See Also

loadCoordIT, loadCoordWR, loadCoordDE, loadCoordUK

Examples

```
EU_coords = loadCoordEU(unit = "nuts0")
str(EU_coords)

coords_eu_it_de <- loadCoordEU(unit = "nuts0", unit_subset = c("italy", "germany"))
str(coords_eu_it_de)
```

loadCoordFR *Get France coordinates*

Description

Loads and returns names, id, and coordinates for France statistical unit, to use with mapping functions and other "map" functions that accept an sf object.

Usage

```
loadCoordFR(unit = c("region"), year = c("2021", "2020", "2019"),
            unit_subset = NULL, matchWith = NULL, dir = NULL,
            use_cache = TRUE, use_internet = TRUE, crs = NULL)
```

Arguments

unit	the type of Italian statistical unit to link
year	year of the analysis
unit_subset	character vector of unit names to extract
matchWith	the type of id
dir	local directory in which shape files are stored
use_cache	a logical value indicating whether to use the cache
use_internet	a logical value indicating wheter the coordinates are downloaded from https://github.com/mappinguniverse/geospatial. If FALSE the maps downloaded during package installation will be used
crs	coordinate reference system. Look at st_crs

Details

Coordinates are download from the Github repo https://github.com/mappinguniverse/geospatial from FR folder https://github.com/mappinguniverse/geospatial/tree/master/FR.

If unit is not specified, country borders are loaded.

Value

A data.frame object with column indicating names, id, and the geometry to map.

Examples

```
FR_coords = loadCoordFR(unit = "region", year = "2020")
str(FR_coords)
```

loadCoordIT *Get Italian coordinates*

Description

Loads and returns names, ids, and coordinates for Italian statistical unit, ready to use with mapping functions and other "map" functions that accept an sf object.

Usage

```
loadCoordIT(unit = c("none","ripartizione", "regione", "provincia","comune"),
            year = c("2021","2020", "2019", "2018", "2017"),
            unit_subset = NULL, matchWith = NULL,
            dir = NULL, use_cache = TRUE, use_internet = TRUE, crs = NULL)
```

Arguments

unit	the type of Italian statistical unit to link
year	year of the analysis
unit_subset	character vector of unit names to extract
matchWith	the type of id
dir	local directory in which shape files are stored
use_cache	a logical value indicating whether to use the cache
use_internet	a logical value indicating wheter the coordinates are downloaded from https://github.com/mappinguniverse/geospatial. If FALSE the maps downloaded during package installation will be used
crs	coordinate reference system. Look at st_crs

Details

Coordinates are download from the Github repo https://github.com/mappinguniverse/geospatial from IT folder https://github.com/mappinguniverse/geospatial/tree/master/IT.

unit="none" (default) indicates that the border of Italy is returned.

Value

A data.frame object with column indicating names, id, and the geometry to map.

Author(s)

Alessio Serafini

References

https://github.com/mappinguniverse/geospatial

See Also

loadCoordEU, loadCoordWR, loadCoordUS, loadCoordDE, loadCoordUK

Examples

```
IT_coords = loadCoordIT(unit = "regione", year = "2020")
str(IT_coords)



## Italy

IT_coords = loadCoordIT()
str(IT_coords)


coords_it<- loadCoordIT(unit = "regione", unit_subset = c(5, 10), matchWith = "number")
str(coords_it)
```

---

loadCoordUK *Get United Kingdom coordinates*

Description

Loads and returns names, id, and coordinates for United Kingdom statistical unit, to use with mapping functions and other "map" functions that accept an sf object.

Usage

```
loadCoordUK(unit = c("country", "county"),
            year = c("2020", "2019"), scale = c("500", "20"),
            unit_subset = NULL, matchWith = NULL, dir = NULL,
            use_cache = TRUE, use_internet = TRUE, crs = NULL)
```

Arguments

unit	the type of Italian statistical unit to link
year	year of the analysis
scale	the scale of the map
unit_subset	character vector of unit names to extract
matchWith	the type of id
dir	local directory in which shape files are stored

use_cache	a logical value indicating whether to use the cache
use_internet	a logical value indicating wheter the coordinates are downloaded from https://github.com/mappinguniverse/geospatial. If FALSE the maps downloaded during package installation will be used
crs	coordinate reference system. Look at st_crs

Details

Coordinates are download from the Github repo https://github.com/mappinguniverse/geospatial from UK folder https://github.com/mappinguniverse/geospatial/tree/master/UK.

If unit is not specified, country borders are loaded.

Value

A data.frame object with column indicating names, id, and the geometry to map.

Author(s)

Alessio Serafini

References

https://github.com/mappinguniverse/geospatial

See Also

loadCoordEU, loadCoordWR, loadCoordUS, loadCoordDE

Examples

```
UK_coords = loadCoordUK(unit = "country", year = "2020")
str(UK_coords)



## Load subset

coords_uk <- loadCoordUK(unit = "county", unit_subset = "england", matchWith = "country")
coords_uk <- loadCoordUK(unit = "county", unit_subset = "hartlepool", matchWith = "county")
```

loadCoordUS *Get USA coordinates*

Description

Loads and returns names, ids, and coordinates for USA, to use with mapping functions and other "map" functions that accept an sf object.

Usage

```
loadCoordUS(unit = c("country", "region", "division", "state",
                     "county", "district", "district_county", "urban_area"),
            year = c("2018"), scale = c("20", "50", "500"),
            unit_subset = NULL, matchWith = NULL, dir = NULL,
            use_cache = TRUE, use_internet = TRUE, crs = NULL)
```

Arguments

unit	type of USA unit to link
year	year of the analysis
scale	the scale of the map
unit_subset	character vector of unit names to extract
matchWith	the type of id
dir	local directory in which shape files are stored
use_cache	a logical value indicating whether to use the cache
use_internet	a logical value indicating wheter the coordinates are downloaded from https://github.com/mappinguniverse/geospatial. If FALSE the maps downloaded during package installation will be used
crs	coordinate reference system. Look at st_crs

Details

Coordinates are downloaded from the Github repo https://github.com/mappinguniverse/geospatial from US folder https://github.com/mappinguniverse/geospatial/tree/master/US.

If unit is not specified, borders of the USA countries are loaded.

Value

A data.frame object with columns indicating names, ids, and the geometry to map.

Author(s)

Alessio Serafini

References

https://github.com/mappinguniverse/geospatial

See Also

loadCoordIT, loadCoordWR, loadCoordDE, loadCoordUK, , loadCoordEU

Examples

```
US_coords = loadCoordUS(unit = "state")
str(US_coords)


coords_us<- loadCoordUS(unit = "state", unit_subset = c("Florida", "California"))
```

---

loadCoordWR *Get worldwide countries coordinates*

Description

Loads and returns names, ids, iso, and coordinates for world countries, ready to use with mapping functions and other "map" functions that accept an sf object.

