Package 'geobr'

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Type Package

Title Download Official Spatial Data Sets of Brazil

Version 1.9.1

URL <https://ipeagit.github.io/geobr/>, <https://github.com/ipeaGIT/geobr>

BugReports <https://github.com/ipeaGIT/geobr/issues>

Description Easy access to official spatial data sets of Brazil as 'sf' objects
in R. The package includes a wide range of geospatial data available
at various geographic scales and for various years with harmonized
attributes, projection and fixed topology.

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Encoding UTF-8

LazyData TRUE

Depends R (>= 3.5.0)

Imports curl (>= 5.0.0), dplyr (>= 0.8-3), data.table, fs, methods, sf
(>= 0.9-3), utils

Suggests arrow (>= 15.0.1), censobr (>= 0.3.2), covr, ggplot2 (>=
3.3.1), knitr, rmarkdown, scales, testthat

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Contents

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cep_to_state   *Determine the state of a given CEP postal code*

Description

Zips codes in Brazil are known as CEP, the abbreviation for postal code address. CEPs in Brazil are 8 digits long, with the format `'xxxxx-xxx'`.

Usage

```
cep_to_state(cep)
```

Arguments

cep   A character string with 8 digits in the format ″xxxxxxxx″, or with the format `'xxxxx-xxx'`.

Value

A character string with a state abbreviation.

Examples

```
uf <- cep_to_state(cep = '69900-000')

# Or:
uf <- cep_to_state(cep = '69900000')
```

---

grid_state_correspondence_table
                    A correspondence table indicating what quadrants of IBGE's statistical grid intersect with each Brazilian state

---

Description

Built-in dataset

- name_state: Title-case name of state (character)
- abbrev_state: Two-letter uppercase abbreviation of a state
- code_grid: Unique code of each quadrant of IBGE's statistical grid

Usage

```
data(grid_state_correspondence_table)
```

Format

A data frame sf with 139 rows and 3 columns

Details

correspondence table indicating what quadrants of IBGE's statistical grid intersect with each Brazilian state

Note

Last updated 2021-o3-21

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list_geobr *List all data sets available in the geobr package*

Description

Returns a data frame with all datasets available in the geobr package

Usage

```
list_geobr()
```

Value

A data.frame

See Also

Other support functions: [lookup_muni](#)()

Examples

```
df <- list_geobr()
```

---

lookup_muni   *Look up municipality codes and names*

Description

Input a municipality **name** *or* **code** and get the names and codes of the municipality's corresponding state, meso, micro, intermediate, and immediate regions

Usage

```
lookup_muni(name_muni = NULL, code_muni = NULL)
```

Arguments

name_muni	The municipality name to be looked up.
code_muni	The municipality code to be looked up.

Details

Only available from 2010 Census data so far

Value

A data.frame with 13 columns identifying the geographies information of that municipality.

A data.frame

See Also

Other support functions: [list_geobr()](list_geobr)

Examples

```
# Get lookup table for municipality Rio de Janeiro
mun <- lookup_muni(name_muni = "Rio de Janeiro")

# Or you can get a lookup table for the same municipality searching for its code
mun <- lookup_muni(code_muni = 3304557)

# Get lookup table for all municipalities
mun_all <- lookup_muni(name_muni = "all")

# Or:
mun_all <- lookup_muni(code_muni = "all")
```

---

read_amazon   *Download spatial data of Brazil's Legal Amazon*

Description

This data set covers the whole of Brazil's Legal Amazon as defined in the federal law n. 12.651/2012).
The original data comes from the Brazilian Ministry of Environment (MMA) and can be found at
"http://mapas.mma.gov.br/i3geo/datadownload.htm".

Usage

```
read_amazon(year = 2012, simplified = TRUE, showProgress = TRUE, cache = TRUE)
```

Arguments

year	Numeric. Year of the data in YYYY format. Defaults to 2012.
simplified	Logic FALSE or TRUE, indicating whether the function should return the data set with 'original' spatial resolution or a data set with 'simplified' geometry. Defaults to TRUE. For spatial analysis and statistics users should set simplified = FALSE. Borders have been simplified by removing vertices of borders using st_simplify{sf} preserving topology with a dTolerance of 100.
showProgress	Logical. Defaults to TRUE display progress bar.
cache	Logical. Whether the function should read the data cached locally, which is faster. Defaults to cache = TRUE. By default, geobr stores data files in a temporary directory that exists only within each R session. If cache = FALSE, the function will download the data again and overwrite the local file.