Usage

```
loadCoordWR(unit = c("country", "nato", "ocde",
                     "continent", "region", "subregion",
                     "region_wb", "type_income", "type_economy"),
            res = c("low", "hi"), unit_subset = NULL,
            matchWith = NULL, dir = NULL, use_cache = TRUE,
            use_internet = TRUE, crs = NULL)
```

Arguments

unit	the type of world statistical unit
res	resolution
unit_subset	character vector of unit names to extract
matchWith	the type of id
dir	local directory in which shape files are stored
use_cache	a logical value indicating whether to use the cache
use_internet	a logical value indicating wheter the coordinates are downloaded from https://github.com/mappinguniverse/geospatial. If FALSE the maps downloaded during package installation will be used.
crs	coordinate reference system. Look at st_crs

Details

Coordinates are download from the Github repo https://github.com/mappinguniverse/geospatial from world folder https://github.com/mappinguniverse/geospatial/tree/master/world.

Value

A data.frame object with column indicating names, id, iso and the geometry to map.

Author(s)

Alessio Serafini

References

https://github.com/mappinguniverse/geospatial

See Also

loadCoordIT, loadCoordEU, loadCoordUS, loadCoordDE, loadCoordUK

Examples

```
WR_coords = loadCoordWR(res = "low")
str(WR_coords, 1)


WR_ocde = loadCoordWR(unit = "ocde",res = "low")
str(WR_ocde, 1)

WR_continent = loadCoordWR(unit = "continent",res = "low")
str(WR_continent, 1)
```

---

mapPalette *Color palette*

Description

Returns different color palette

Usage

```
mapPalette(type, nclass = NULL )
```

Arguments

type	character value indicating the color palette
nclass	number of classes

Value

A character vector with palettes.

---

mapping *Static maps*

Description

Function to produce static maps from an object of class sf, IT, EU, US, or WR.

Usage

```
mapping(data = NULL, var = NULL, colID = NULL,
        type = c("static", "interactive"),
        typeStatic = c("tmap", "choro.cart", "typo","bar"),
        add_text = NULL, subset = NULL, facets = NULL, aggregation_fun = sum,
        aggregation_unit = NULL, options = mapping.options(), ...)
```

Arguments

data	an object of class sf, IT, EU, US, or WR
var	character value(s) or columns number(s) indicating the variable to plot
colID	character value or columns number indicating the column with unit names
type	if generates static or interactive map
typeStatic	type of static map
add_text	character name indicating the column with text labels
subset	a formula indicating the condition to subset the data. See the details
facets	variable(s) name to split the data
aggregation_fun	function to use when data are aggregated
aggregation_unit	variable name by which the unit are aggregate
options	a list with options using mapping.options function
...	further arguments

Details

It is a general function to map data. We can externally provide the coordinates with the variable to map, or the coordinates and the data to link.

If coordinates are provided and `data` is `NULL`, the function map the `var` in `coordinates`. If `data` is not `NULL`, then the function link data and coordinates, and the `var` is get from the data provided in input. If only `data` are provided without coordinates, the function search the `colID` among the the coordinates dataset provided by https://github.com/mappinguniverse/geospatial, to link the ids with coordinates. For search look at `SearchNames`

Value

Returns a map. For `tmap` type, the function also returns a `tmap` object.

References

Giraud, T. and Lambert, N. (2016). cartography: Create and Integrate Maps in your R Workflow. JOSS, 1(4). doi: 10.21105/joss.00054.

Pebesma, E., 2018. Simple Features for R: Standardized Support for Spatial Vector Data. The R Journal 10 (1), 439-446, https://doi.org/10.32614/RJ-2018-009

Tennekes M (2018). "tmap: Thematic Maps in R." _Journalstatisticaltical Software_, *84*(6), 1-39. doi: 10.18637/jss.v084.i06 (URL: https://doi.org/10.18637/jss.v084.i06).

See Also

mappingWR,mappingIT, mappingEU

Examples

```
library(dplyr)
library(sf)

data("popIT")
popIT <- popIT
coords <- loadCoordIT(unit = "provincia", year = '2019')
cr <- left_join(coords, popIT, by = c( "provincia" = "ID"))

###############
#   Statics   #
###############

mapping(cr)


mapping(cr, var = "maschi")


nc = st_read(system.file("shape/nc.shp", package="sf"))
class(nc)
mapping(nc)
```

```
mapping(nc, var = "AREA", options = mapping.options(legend.position = c("left", "bottom")))


###############
# Interactive #
###############

mapping(cr, type = "interactive")
mapping(cr, var = "maschi", type = "interactive")

nc = st_read(system.file("shape/nc.shp", package="sf"))
class(nc)
mapping(nc, type = "interactive")
mapping(nc, var = "AREA", type = "interactive")
```

`mapping.options` *Default values for* **mapping** *functions*

Description

Set or retrieve default values used in mapping functions availables in **mapping** package.

Usage

```
mapping.options(...)
```

Arguments

`...`	A single character vector, or a named list. The form `name = value` can be used to change a single option or `list(name1 = value1, name2 = value2)` can be used to change several arguments. If no arguments are provided, then the function returns all the current options.

Details

The function change globally the option for the current R session, and locally if used in the `mapping` function, with the `options` argument, for example, `options = mapping.options(legend.frame = FALSE, "title.position" = "left")`.

Many different options are used for the function in **tmap** package. For more details, look at `tm_layout`, `tm_borders`, and `tm_fill`.

Available options are the following:

`palette.cont = "YlGnBu"` palette for countinuous data

`palette.cat = "Accent"` palette for categorical data

`palette.cont.vector = NULL` a string vector with color names for countinuous data

`palette.cont.vector = NULL` a string vector with color names for categorical data

`nclass = 5` number of classes for countinuous data

`check.unit.names = TRUE` a ogical value indicating whether the input id names are checked before the link with the coordinates

`use_cache = TRUE` a ogical value indicating whether the cache is used to load the shape file

`use_internet = TRUE` a ogical value indicating whether the data are downloaded from internet or whether a internet connection is available

`alpha = 1` transparency

`breaks = NULL` a numerical value indicating the breaks

`interval.closure = "left"` a ogical value indicating where the interval are closed

`labels = NULL` a character vector with labels of the classes

`NA.color = "grey"` color for `NA` values

`NA.text = "Missing"` label for `NA` values

`col.style = "order"` type of color scale for numeric data. For other method look ad `tm_fill`

`map.frame = TRUE` a logical value indicating whether the frame is drawn

`border.lwd = 1` line width of the borders

`border.col = "black"` color of the borders

`border.type = "solid"` border type

`border.alpha = NA` trasparency of the borders

`title = NULL` main title

`title.position = "center"` main title position

`title.color = "black"` color of main title

`title.fontface = 1` main title font face

`title.size = 1` main title size

`legend.title = NA` title of the legend

`legend.show = TRUE` a logical value indicating whether include the legend

`legend.only = FALSE` a logical value indicating whether include the legend without map

`legend.position = c("right","top")` legend position

`legend.digits = 5` legend digits

`legend.outside = FALSE` a logical value indicating whether the legend is included outside the map

`legend.outside.facetes = TRUE` a logical value indicating whether the legend is included outside the facetes

`legend.width = 1` width of the legend

`legend.title.position = c("right","top")` legend title position

`legend.title.size = 1` legend title size

`legend.title.fontface = 1` legend title font space

legend.title.color = "black" legend title color

legend.text.color = "black" legend title color

legend.text.size = 0.5 legend title color size

legend.text.align = "left"

legend.text.fontface = 1

legend.frame = TRUE a logical value indicating whether the frame is drawn for the legend

legend.decimal.mark = "."

legend.format = "fg"

legend.big.mark = ","

legend.text.separator = "-"

facets.free.scale = FALSE

facetes.cols = NA

facetes.rows = NA

interactive.tiles = "CartoDB.Positron"

interactive.popup.vars = NULL

interactive.popup.id = TRUE

interactive.popup.closeButton = TRUE

interactive.popup.width.max = 150

interactive.popup.width.min = 35

interactive.highlight.weight = 3

interactive.highlight.color = "black"

interactive.highlight.alpha = 1

interactive.highlight.front = TRUE

interactive.control.collapse = TRUE

interactive.layer.control.position = c("left", "top")

interactive.hovered.id = TRUE

text.size = 0.5

text.col = "black"

text.fontface = 1

text.shadow = FALSE

text.alpha = NA

credits.source = NULL

credits.author = NULL

credits.size = 0.7

credits.fontface = NA

credits.color = "black"

credits.align = "left"

`credits.position` = `c("left", "bottom")`

`popup.vars` = `NA` a character vector indicating the variable to popoup in interactive maps

`compass` = `NULL` a character vector indicatin the type of compass (look at `tm_layout`)

`style` = `"white"` style (look at `tm_style`)

`crs` = `NULL`

Options may be reset using `mapping.options()`.

Value

Return a list with options.

References

Tennekes M (2018). "tmap: Thematic Maps in R." _Journalstatisticaltical Software_, *84*(6), 1-39. doi: 10.18637/jss.v084.i06 (URL: https://doi.org/10.18637/jss.v084.i06).

Examples

```
mapping.options()

# A single options

mapping.options("title.position")

# Globally

mapping.options("title.position" = "left")
mapping.options("title.position")
```

`mappingDE` *Static maps for Germany*

Description

Function to produce static maps for Germany statistical unit.

Usage

```
mappingDE(data, var = NULL, colID = NULL,
          type = c("static", "interactive"),
          typeStatic = c("tmap", "choro.cart", "typo", "bar"),
          unit = c("state", "district", "municipal", "municipality"),
          matchWith = c("name", "code", "code_full"), dir = NULL,
          add_text = NULL, subset = NULL, facets = NULL,
          aggregation_fun = sum, aggregation_unit = NULL,
          options = mapping.options())
```

Arguments

data	a data.frame object with variables to display or a DE object produced by DE function. If object of class DE, arguments unit, year, and matchWith will be ignored
var	character value(s) or columns number(s) indicating the variable to plot
colID	character value or columns number indicating the column with unit names
type	if generates static or interactive map
typeStatic	type of static map
unit	the type of Italian statistical unit
matchWith	the type of id to check:

"name"	if unit names
"code"	if unit code
"code_full"	if unit complete code

dir	local directory in which shape files are stored
add_text	character name indicating the column with text labels
subset	a formula indicating the condition to subset the data. See the details section
facets	variable(s) name to split the data
aggregation_fun	function to use when data are aggregated
aggregation_unit	variable name by which the unit are aggregated
options	a list with options using mapping.options function

Details

If data is a object of class "DE" generated using the DE function, the argument unit, because the object already contains the coordinates.

The aggregation_unit provides an aggregation for a user specified variable in data, or for larger statistical unit, automatically provided when the function link the data with the coordinates. For example, if data are of type municipal, we will have variables for larger aggregate unit, that is district and state variables. Look at DE for more details.

subset provide an expression to subsetting the data using a formula, with the logical operators. For example data can be subsetting as follows: ~I("Variable 1" == "condition 1" & "Variable 2" != "condition 2") or for example, ~I("Variable 1" > "condition 1" | "Variable 2" != "condition 2").

Value

Return a map. For tmap type, the function also returns a tmap object.

See Also

mappingWR,mappingEU, mappingUS, mappingUK

Examples

```
data("popDE")

de <- DE(data = popDE, colID = "code_state",
         unit = "state", matchWith = "code_full",
         check.unit.names = FALSE)


###############
#   Statics   #
###############

mappingDE(data = de, var = "population_2020")


mappingDE(data = de, var = "population_2020",
            subset = ~I(state == "bayern"))




###############
# Interactive #
###############

mappingDE(data = de, var = "population_2020", type = "interactive")




  mappingDE(data = de, var = "population_2020",
            subset = ~I(state == "bayern"),
            type = "interactive")
```

`mappingEU` *Static maps for Europe*

Description

Function to produce static maps for European statistical unit.

Usage

```
mappingEU(data, var = NULL, colID = NULL,
          type = c("static", "interactive"),
```

```
typeStatic = c("tmap", "choro.cart", "typo", "bar"),
unit = c("nuts0", "nuts1", "nuts2", "nuts3", "urau"),
year = c("2021","2016", "2013", "2010", "2006", "2003"),
matchWith = c("nuts", "id", "iso2", "iso3", "country_code"),
scale = c("20", "60"), dir = NULL, show_eu = TRUE,
add_text = NULL, subset = NULL, facets = NULL,
aggregation_fun = sum, aggregation_unit = NULL,
options = mapping.options())
```

Arguments

data	a data.frame object with variables to display or a EU object produced by EU function
var	character value(s) or columns number(s) indicating the variable to plot
colID	character value or columns number indicating the column with unit names
type	if generates static or interactive map
typeStatic	type of static map
unit	the type of European statistical unit to check
year	year of the unit
matchWith	the type of id to check:

"nuts"	if nuts names).
"id"	if nuts id.
"iso2"	if iso2 code.
"iso3"	if iso3 code.
"country_code"	if Eurostat code

scale	the scale of a map
dir	local directory in which shape files are stored
show_eu	logical value set to TRUE indicating if the map entire map is drawn or only the coordinates linked to the input data
add_text	character name indicating the column with text labels
subset	a formula indicating the condition to subset the data. See the details
facets	variable(s) name to split the data
aggregation_fun	function to use when data are aggregated
aggregation_unit	variable name by which the unit are aggregated
options	a list with options using mapping.options function

Details

If data is a object of class "EU" generated using the EU function, the arguments unit, year, and matchWith are ignored, because the object already contains the coordinates.