Value

An "sf" "data.frame" object

See Also

Other area functions: read_biomes(), read_capitals(), read_comparable_areas(), read_country(),
read_disaster_risk_area(), read_health_facilities(), read_health_region(), read_immediate_region(),
read_indigenous_land(), read_intermediate_region(), read_meso_region(), read_metro_area(),
read_micro_region(), read_municipal_seat(), read_municipality(), read_neighborhood(),
read_pop_arrangements(), read_region(), read_schools(), read_semiarid(), read_state(),
read_statistical_grid(), read_urban_area(), read_urban_concentrations(), read_weighting_area()

Examples

```
# Read Brazilian Legal Amazon
a <- read_amazon(year = 2012)
```

---

read_biomes   *Download spatial data of Brazilian biomes*

Description

This data set includes polygons of all biomes present in Brazilian territory and coastal area. The latest data set dates to 2019 and it is available at scale 1:250.000. The 2004 data set is at the scale 1:5.000.000. The original data comes from IBGE. More information at https://www.ibge.gov.br/apps/biomas/

Usage

```
read_biomes(year = 2019, simplified = TRUE, showProgress = TRUE, cache = TRUE)
```

Arguments

year	Numeric. Year of the data in YYYY format. Defaults to 2019.
simplified	Logic FALSE or TRUE, indicating whether the function should return the data set with 'original' spatial resolution or a data set with 'simplified' geometry. Defaults to TRUE. For spatial analysis and statistics users should set simplified = FALSE. Borders have been simplified by removing vertices of borders using st_simplify{sf} preserving topology with a dTolerance of 100.
showProgress	Logical. Defaults to TRUE display progress bar.
cache	Logical. Whether the function should read the data cached locally, which is faster. Defaults to cache = TRUE. By default, geobr stores data files in a temporary directory that exists only within each R session. If cache = FALSE, the function will download the data again and overwrite the local file.

Value

An "sf" "data.frame" object

See Also

Other area functions: [read_amazon()](), [read_capitals()](), [read_comparable_areas()](), [read_country()](), [read_disaster_risk_area()](), [read_health_facilities()](), [read_health_region()](), [read_immediate_region()](), [read_indigenous_land()](), [read_intermediate_region()](), [read_meso_region()](), [read_metro_area()](), [read_micro_region()](), [read_municipal_seat()](), [read_municipality()](), [read_neighborhood()](), [read_pop_arrangements()](), [read_region()](), [read_schools()](), [read_semiarid()](), [read_state()](), [read_statistical_grid()](), [read_urban_area()](), [read_urban_concentrations()](), [read_weighting_area()]()

Examples

```
# Read biomes
b <- read_biomes(year = 2019)
```

---

read_capitals   *Download data of state capitals*

Description

This function downloads either a spatial `sf` object with the location of the municipal seats (sede dos municipios) of state capitals, or a `data.frame` with the names and codes of state capitals. Data downloaded for the latest available year.

Usage

```
read_capitals(as_sf = TRUE, showProgress = TRUE)
```

Arguments

as_sf   Logic `FALSE` or `TRUE`, indicating whether the function should return a spatial
                data in `sf` format (Defaults to `TRUE`) or in a `data.frame` format without spatial
                information (`FALSE`).

showProgress   Logical. Defaults to `TRUE` display progress bar.

Value

An `"sf"` `"data.frame"` object or a `"data.frame"`

See Also

Other area functions: `read_amazon()`, `read_biomes()`, `read_comparable_areas()`, `read_country()`, `read_disaster_risk_area()`, `read_health_facilities()`, `read_health_region()`, `read_immediate_region()`, `read_indigenous_land()`, `read_intermediate_region()`, `read_meso_region()`, `read_metro_area()`, `read_micro_region()`, `read_municipal_seat()`, `read_municipality()`, `read_neighborhood()`, `read_pop_arrangements()`, `read_region()`, `read_schools()`, `read_semiarid()`, `read_state()`, `read_statistical_grid()`, `read_urban_area()`, `read_urban_concentrations()`, `read_weighting_area()`

Examples

```
# Read spatial data with the  municipal seats of state capitals
capitals_sf <- read_capitals(as_sf = TRUE)

# Read simple data.frame of state capitals
capitals_df <- read_capitals(as_sf = FALSE)
```

---

read_census_tract | *Download spatial data of census tracts of the Brazilian Population Census*

Description

Download spatial data of census tracts of the Brazilian Population Census

Usage

```
read_census_tract(
  code_tract,
  year = 2010,
  zone = "urban",
  simplified = TRUE,
  showProgress = TRUE,
  cache = TRUE
)
```

Arguments

code_tract   The 7-digit code of a Municipality. If the two-digit code or a two-letter upper-
                case abbreviation of a state is passed, (e.g. 33 or "RJ") the function will load
                all census tracts of that state. If code_tract="all", the function downloads all
                census tracts of the country.