The aggregation_unit provides an aggregation for a user specified variable in data, or for larger statistical unit, automatically provided when the function link the data with the coordinates. For example, if data are of type nut2, we will have variables for larger aggregate unit, that is nuts1 and nuts0 variables. Look at EU for more details.

subset provide an expression to subsetting the data using a formula, with the logical operators. For example data can be subsetting as follows: ~I("Variable 1" == "condition 1" & "Variable 2" != "condition 2") or for example, ~I("Variable 1" > "condition 1" | "Variable 2" != "condition 2").

Value

Returns a map. For tmap type, the function also returns a tmap object.

References

Giraud, T. and Lambert, N. (2016). cartography: Create and Integrate Maps in your R Workflow. JOSS, 1(4). doi: 10.21105/joss.00054.

Pebesma, E., 2018. Simple Features for R: Standardized Support for Spatial Vector Data. The R Journal 10 (1), 439-446, https://doi.org/10.32614/RJ-2018-009

Tennekes M (2018). "tmap: Thematic Maps in R." _Journalstatisticaltical Software_, *84*(6), 1-39. doi: 10.18637/jss.v084.i06 (URL: https://doi.org/10.18637/jss.v084.i06).

See Also

mappingWR,mappingIT,mappingUS,mappingDE,mappingUK

Examples

```
data("popEU")
popEU <- popEU
euNuts2 <- EU(data = popEU, colID = "GEO",unit = "nuts2",matchWith = "id")

###############
#   Statics   #
###############


mappingEU(data = euNuts2, var = "total")
mappingEU(data = euNuts2, var = c("male","female"))

mappingEU(data = euNuts2, var = "total", subset = ~I(nuts0_id == "IT"))
mappingEU(data = euNuts2, var = "total",
          subset = ~I(nuts0_id == "ES"), facets = "nuts2")


mappingEU(data = euNuts2, var = "total", typeStatic = "choro.cart")

mappingEU(data = euNuts2, var = "total", aggregation_unit = "nuts0", aggregation_fun = sum)
```

```
mappingEU(data = euNuts2, var = c("male","female"),
          aggregation_unit = "nuts0", aggregation_fun = sum)

### Europe

eu1 <- loadCoordEU()
mappingEU(data = eu1)



################
# Interactive #
################

mappingEU(data = euNuts2, var = "total", type = "interactive")
mappingEU(data = euNuts2, var = c("male","female"), type = "interactive")

mappingEU(data = euNuts2, type = "interactive",
          var = "total", subset = ~I(nuts0_id == "IT"))
mappingEU(data = euNuts2, var = "total", type = "interactive",
          subset = ~I(nuts0_id == "ES"))


mappingEU(data = euNuts2, var = "total", type = "interactive")

mappingEU(data = euNuts2, var = "total", type = "interactive",
          aggregation_unit = "nuts0",
          aggregation_fun = sum)
mappingEU(data = euNuts2, var = c("male","female"), type = "interactive",
          aggregation_unit = "nuts0", aggregation_fun = sum)
```

`mappingFR` *Static maps for France*

Description

Function to produce static maps for France statistical unit.

Usage

```
mappingFR(data, var = NULL, colID = NULL,
          type = c("static", "interactive"),
          typeStatic = c("tmap", "choro.cart", "typo", "bar"),
          unit = c("region"), year = c("2021", "2020", "2019"),
          matchWith = c("name", "code"),
          dir = NULL, add_text = NULL, subset = NULL, facets = NULL,
          aggregation_fun = sum, aggregation_unit = NULL,
          options = mapping.options())
```

Arguments

data	a data.frame object with variables to display or a UK object produced by FR function. If object of class FR, arguments unit, year, and matchWith will be ignored
var	character value(s) or columns number(s) indicating the variable to plot
colID	character value or columns number indicating the column with unit names
type	if generates static or interactive map
typeStatic	type of static map
unit	the type of Italian statistical unit
year	year of the unit
matchWith	the type of id to check: "name" if unit names). "code" if unit code
dir	local directory in which shape files are stored
add_text	character name indicating the column with text labels
subset	a formula indicating the condition to subset the data. See the details section
facets	variable(s) name to split the data
aggregation_fun	function to use when data are aggregated
aggregation_unit	variable name by which the unit are aggregated
options	a list with options using mapping.options function

Details

If data is a object of class "UK" generated using the UK function, the arguments unit, and year are ignored, because the object already contains the coordinates.

subset provide an expression to subsetting the data using a formula, with the logical operators. For example data can be subsetting as follows: ~I("Variable 1" == "condition 1" & "Variable 2" != "condition 2") or for example, ~I("Variable 1" > "condition 1" | "Variable 2" != "condition 2").

Value

Return a map. For tmap type, the function also returns a tmap object.

References

Giraud, T. and Lambert, N. (2016). cartography: Create and Integrate Maps in your R Workflow. JOSS, 1(4). doi: 10.21105/joss.00054.

Pebesma, E., 2018. Simple Features for R: Standardized Support for Spatial Vector Data. The R Journal 10 (1), 439-446, https://doi.org/10.32614/RJ-2018-009

Tennekes M (2018). “tmap: Thematic Maps in R.” _Journalstatisticaltical Software_, *84*(6), 1-39. doi: 10.18637/jss.v084.i06 (URL: https://doi.org/10.18637/jss.v084.i06).

See Also

mappingWR,mappingEU, mappingUS, mappingDE

Examples

```
data("popFR")



fr <- FR(data = popFR)

###############
#   Statics   #
###############

mappingFR(data = fr, var = "population", subset = ~I(region == "corse"))
```

---

mappingIT *Static maps for Italy*

Description

Function to produce static maps for Italian statistical unit.

Usage

```
mappingIT(data, var = NULL, colID = NULL,
          type = c("static", "interactive"),
          typeStatic = c("tmap", "choro.cart", "typo", "bar"),
          unit = c("none", "ripartizione", "regione", "provincia", "comune"),
          year = c("2021", "2020", "2019", "2018", "2017"),
          matchWith = c("name", "code", "number"), dir = NULL, show_it = TRUE,
          add_text = NULL, subset = NULL, facets = NULL,
          aggregation_fun = sum, aggregation_unit = NULL,
          options = mapping.options())
```

Arguments

data	a data.frame object with variables to display or a IT object produced by IT function. If object of class IT, arguments unit, year, and matchWith will be ignored
var	character value(s) or columns number(s) indicating the variable to plot
colID	character value or columns number indicating the column with unit names
type	if generates static or interactive map
typeStatic	type of static map
unit	the type of Italian statistical unit
year	year of the unit
matchWith	the type of id to check: "name" if unit names). "code" if unit code
dir	local directory in which shape files are stored
show_it	logical value set to TRUE indicating if the map entire map is drawn or only the coordinates linked to the input data
add_text	character name indicating the column with text labels
subset	a formula indicating the condition to subset the data. See the details section
facets	variable(s) name to split the data
aggregation_fun	function to use when data are aggregated
aggregation_unit	variable name by which the unit are aggregated
options	a list with options using mapping.options function

Details

If data is a object of class "IT" generated using the IT function, the arguments unit, and year are ignored, because the object already contains the coordinates.

The aggregation_unit provides an aggregation for a user specified variable in data, or for larger statistical unit, automatically provided when the function link the data with the coordinates. For example, if data are of type provicia, we will have variables for larger aggregate unit, that is regione and ripartizione variables. Look at IT for more details.

subset provide an expression to subsetting the data using a formula, with the logical operators. For example data can be subsetting as follows: ~I("Variable 1" == "condition 1" & "Variable 2" != "condition 2") or for example, ~I("Variable 1" > "condition 1" | "Variable 2" != "condition 2").

Value

Return a map. For tmap type, the function also returns a tmap object.

References

Giraud, T. and Lambert, N. (2016). cartography: Create and Integrate Maps in your R Workflow. JOSS, 1(4). doi: 10.21105/joss.00054.

Pebesma, E., 2018. Simple Features for R: Standardized Support for Spatial Vector Data. The R Journal 10 (1), 439-446, https://doi.org/10.32614/RJ-2018-009

Tennekes M (2018). "tmap: Thematic Maps in R." _Journalstatisticaltical Software_, *84*(6), 1-39. doi: 10.18637/jss.v084.i06 (URL: https://doi.org/10.18637/jss.v084.i06).

See Also

mappingWR,mappingEU,mappingUS,mappingDE,mappingUK

Examples

```
data("popIT")

it <- IT(data = popIT, unit = "provincia", year = "2019", check.unit.names = FALSE)

###############
#   Statics   #
###############

mappingIT(data = it, var = "totale")


mappingIT(data = it, var = "totale", subset = ~I(regione == "Lazio"))


mappingIT(data = it, var = "totale", facets =  "ripartizione")

mappingIT(data = it, var = c("maschi","femmine"))
mappingIT(data = it, var = "totale", typeStatic = "choro.cart")


mappingIT(data = it, var = "totale",
          aggregation_unit = "ripartizione",
          aggregation_fun = function(x) sum(x, na.rm = TRUE))

### Italy

it1 <- loadCoordIT()
mappingIT(data = it1)



###############
# Interactive #
###############

mappingIT(data = it, var = "totale", type = "interactive")
```

```
mappingIT(data = it, var = c("maschi", "femmine"), type = "interactive")


mappingIT(data = it, var = "totale", subset = ~I(regione == "Lazio"), type = "interactive")

mappingIT(data = it, var = "totale", type = "interactive",
                      aggregation_unit = "ripartizione",
                      aggregation_fun = function(x) sum(x, na.rm = TRUE))
```

---

mappingUK *Static maps for United Kingdom*

Description

Function to produce static maps for United Kingdom statistical unit.

Usage

```
mappingUK(data, var = NULL, colID = NULL,
          type = c("static", "interactive"),
          typeStatic = c("tmap", "choro.cart", "typo", "bar"),
          unit = c("country", "county"), year = c("2020", "2019"),
          matchWith = c("name", "code"), scale = c("500", "20"),
          dir = NULL, add_text = NULL, subset = NULL,
          facets = NULL, aggregation_fun = sum, aggregation_unit = NULL,
          options = mapping.options())
```

Arguments

data	a data.frame object with variables to display or a UK object produced by UK function. If object of class UK, arguments unit, year, and matchWith will be ignored
var	character value(s) or columns number(s) indicating the variable to plot
colID	character value or columns number indicating the column with unit names
type	if generates static or interactive map
typeStatic	type of static map
unit	the type of Italian statistical unit
year	year of the unit
matchWith	the type of id to check:

"name"	if unit names).
"code"	if unit code

scale	the scale of a map
dir	local directory in which shape files are stored
add_text	character name indicating the column with text labels
subset	a formula indicating the condition to subset the data. See the details section
facets	variable(s) name to split the data
aggregation_fun	function to use when data are aggregated
aggregation_unit	variable name by which the unit are aggregated
options	a list with options using mapping.options function

Details

If data is a object of class "UK" generated using the UK function, the arguments unit, and year are ignored, because the object already contains the coordinates.

The aggregation_unit provides an aggregation for a user specified variable in data, or for larger statistical unit, automatically provided when the function link the data with the coordinates. For example, if data are of type county, we will have variables for larger aggregate unit, that is country variables. Look at UK for more details.

subset provide an expression to subsetting the data using a formula, with the logical operators. For example data can be subsetting as follows: ~I("Variable 1" == "condition 1" & "Variable 2" != "condition 2") or for example, ~I("Variable 1" > "condition 1" | "Variable 2" != "condition 2").

Value

Return a map. For tmap type, the function also returns a tmap object.

References

Giraud, T. and Lambert, N. (2016). cartography: Create and Integrate Maps in your R Workflow. JOSS, 1(4). doi: 10.21105/joss.00054.

Pebesma, E., 2018. Simple Features for R: Standardized Support for Spatial Vector Data. The R Journal 10 (1), 439-446, https://doi.org/10.32614/RJ-2018-009

Tennekes M (2018). "tmap: Thematic Maps in R." _Journalstatisticaltical Software_, *84*(6), 1-39. doi: 10.18637/jss.v084.i06 (URL: https://doi.org/10.18637/jss.v084.i06).

See Also

mappingWR,mappingEU, mappingUS, mappingDE

Examples

```
data("popUK")

uk <- UK(data = popUK, unit = "county", matchWith = "code", check.unit.names = FALSE)
```

mappingUS *Static maps for USA*

Description

Function to produce static maps for USA unit.

Usage

```
mappingUS(data, var = NULL, colID = NULL,
          type = c("static", "interactive"),
          typeStatic = c("tmap", "choro.cart", "typo", "bar"),
          unit = c("country", "region", "division","state",
                   "county", "district", "district_county", "urban_area"),
          year = c("2018"), matchWith = c("name", "id", "number"),
          scale = c("20", "50", "500"), dir = NULL, show_us = TRUE,
          add_text = NULL, subset = NULL, facets = NULL,
          aggregation_fun = sum, aggregation_unit = NULL,
          options = mapping.options())
```

Arguments

data	a data.frame object with variables to display or a US object produced by US function
var	character value(s) or columns number(s) indicating the variable to plot
colID	character value or columns number indicating the column with unit names
type	if generates static or interactive map
typeStatic	type of static map
unit	the type of European statistical unit to check.
year	year of the unit
matchWith	the type of id to check if unit is set to "states"
scale	the scale of a map
dir	local directory in which shape files are stored
show_us	logical value set to TRUE indicating if the map entire map is drawn or only the coordinates linked to the input data
add_text	character name indicating the column with text labels
subset	a formula indicating the condition to subset the data. See the details section
facets	variable(s) name to split the data
aggregation_fun	function to use when data are aggregated
aggregation_unit	variable name by which the unit are aggregated
options	a list with options using mapping.options function

Details

If data is a object of class "US" generated using the US function, the arguments unit, year, and matchWith are ignored, because the object already contains the coordinates.