year   Numeric. Year of the data in YYYY format. Defaults to 2010.

zone   For census tracts before 2010, 'urban' and 'rural' census tracts are separate data
                sets.

simplified   Logic FALSE or TRUE, indicating whether the function should return the data
                set with 'original' spatial resolution or a data set with 'simplified' geometry.
                Defaults to TRUE. For spatial analysis and statistics users should set simplified
                = FALSE. Borders have been simplified by removing vertices of borders using
                st_simplify{sf} preserving topology with a dTolerance of 100.

showProgress   Logical. Defaults to TRUE display progress bar.

cache   Logical. Whether the function should read the data cached locally, which is
                faster. Defaults to cache = TRUE. By default, geobr stores data files in a tem-
                porary directory that exists only within each R session. If cache = FALSE, the
                function will download the data again and overwrite the local file.

Value

An "sf" "data.frame" object

See Also

Other general area functions: read_conservation_units()

Examples

```
# Read rural census tracts for years before 2007
  c <- read_census_tract(code_tract=5201108, year=2000, zone="rural")

# Read all census tracts of a state at a given year
  c <- read_census_tract(code_tract=53, year=2010) # or
  c <- read_census_tract(code_tract="DF", year=2010)
  plot(c)

# Read all census tracts of a municipality at a given year
  c <- read_census_tract(code_tract=5201108, year=2010)
  plot(c)

# Read all census tracts of the country at a given year
  c <- read_census_tract(code_tract="all", year=2010)
```

---

read_comparable_areas   *Download spatial data of historically comparable municipalities*

Description

This function downloads the shape file of minimum comparable area of municipalities, known in
Portuguese as 'Areas minimas comparaveis (AMCs)'. The data is available for any combination of
census years between 1872-2010. These data sets are generated based on the Stata code originally
developed by Ehrl (2017) doi:10.1590/0101416147182phe, and translated into R by the geobr team.

Usage

```
read_comparable_areas(
  start_year = 1970,
  end_year = 2010,
  simplified = TRUE,
  showProgress = TRUE,
  cache = TRUE
)
```

Arguments

start_year	Numeric. Start year to the period in the YYYY format. Defaults TO 1970.
end_year	Numeric. End year to the period in the YYYY format. Defaults to 2010.
simplified	Logic FALSE or TRUE, indicating whether the function should return the data set with 'original' spatial resolution or a data set with 'simplified' geometry. Defaults to TRUE. For spatial analysis and statistics users should set simplified = FALSE. Borders have been simplified by removing vertices of borders using st_simplify{sf} preserving topology with a dTolerance of 100.
showProgress	Logical. Defaults to TRUE display progress bar.

cache   Logical. Whether the function should read the data cached locally, which is faster. Defaults to `cache = TRUE`. By default, geobr stores data files in a temporary directory that exists only within each R session. If `cache = FALSE`, the function will download the data again and overwrite the local file.

Details

These data sets are generated based on the original Stata code developed by Philipp Ehrl. If you use these data, please cite:

- Ehrl, P. (2017). Minimum comparable areas for the period 1872-2010: an aggregation of Brazilian municipalities. Estudos Econômicos (São Paulo), 47(1), 215-229. https://doi.org/10.1590/0101-416147182phe

Value

An `"sf"` `"data.frame"` object

See Also

Other area functions: `read_amazon()`, `read_biomes()`, `read_capitals()`, `read_country()`, `read_disaster_risk_area()`, `read_health_facilities()`, `read_health_region()`, `read_immediate_region()`, `read_indigenous_land()`, `read_intermediate_region()`, `read_meso_region()`, `read_metro_area()`, `read_micro_region()`, `read_municipal_seat()`, `read_municipality()`, `read_neighborhood()`, `read_pop_arrangements()`, `read_region()`, `read_schools()`, `read_semiarid()`, `read_state()`, `read_statistical_grid()`, `read_urban_area()`, `read_urban_concentrations()`, `read_weighting_area()`

Examples

```
amc <- read_comparable_areas(start_year=1970, end_year=2010)
```

---

read_conservation_units

Download spatial data of Brazilian environmental conservation units

---

Description

This data set covers the whole of Brazil and it includes the polygons of all conservation units present in Brazilian territory. The last update of the data was 09-2019. The original data comes from MMA and can be found at "http://mapas.mma.gov.br/i3geo/datadownload.htm".

Usage

```
read_conservation_units(
  date = 201909,
  simplified = TRUE,
  showProgress = TRUE,
  cache = TRUE
)
```

Arguments

date	Numeric. Date of the data in YYYYMM format. Defaults to `201909`.
simplified	Logic `FALSE` or `TRUE`, indicating whether the function should return the data set with 'original' spatial resolution or a data set with 'simplified' geometry. Defaults to `TRUE`. For spatial analysis and statistics users should set `simplified = FALSE`. Borders have been simplified by removing vertices of borders using `st_simplify{sf}` preserving topology with a `dTolerance` of 100.
showProgress	Logical. Defaults to `TRUE` display progress bar.
cache	Logical. Whether the function should read the data cached locally, which is faster. Defaults to `cache = TRUE`. By default, geobr stores data files in a temporary directory that exists only within each R session. If `cache = FALSE`, the function will download the data again and overwrite the local file.

Value

An `"sf" "data.frame"` object

See Also

Other general area functions: [read_census_tract](#)()

Examples

```
# Read conservation_units
b <- read_conservation_units(date = 201909)
```

---

read_country	*Download spatial data of Brazil's national borders*

Description

Data at scale 1:250,000, using Geodetic reference system "SIRGAS2000" and CRS(4674).

Usage

```
read_country(year = 2010, simplified = TRUE, showProgress = TRUE, cache = TRUE)
```

Arguments

year	Numeric. Year of the data in YYYY format. Defaults to `2010`.
simplified	Logic `FALSE` or `TRUE`, indicating whether the function should return the data set with 'original' spatial resolution or a data set with 'simplified' geometry. Defaults to `TRUE`. For spatial analysis and statistics users should set `simplified = FALSE`. Borders have been simplified by removing vertices of borders using `st_simplify{sf}` preserving topology with a `dTolerance` of 100.

showProgress   Logical. Defaults to TRUE display progress bar.

cache   Logical. Whether the function should read the data cached locally, which is faster. Defaults to cache = TRUE. By default, geobr stores data files in a temporary directory that exists only within each R session. If cache = FALSE, the function will download the data again and overwrite the local file.

Value

An "sf" "data.frame" object

See Also

Other area functions: read_amazon(), read_biomes(), read_capitals(), read_comparable_areas(), read_disaster_risk_area(), read_health_facilities(), read_health_region(), read_immediate_region(), read_indigenous_land(), read_intermediate_region(), read_meso_region(), read_metro_area(), read_micro_region(), read_municipal_seat(), read_municipality(), read_neighborhood(), read_pop_arrangements(), read_region(), read_schools(), read_semiarid(), read_state(), read_statistical_grid(), read_urban_area(), read_urban_concentrations(), read_weighting_area()

Examples

```
# Read specific year
br <- read_country(year = 2018)
```

---

read_disaster_risk_area

Download spatial data of disaster risk areas

Description

This function reads the the official data of disaster risk areas in Brazil (currently only available for 2010). It specifically focuses on geodynamic and hydro-meteorological disasters capable of triggering landslides and floods. The data set covers the whole country. Each risk area polygon (known as 'BATER') has unique code id (column 'geo_bater'). The data set brings information on the extent to which the risk area polygons overlap with census tracts and block faces (column "acuracia") and number of ris areas within each risk area (column 'num'). Original data were generated by IBGE and CEMADEN. For more information about the methodology, see deails at https://www.ibge.gov.br/geociencias/organizacao-do-territorio/tipologias-do-territorio/21538-populacao-em-areas-de-html

Usage

```
read_disaster_risk_area(
  year = 2010,
  simplified = TRUE,
  showProgress = TRUE,
  cache = TRUE
)
```

Arguments

year	Numeric. Year of the data in YYYY format. Defaults to 2010.
simplified	Logic FALSE or TRUE, indicating whether the function should return the data set with 'original' spatial resolution or a data set with 'simplified' geometry. Defaults to TRUE. For spatial analysis and statistics users should set simplified = FALSE. Borders have been simplified by removing vertices of borders using st_simplify{sf} preserving topology with a dTolerance of 100.
showProgress	Logical. Defaults to TRUE display progress bar.
cache	Logical. Whether the function should read the data cached locally, which is faster. Defaults to cache = TRUE. By default, geobr stores data files in a temporary directory that exists only within each R session. If cache = FALSE, the function will download the data again and overwrite the local file.