The aggregation_unit provides an aggregation for a user specified variable in data, or for larger statistical unit, automatically provided when the function link the data with the coordinates. For example, if data are of type county, we will have variables for larger aggregate unit, that is state and region variables. Look at US for more details.

subset provide an expression to subsetting the data using a formula, with the logical operators. For example data can be subsetting as follows: ~I("Variable 1" == "condition 1" & "Variable 2" != "condition 2") or for example, ~I("Variable 1" > "condition 1" | "Variable 2" != "condition 2").

Value

Return a map. For tmap type, the function also returns a tmap object.

References

Giraud, T. and Lambert, N. (2016). cartography: Create and Integrate Maps in your R Workflow. JOSS, 1(4). doi: 10.21105/joss.00054.

Pebesma, E., 2018. Simple Features for R: Standardized Support for Spatial Vector Data. The R Journal 10 (1), 439-446, https://doi.org/10.32614/RJ-2018-009

Tennekes M (2018). "tmap: Thematic Maps in R." _Journalstatisticaltical Software_, *84*(6), 1-39. doi: 10.18637/jss.v084.i06 (URL: https://doi.org/10.18637/jss.v084.i06).

See Also

mappingWR,mappingIT,mappingEU,mappingDE,mappingUK

Examples

```
data("popUS")

us <- US(data = popUS, unit = "state")

###############
#   Statics   #
###############


mappingUS(data = us, var = "population")
mappingUS(data = us, var = "population",
          subset = ~I(id == "california" | id == "texas"))
mappingUS(data = us, var = "population",
          subset = ~I(id == "california" | id == "texas"), facets = "id")


mappingUS(data = us, var = "population", typeStatic = "choro.cart")
```

```
###############
# Interactive #
###############


mappingUS(data = us, var = "population", type = "interactive")
mappingUS(data = us, var = "population", type = "interactive",
                    subset = ~I(id == "california" | id == "texas" | id == "new york" ))
```

---

mappingWR *Static maps for World countries*

Description

Function to produce static maps for world countries.

Usage

```
mappingWR(data, var = NULL, colID = NULL,
          type = c("static", "interactive"),
          typeStatic = c("tmap", "choro.cart",
                         "typo", "bar"),
          unit = c("country", "nato", "ocde", "continent",
                   "region", "subregion", "region_wb",
                   "type_income", "type_economy"),
          matchWith = c("country", "iso2", "iso3",
                        "iso3_eh", "iso3_numeric",
                        "iso3_un", "iso2_wb", "iso3_wb",
                        "name_formal", "name_wb"),
          res = c("low", "hi"), dir = NULL, show_wr = TRUE,
          add_text = NULL, subset = NULL,
          facets = NULL, aggregation_fun = sum, aggregation_unit = NULL,
          options = mapping.options(legend.position = c("left", "bottom")))
```

Arguments

data	a data.frame object with variables to display or a WR object produced by WR function
var	character value(s) or columns number(s) indicating the variable to plot
colID	character value or columns number indicating the column with unit names
type	if generates static or interactive map
typeStatic	type of static map
unit	the type of world statistical unit
matchWith	the type of id to check:

"country"	if country names).
"iso2"	if iso2 code.
"iso3"	if iso3 code.
"iso3_eh"	if iso3_eh code.
"iso3_numeric"	if iso3 numeric code.
"iso3_un"	if iso3 United Nations.
"iso2_wb"	if iso2 World Bank.
"iso3_wb"	if iso3 World Bank.
"name_formal"	if formal names.
"name_wb"	if World Bank names.

res	map resolution
dir	local directory in which shape files are stored
show_wr	logical value set to TRUE indicating if the map entire map is drawn or only the coordinates linked to the input data
add_text	character name indicating the column with text labels
subset	a formula indicating the condition to subset the data. See the details section
facets	variable(s) name to split the data
aggregation_fun	function to use when data are aggregated
aggregation_unit	variable name by which the unit are aggregated
options	a list with options using mapping.options function

Details

If data is a object of class "WR" generated using the WR function, the arguments unit, year, and matchWith are ignored, because the object already contains the coordinates.

The aggregation_unit provides an aggregation for a user specified variable in data, or for larger statistical unit, automatically provided when the function link the data with the coordinates.

subset provide an expression to subsetting the data using a formula, with the logical operators. For example data can be subsetting as follows: ~I("Variable 1" == "condition 1" & "Variable 2" != "condition 2") or for example, ~I("Variable 1" > "condition 1" | "Variable 2" != "condition 2").

Value

Return a map. For tmap type, the function also returns a tmap object.

References

Giraud, T. and Lambert, N. (2016). cartography: Create and Integrate Maps in your R Workflow. JOSS, 1(4). doi: 10.21105/joss.00054.

Pebesma, E., 2018. Simple Features for R: Standardized Support for Spatial Vector Data. The R Journal 10 (1), 439-446, https://doi.org/10.32614/RJ-2018-009

Tennekes M (2018). "tmap: Thematic Maps in R." _Journalstatisticaltical Software_, *84*(6), 1-39. doi: 10.18637/jss.v084.i06 (URL: https://doi.org/10.18637/jss.v084.i06).

See Also

mappingEU,mappingIT,mappingUS,mappingDE,mappingUK

Examples

```
data("popWR")
popWR <- popWR


wr <- WR(data = popWR, colID = "country_code",
         matchWith = "iso3_eh", check.unit.names = FALSE,
         res = "low")

###############
#   Statics   #
###############


mappingWR(data = wr, var = "total")


mappingWR(data = wr, var = c("male","female"))
mappingWR(data = wr, var = "total", subset = ~I(iso2 == "IT"))
mappingWR(data = wr, var = "total", subset = ~I(region == "Americas"))

mappingWR(data = wr, var = "total", facets = "continent")
mappingWR(data = wr, var = "total",
          subset = ~I(continent == "South America"),
          facets = "name_wb")



mappingWR(data = wr, var = "total", typeStatic = "choro.cart")


mappingWR(data = wr, var = "total", aggregation_unit = "continent",
          aggregation_fun = function(x) sum(x, na.rm = TRUE))
mappingWR(data = wr, var = "total", aggregation_unit = "subregion",
          aggregation_fun = function(x) sum(x, na.rm = TRUE))

## World countries

wr1 <- loadCoordWR()
mappingWR(data = wr1)


###############
# Interactive #
###############
```

```
mappingWR(data = wr, var = "total", type = "interactive")
mappingWR(data = wr, var = c("male","female"), type = "interactive")
mappingWR(data = wr, var = "total", subset = ~I(iso2 == "IT"), type = "interactive")



mappingWR(data = wr, var = "total",
          subset = ~I(region == "Americas"), type = "interactive")
mappingWR(data = wr, var = "total", type = "interactive",
          aggregation_unit = "continent",
          aggregation_fun = function(x) sum(x, na.rm = TRUE))
mappingWR(data = wr, var = "total", type = "interactive",
          aggregation_unit = "subregion",
          aggregation_fun = function(x) sum(x, na.rm = TRUE))
```

---

names *Statistical Unit Names*

Description

Statistical unit names.