Value

An "sf" "data.frame" object

See Also

Other area functions: read_amazon(), read_biomes(), read_capitals(), read_comparable_areas(), read_country(), read_health_facilities(), read_health_region(), read_immediate_region(), read_indigenous_land(), read_intermediate_region(), read_meso_region(), read_metro_area(), read_micro_region(), read_municipal_seat(), read_municipality(), read_neighborhood(), read_pop_arrangements(), read_region(), read_schools(), read_semiarid(), read_state(), read_statistical_grid(), read_urban_area(), read_urban_concentrations(), read_weighting_area()

Examples

```
# Read all disaster risk areas in an specific year
d <- read_disaster_risk_area(year=2010)
```

---

read_health_facilities

Download geolocated data of health facilities

Description

Data comes from the National Registry of Healthcare facilities (Cadastro Nacional de Estabelecimentos de Saude - CNES), originally collected by the Brazilian Ministry of Health. According to the Ministry of Health: "The coordinates of each facility were obtained by CNES and validated by means of space operations. These operations verify if the point is in the municipality, considering a radius of 5,000 meters. When the coordinate is not correct, further searches are done in other systems of the Ministry of Health and in web services like Google Maps. Finally, if the coordinates have been correctly obtained in this process, the coordinates of the municipal head office are used.

The geocode source used is registered in the database in a specific column `data_source`. Periodically the coordinates are revised with the objective of improving the quality of the data." The date of the last data update is registered in the database in the columns `date_update` and `year_update`. More information in the CNES data set available at <https://dados.gov.br/>. These data use Geodetic reference system "SIRGAS2000" and CRS(4674).

Usage

```
read_health_facilities(date = 202303, showProgress = TRUE, cache = TRUE)
```

Arguments

date
: Numeric. Date of the data in YYYYMM format. Defaults to `202303`, which was the latest data available by the time of this update.

showProgress
: Logical. Defaults to `TRUE` display progress bar.

cache
: Logical. Whether the function should read the data cached locally, which is faster. Defaults to `cache = TRUE`. By default, geobr stores data files in a temporary directory that exists only within each R session. If `cache = FALSE`, the function will download the data again and overwrite the local file.

Value

An `"sf"` `"data.frame"` object

See Also

Other area functions: `read_amazon()`, `read_biomes()`, `read_capitals()`, `read_comparable_areas()`, `read_country()`, `read_disaster_risk_area()`, `read_health_region()`, `read_immediate_region()`, `read_indigenous_land()`, `read_intermediate_region()`, `read_meso_region()`, `read_metro_area()`, `read_micro_region()`, `read_municipal_seat()`, `read_municipality()`, `read_neighborhood()`, `read_pop_arrangements()`, `read_region()`, `read_schools()`, `read_semiarid()`, `read_state()`, `read_statistical_grid()`, `read_urban_area()`, `read_urban_concentrations()`, `read_weighting_area()`

Examples

```
# Read all health facilities of the whole country
h <- read_health_facilities( date = 202303)
```

---

read_health_region
: *Download spatial data of Brazilian health regions and health macro regions*

Description

Health regions are used to guide the the regional and state planning of health services. Macro health regions, in particular, are used to guide the planning of high complexity health services. These services involve larger economics of scale and are concentrated in few municipalities because they are generally more technology intensive, costly and face shortages of specialized professionals. A macro region comprises one or more health regions.

Usage

```
read_health_region(
  year = 2013,
  macro = FALSE,
  simplified = TRUE,
  showProgress = TRUE,
  cache = TRUE
)
```

Arguments

year   Numeric. Year of the data in YYYY format. Defaults to 2013, the latest available.

macro   Logic. If FALSE (default), the function downloads health regions data. If TRUE, the function downloads macro regions data.

simplified   Logic FALSE or TRUE, indicating whether the function should return the data set with 'original' spatial resolution or a data set with 'simplified' geometry. Defaults to TRUE. For spatial analysis and statistics users should set simplified = FALSE. Borders have been simplified by removing vertices of borders using st_simplify{sf} preserving topology with a dTolerance of 100.

showProgress   Logical. Defaults to TRUE display progress bar.

cache   Logical. Whether the function should read the data cached locally, which is faster. Defaults to cache = TRUE. By default, geobr stores data files in a temporary directory that exists only within each R session. If cache = FALSE, the function will download the data again and overwrite the local file.

Value

An "sf" "data.frame" object

See Also

Other area functions: read_amazon(), read_biomes(), read_capitals(), read_comparable_areas(), read_country(), read_disaster_risk_area(), read_health_facilities(), read_immediate_region(), read_indigenous_land(), read_intermediate_region(), read_meso_region(), read_metro_area(), read_micro_region(), read_municipal_seat(), read_municipality(), read_neighborhood(), read_pop_arrangements(), read_region(), read_schools(), read_semiarid(), read_state(), read_statistical_grid(), read_urban_area(), read_urban_concentrations(), read_weighting_area()

Examples

```
# Read all health regions for a given year
hr <- read_health_region( year=2013 )

# Read all macro health regions
mhr <- read_health_region( year=2013, macro =TRUE)
```

---

read_immediate_region *Download spatial data of Brazil's Immediate Geographic Areas*

Description

The Immediate Geographic Areas are part of the geographic division of Brazil created in 2017 by IBGE. These regions were created to replace the "Micro Regions" division. Data at scale 1:250,000, using Geodetic reference system "SIRGAS2000" and CRS(4674)

Usage

```
read_immediate_region(
  code_immediate = "all",
  year = 2019,
  simplified = TRUE,
  showProgress = TRUE,
  cache = TRUE
)
```

Arguments

code_immediate 6-digit code of an immediate region. If the two-digit code or a two-letter upper-
case abbreviation of a state is passed, (e.g. 33 or "RJ") the function will load
all immediate regions of that state. If code_immediate="all" (Default), the
function downloads all immediate regions of the country.

year   Numeric. Year of the data in YYYY format. Defaults to 2019.

simplified   Logic FALSE or TRUE, indicating whether the function should return the data
set with 'original' spatial resolution or a data set with 'simplified' geometry.
Defaults to TRUE. For spatial analysis and statistics users should set simplified
= FALSE. Borders have been simplified by removing vertices of borders using
st_simplify{sf} preserving topology with a dTolerance of 100.

showProgress   Logical. Defaults to TRUE display progress bar.

cache   Logical. Whether the function should read the data cached locally, which is
faster. Defaults to cache = TRUE. By default, geobr stores data files in a tem-
porary directory that exists only within each R session. If cache = FALSE, the
function will download the data again and overwrite the local file.

Value

An "sf" "data.frame" object

See Also

Other area functions: read_amazon(), read_biomes(), read_capitals(), read_comparable_areas(),
read_country(), read_disaster_risk_area(), read_health_facilities(), read_health_region(),
read_indigenous_land(), read_intermediate_region(), read_meso_region(), read_metro_area(),
read_micro_region(), read_municipal_seat(), read_municipality(), read_neighborhood(),
read_pop_arrangements(), read_region(), read_schools(), read_semiarid(), read_state(),
read_statistical_grid(), read_urban_area(), read_urban_concentrations(), read_weighting_area()

Examples

```
# Read an specific immediate region
  im <- read_immediate_region(code_immediate=110006)

# Read immediate regions of a state
  im <- read_immediate_region(code_immediate=12)
  im <- read_immediate_region(code_immediate="AM")

# Read all immediate regions of the country
  im <- read_immediate_region()
  im <- read_immediate_region(code_immediate="all")
```

---

read_indigenous_land   *Download spatial data of indigenous lands in Brazil*

Description

The data set covers the whole of Brazil and it includes indigenous lands from all ethnicities and in
different stages of demarcation. The original data comes from the National Indian Foundation (FU-
NAI) and can be found at https://www.gov.br/funai/pt-br/atuacao/terras-indigenas/
geoprocessamento-e-mapas. Although original data is updated monthly, the geobr package will
only keep the data for a few months per year.

Usage

```
read_indigenous_land(
  date = 201907,
  simplified = TRUE,
  showProgress = TRUE,
  cache = TRUE
)
```

Arguments

date	Numeric. Date of the data in YYYYMM format. Defaults to `201907`.
simplified	Logic `FALSE` or `TRUE`, indicating whether the function should return the data set with 'original' spatial resolution or a data set with 'simplified' geometry. Defaults to `TRUE`. For spatial analysis and statistics users should set `simplified = FALSE`. Borders have been simplified by removing vertices of borders using `st_simplify{sf}` preserving topology with a dTolerance of 100.
showProgress	Logical. Defaults to `TRUE` display progress bar.
cache	Logical. Whether the function should read the data cached locally, which is faster. Defaults to `cache = TRUE`. By default, geobr stores data files in a temporary directory that exists only within each R session. If `cache = FALSE`, the function will download the data again and overwrite the local file.

Value

An `"sf"` `"data.frame"` object

See Also

Other area functions: read_amazon(), read_biomes(), read_capitals(), read_comparable_areas(), read_country(), read_disaster_risk_area(), read_health_facilities(), read_health_region(), read_immediate_region(), read_intermediate_region(), read_meso_region(), read_metro_area(), read_micro_region(), read_municipal_seat(), read_municipality(), read_neighborhood(), read_pop_arrangements(), read_region(), read_schools(), read_semiarid(), read_state(), read_statistical_grid(), read_urban_area(), read_urban_concentrations(), read_weighting_area()

Examples

```
# Read all indigenous land in an specific date
i <- read_indigenous_land(date=201907)
```