Usage

```
data("namesWR")
data("namesEU")
data("namesIT")
data("namesUS")
data("namesDE")
data("namesFR")
data("namesUK")
```

Format

A list with all names divided for year and type of units.

Details

Look at getNamesWR, getNamesEU, getNamesIT, getNamesUS, getNamesUK, getNamesDE, getNamesFR

Source

World Bank, Eurostat, United States Census and Istat

Examples

```
data(namesWR)
str(namesWR)

data(namesEU)
str(namesEU)

data(namesIT)
str(namesIT)

data(namesUS)
str(namesUS)
```

---

popDE *German Population*

Description

German bund population for year 2020

Usage

```
data("popDE")
```

Format

A data frame.

---

popEU *European population*

Description

European population for year 2018

Usage

```
data("popEU")
data("popEUnuts2")
```

Format

A data frame with 2252 observations on the following 5 variables.

`TIME` year

`GEO` names

`total` total

`male` number of male

`female` number of female

Source

https://ec.europa.eu/eurostat/data/database

---

popFR *French Population*

Description

French regions population for year 2021

Usage

```
data("popFR")
```

Format

A data frame.

---

popIT *Italian Population*

Description

Italian provincia population for year 2018

Usage

```
data("popIT")
```

Format

A data frame with 107 observations on the following 4 variables.

`ID` names

`maschi` number of male

`femmine` number of femal

`totale` total

Source

Istat

popUK *United Kingdom Population*

Description

United Kingdome county population for year 2020

Usage

```
data("popUK")
```

Format

A data frame.

popUS *USA population*

Description

USA population for year 2019

Usage

```
data("popUS")
```

Format

A data frame with 52 observations on the following 2 variables.

`id` names

`population` total population

Source

https://www.census.gov/geographies/mapping-files/time-series/geo/carto-boundary-file.html

popWR *World population*

Description

Country pooulation for yeaar 2018

Usage

```
data("popWR")
```

Format

A data frame with 269 observations on the following 5 variables.

`country` a factor with countries

`country_code` a factor with code

`total` total

`male` number of male

`female` number of female

Source

World Bank

saveObj *Save mapping obj*

Description

Save output from `loadCoord` function, `sf` objects, `IT`, `EU`, `WR`, and `US` in different format

Usage

```
saveObj(obj, name, as = c("RData", "csv", "json", "geojson", "shp"), ...)
```

Arguments

`obj`	Output from `loadCoord` function, `sf` objects, `IT`, `EU`, `WR`, and `US`
`name`	output name
`as`	format
`...`	further arguments

Value

No return value.

Examples

```
## Not run:

data("popIT")
it <- IT(data = popIT, unit = "provincia", year = "2019")
saveObj(it, name = "it.RData")


## End(Not run)
```

`tax_wedge_ocde` *OCDE tax wedge*

Description

Tax wedge for OCDE countries

Usage

```
data("tax_wedge_ocde")
```

Format

A data frame with 74 observations on the following 7 variables.

`country_code` a factor with country code

`year` a character vector with year

`family_type` a factor with family levels

`average_rate_employees_SSC` a numeric vector with Social Securities Contribution by employees

`average_rate_employer_SSC` a numeric vector with Social Securities Contribution by employers

`net_personal_average_tax_rate` a numeric vector with personal average tax rate

`average_tax_wedge` a numeric vector with average tax wedge

Source

OECD (2020), Tax wedge (indicator). doi: 10.1787/cea9eba3-en (Accessed on 30 November 2020). https://data.oecd.org/tax/tax-wedge.htm

Examples

```
data(tax_wedge_ocde)
str(tax_wedge_ocde)
```

UK *Object of class* UK

Description

Creates an object with data and coordinates of class UK for United Kindome statistical units to use with mapping functions or available in other R "maps" packages.

Usage

```
UK(data, colID = NULL, unit = c("country", "county"),
   year = c("2020", "2019"), matchWith = c("name", "code"),
   scale = c("500", "20"), subset = NULL, add = NULL,
   new_var_names = NULL, aggregation_fun = sum,
   aggregation_unit = NULL, aggregation_var = NULL,
   facets = NULL, check.unit.names = TRUE, dir = NULL,
   use_cache = TRUE, print = FALSE, use_internet = TRUE, crs = NULL)
```

Arguments

data	a data.frame object with variables to display
colID	character value or columns number indicating the column with unit names or codes
unit	the type of Italian statistical unit
year	year of the analysis
matchWith	the type of id to check: "name" if unit names "code" if unit code
scale	the scale of the map
subset	a formula indicating the condition to subset the data, see the Details
add	a formula to add new transformed variables starting from the variables in the data
new_var_names	a character value or vector indicating the names of the new variables created in add
aggregation_fun	function to use when data are aggregated
aggregation_unit	variable name by which the unit are aggregated
aggregation_var	variable name with value to aggregate
facets	variable(s) name to split the data

check.unit.names
: a logical value indicating if the colID names are checked with unit names

dir
: local directory in which shape files are stored

use_cache
: a logical value indicating whether use the cache

print
: a logical value indicating whether print the nomatched names

use_internet
: a logical value indicating wheter the coordinates are downloaded from https://github.com/mappinguniverse/geospatial. If FALSE the maps downloaded during package installation will be used

crs
: coordinate reference system. Look at st_crs

Details

The function links (automatically) the id in the data and the coordinates for the given unit.

Since the names (or codes) provided in the data given in input must be checked with the unit names (or codes) available in the package, the check.unit.names provides a preliminary check.

subset provide an expression to subset the data, using a formula with the logical operators. For example, sub-samples of the data can be selected as follows: ~I("Variable 1" == "condition 1" & "Variable 2" != "condition 2") or for example, ~I("Variable 1" > "condition 1" | "Variable 2" != "condition 2").

Value

An object of class UK, with data and coordinates to use in functions which perform map.

See Also

EU, WR, US, DE

Examples

```
data("popUK")
uk <- UK(data = popUK, unit = "county", matchWith = "code")

### Adding two varaibles


uk2 <- UK(data = popUK, unit = "county", matchWith = "code",
          add = ~I(population/1000) + I(population/100) )


### Adding to variables and names
uk3 <- UK(data = popUK, unit = "county", matchWith = "code",
          add = ~I(population/1000) + I(population/100),
          new_var_names = c("ratio1", "ratio2"))
```

US *Object of class* US

Description

Creates an object with data and coordinate of class US for United States of America to use with mapping functions or available in other R "maps" packages.