---

read_intermediate_region

Download spatial data of Brazil's Intermediate Geographic Areas

---

Description

The intermediate Geographic Areas are part of the geographic division of Brazil created in 2017 by IBGE. These regions were created to replace the "Meso Regions" division. Data at scale 1:250,000, using Geodetic reference system "SIRGAS2000" and CRS(4674)

Usage

```
read_intermediate_region(
  code_intermediate = "all",
  year = 2019,
  simplified = TRUE,
  showProgress = TRUE,
  cache = TRUE
)
```

Arguments

code_intermediate

4-digit code of an intermediate region. If the two-digit code or a two-letter up-
percase abbreviation of a state is passed, (e.g. 33 or "RJ") the function will load
all intermediate regions of that state. If `code_intermediate="all"` (Default),
the function downloads all intermediate regions of the country.

year   Numeric. Year of the data in YYYY format. Defaults to 2019.

simplified   Logic `FALSE` or `TRUE`, indicating whether the function should return the data
set with 'original' spatial resolution or a data set with 'simplified' geometry.
Defaults to `TRUE`. For spatial analysis and statistics users should set `simplified`
`= FALSE`. Borders have been simplified by removing vertices of borders using
`st_simplify{sf}` preserving topology with a `dTolerance` of 100.

showProgress   Logical. Defaults to `TRUE` display progress bar.

cache   Logical. Whether the function should read the data cached locally, which is
faster. Defaults to `cache = TRUE`. By default, geobr stores data files in a tem-
porary directory that exists only within each R session. If `cache = FALSE`, the
function will download the data again and overwrite the local file.

Value

An `"sf"` `"data.frame"` object

See Also

Other area functions: `read_amazon()`, `read_biomes()`, `read_capitals()`, `read_comparable_areas()`,
`read_country()`, `read_disaster_risk_area()`, `read_health_facilities()`, `read_health_region()`,
`read_immediate_region()`, `read_indigenous_land()`, `read_meso_region()`, `read_metro_area()`,
`read_micro_region()`, `read_municipal_seat()`, `read_municipality()`, `read_neighborhood()`,
`read_pop_arrangements()`, `read_region()`, `read_schools()`, `read_semiarid()`, `read_state()`,
`read_statistical_grid()`, `read_urban_area()`, `read_urban_concentrations()`, `read_weighting_area()`

Examples

```
# Read an specific intermediate region
  im <- read_intermediate_region(code_intermediate=1202)

# Read intermediate regions of a state
  im <- read_intermediate_region(code_intermediate=12)
```

```
    im <- read_intermediate_region(code_intermediate="AM")

  # Read all intermediate regions of the country
    im <- read_intermediate_region()
    im <- read_intermediate_region(code_intermediate="all")
```

---

read_meso_region   *Download spatial data of meso regions*

Description

Data at scale 1:250,000, using Geodetic reference system "SIRGAS2000" and CRS(4674)

Usage

```
read_meso_region(
  code_meso = "all",
  year = 2010,
  simplified = TRUE,
  showProgress = TRUE,
  cache = TRUE
)
```

Arguments

code_meso	The 4-digit code of a meso region. If the two-digit code or a two-letter uppercase abbreviation of a state is passed, (e.g. 33 or "RJ") the function will load all meso regions of that state. If code_meso="all" (Default), the function downloads all meso regions of the country.
year	Numeric. Year of the data in YYYY format. Defaults to 2010.
simplified	Logic FALSE or TRUE, indicating whether the function should return the data set with 'original' spatial resolution or a data set with 'simplified' geometry. Defaults to TRUE. For spatial analysis and statistics users should set simplified = FALSE. Borders have been simplified by removing vertices of borders using st_simplify{sf} preserving topology with a dTolerance of 100.
showProgress	Logical. Defaults to TRUE display progress bar.
cache	Logical. Whether the function should read the data cached locally, which is faster. Defaults to cache = TRUE. By default, geobr stores data files in a temporary directory that exists only within each R session. If cache = FALSE, the function will download the data again and overwrite the local file.