Usage

```
US(data, colID = NULL,
   unit = c("country","region", "division","state", "county",
            "district", "district_county","urban_area"),
   year = c("2018"),matchWith = c("name", "id", "number"),
   scale = c("20", "50", "500"), show_us = TRUE,
   subset = NULL, add = NULL, new_var_names = NULL,
   aggregation_fun = sum, aggregation_unit = NULL, aggregation_var = NULL,
   facets = NULL, check.unit.names = TRUE, dir = NULL, use_cache = TRUE,
   print = FALSE, use_internet = TRUE, crs = NULL)
```

Arguments

data	a data.frame object with variables to display
colID	character value or column numbers indicating the column with unit names.
unit	the type of US statistical unit
year	year of the analysis
matchWith	the type of id to check if unit is set to "states"
scale	the scale of the map
show_us	logical value set to TRUE indicating if the entire map is drawn or only the coordinates linked to the input data
subset	a formula indicating the condition to subset the data. See the details.
add	a formula to add new transformed variables starting from the variables in the data
new_var_names	a character value or vector indicating the names of the new variables created in add.
aggregation_fun	function to use when data are aggregated
aggregation_unit	variable name by which the unit are aggregated
aggregation_var	variable name with value to aggregate
facets	variable(s) name to split the data

check.unit.names
: a logical value indicating if the colID names are checked with unit names.

dir
: local directory in which shape files are stored

use_cache
: a logical value indicating whether use the cache

print
: a logical value indicating whether print the nomatched names

use_internet
: a logical value indicating wheter the coordinates are downloaded from https://github.com/mappinguniverse/geospatial. If FALSE the maps downloaded during package installation will be used

crs
: coordinate reference system. Look at st_crs

Details

The function links (automatically) the id in the data and the coordinates for the given unit.

Since the names (or codes) provided in the data given in input must be checked with the unit names (or codes) available in the package (as provided by USA Census of Bureau), the check.unit.names provides a preliminary check.

subset provide an expression to subset the data, using a formula with the logical operators. For example, sub-samples of the data can be selected as follows: ~I("Variable 1" == "condition 1" & "Variable 2" != "condition 2") or for example, ~I("Variable 1" > "condition 1" | "Variable 2" != "condition 2").

Value

An object of class US, with data and coordinates to use in functions which perform map.

See Also

WR, EU, IT, DE, UK

Examples

```
data("popUS")

us <- US(data = popUS,colID = "id", unit = "state")
str(us, 1)

us1 <- US(data = popUS, colID = "id", unit = "state", add = ~I(population/100))
str(us1, 1)

us2 <- US(data = popUS, colID = "id", unit = "state",
          add = ~I(population/100), new_var_names = c("population/100"))
str(us2, 1)
```

usa_election *Usa Election*

Description

2008 and 2016 Usa presidential election

Usage

```
data("usa_election")
```

Format

A data frame with 51 observations on the following 19 variables.

`state_id` a character vector

`electoral_votes_obama` a numeric vector

`electoral_votes_mccain` a numeric vector

`votes_obama` a numeric vector

`votes_mccain` a numeric vector

`votes_others_08` a numeric vector

`total_votes_08` a numeric vector

`electoral_votes_trump` a numeric vector

`electoral_votes_clinton` a numeric vector

`votes_trump` a numeric vector

`votes_clinton` a numeric vector

`votes_others_16` a numeric vector

`total_votes_16` a numeric vector

`total_popolation_08` a numeric vector

`total_citizen_08` a numeric vector

`total_registered_08` a numeric vector

`total_popolation_16` a numeric vector

`total_citizen_16` a numeric vector

`total_registered_16` a numeric vector

Source

https://www.census.gov/topics/public-sector/voting/data.html https://www.fec.gov/introduction-campaign-finance/election-and-voting-information/

Examples

```
data(usa_election)
str(usa_election)
```

WR *Object of class* WR

Description

Creates an object with data and coordinate of class WR to use with mapping function or available in other R "maps" packages.

Usage

```
WR(data, colID = NULL,
   unit = c("country", "nato", "ocde", "continent",
            "region", "subregion", "region_wb",
            "type_income", "type_economy"),
   matchWith = c("country", "iso2", "iso3", "iso3_eh",
                 "iso3_numeric", "iso3_un", "iso2_wb",
                 "iso3_wb", "name_formal", "name_wb"),
   res = c("low", "hi"), show_wr = TRUE, subset = NULL,
   add = NULL, new_var_names = NULL,
   aggregation_fun = sum, aggregation_unit = NULL, aggregation_var = NULL,
   facets = NULL, check.unit.names = TRUE, dir = NULL, use_cache = TRUE,
   print = FALSE, use_internet = TRUE, crs = NULL)
```

Arguments

data	a data.frame object with variables to display
colID	character value or columns number indicating the column with unit names
unit	the type of world statistical unit
matchWith	the type of id to check:

"country"	if country names
"iso2"	if iso2 code
"iso3"	if iso3 code
"iso3_eh"	if iso3_eh code
"iso3_numeric"	if iso3 numeric code
"iso3_un"	if iso3 United Nations
"iso2_wb"	if iso2 World Bank
"iso3_wb"	if iso3 World Bank
"name_formal"	if formal names
"name_wb"	if World Bank names

res	map resolution
show_wr	logical value set to TRUE indicating if the entire map is drawn or only the coordinates linked to the input data
subset	a formula indicating the condition to subset the data, see the Details

add	a formula to add new transformed variables starting from the variables in the data
new_var_names	a character value or vector indicating the names of the new variables created in add
aggregation_fun	function to use when data are aggregated
aggregation_unit	variable name by which the unit are aggregated
aggregation_var	variable name with value to aggregate
facets	variable(s) name to split the data
check.unit.names	a logical value indicating if the colID names are checked with unit names
dir	local directory in which shape files are stored
use_cache	a logical value indicating whether use the cache
print	a logical value indicating whether print the nomatched names
use_internet	a logical value indicating wheter the coordinates are downloaded from https://github.com/mappinguniverse/geospatial. If FALSE the maps downloaded during package installation will be used
crs	coordinate reference system. Look at st_crs

Details

The function links (automatically) the id in the data and the coordinates for the given unit.

Since the names (or codes) provided in the data given in input must be checked with the unit names (or codes) available in the package, the check.unit.names provides a preliminary check.

subset provide an expression to subset the data, using a formula with the logical operators. For example, sub-samples of the data can be selected as follows: ~I("Variable 1" == "condition 1" & "Variable 2" != "condition 2") or for example, ~I("Variable 1" > "condition 1" | "Variable 2" != "condition 2").

Value

An object of class WR, with data and coordinates to use in functions which perform map.

See Also

EU, IT, US, DE, UK

Examples

```
data("popWR")

wr <- WR(data = popWR, colID = "country_code",
         matchWith = "iso3_eh", res = "low")
```

```
str(wr, 1)

wr1 <- WR(data = popWR, colID = "country_code",
          matchWith = "iso3_eh", res = "low",
          add = ~I(male/total) + I(female/total))
str(wr1)

wr2 <- WR(data = popWR, colID = "country_code",
          matchWith = "iso3_eh", res = "low",
          add = ~I(male/total) + I(female/total),
          new_var_names = c("Per_Male", "Per_Female"))
str(wr2)
```

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