Value

An "sf" "data.frame" object

See Also

Other area functions: read_amazon(), read_biomes(), read_capitals(), read_comparable_areas(),
read_country(), read_disaster_risk_area(), read_health_facilities(), read_health_region(),
read_immediate_region(), read_indigenous_land(), read_intermediate_region(), read_metro_area(),
read_micro_region(), read_municipal_seat(), read_municipality(), read_neighborhood(),
read_pop_arrangements(), read_region(), read_schools(), read_semiarid(), read_state(),
read_statistical_grid(), read_urban_area(), read_urban_concentrations(), read_weighting_area()

Examples

```
# Read specific meso region at a given year
  meso <- read_meso_region(code_meso=3301, year=2018)

# Read all meso regions of a state at a given year
  meso <- read_meso_region(code_meso=12, year=2017)
  meso <- read_meso_region(code_meso="AM", year=2000)

# Read all meso regions of the country at a given year
  meso <- read_meso_region(code_meso="all", year=2010)
```

---

read_metro_area   *Download spatial data of official metropolitan areas in Brazil*

Description

The function returns the shapes of municipalities grouped by their respective metro areas. Metropolitan areas are created by each state in Brazil. The data set includes the municipalities that belong to all metropolitan areas in the country according to state legislation in each year. Original data were generated by Institute of Geography. Data at scale 1:250,000, using Geodetic reference system "SIRGAS2000" and CRS(4674).

Usage

```
read_metro_area(
  year = 2018,
  code_state = "all",
  simplified = TRUE,
  showProgress = TRUE,
  cache = TRUE
)
```

Arguments

year	Numeric. Year of the data in YYYY format. Defaults to 2018.
code_state	The two-digit code of a state or a two-letter uppercase abbreviation (e.g. 33 or "RJ"). If code_state="all" (the default), the function downloads all states.

simplified	Logic FALSE or TRUE, indicating whether the function should return the data set with 'original' spatial resolution or a data set with 'simplified' geometry. Defaults to TRUE. For spatial analysis and statistics users should set simplified = FALSE. Borders have been simplified by removing vertices of borders using st_simplify{sf} preserving topology with a dTolerance of 100.
showProgress	Logical. Defaults to TRUE display progress bar.
cache	Logical. Whether the function should read the data cached locally, which is faster. Defaults to cache = TRUE. By default, geobr stores data files in a temporary directory that exists only within each R session. If cache = FALSE, the function will download the data again and overwrite the local file.

Value

An "sf" "data.frame" object

See Also

Other area functions: read_amazon(), read_biomes(), read_capitals(), read_comparable_areas(), read_country(), read_disaster_risk_area(), read_health_facilities(), read_health_region(), read_immediate_region(), read_indigenous_land(), read_intermediate_region(), read_meso_region(), read_micro_region(), read_municipal_seat(), read_municipality(), read_neighborhood(), read_pop_arrangements(), read_region(), read_schools(), read_semiarid(), read_state(), read_statistical_grid(), read_urban_area(), read_urban_concentrations(), read_weighting_area()

Examples

```
# Read all official metropolitan areas for a given year
  m <- read_metro_area(2005)

  m <- read_metro_area(2018)
```

---

read_micro_region	*Download spatial data of micro regions*

Description

Data at scale 1:250,000, using Geodetic reference system "SIRGAS2000" and CRS(4674)

Usage

```
read_micro_region(
  code_micro = "all",
  year = 2010,
  simplified = TRUE,
  showProgress = TRUE,
  cache = TRUE
)
```

Arguments

code_micro   5-digit code of a micro region. If the two-digit code or a two-letter uppercase
                  abbreviation of a state is passed, (e.g. 33 or "RJ") the function will load all micro
                  regions of that state. If code_micro="all" (Default), the function downloads
                  all micro regions of the country.

year   Numeric. Year of the data in YYYY format. Defaults to 2010.

simplified   Logic FALSE or TRUE, indicating whether the function should return the data
                  set with 'original' spatial resolution or a data set with 'simplified' geometry.
                  Defaults to TRUE. For spatial analysis and statistics users should set simplified
                  = FALSE. Borders have been simplified by removing vertices of borders using
                  st_simplify{sf} preserving topology with a dTolerance of 100.

showProgress   Logical. Defaults to TRUE display progress bar.

cache   Logical. Whether the function should read the data cached locally, which is
                  faster. Defaults to cache = TRUE. By default, geobr stores data files in a tem-
                  porary directory that exists only within each R session. If cache = FALSE, the
                  function will download the data again and overwrite the local file.

Value

An "sf" "data.frame" object

See Also

Other area functions: read_amazon(), read_biomes(), read_capitals(), read_comparable_areas(),
read_country(), read_disaster_risk_area(), read_health_facilities(), read_health_region(),
read_immediate_region(), read_indigenous_land(), read_intermediate_region(), read_meso_region(),
read_metro_area(), read_municipal_seat(), read_municipality(), read_neighborhood(),
read_pop_arrangements(), read_region(), read_schools(), read_semiarid(), read_state(),
read_statistical_grid(), read_urban_area(), read_urban_concentrations(), read_weighting_area()

Examples

```
# Read an specific micro region a given year
  micro <- read_micro_region(code_micro=11008, year=2018)

# Read micro regions of a state at a given year
  micro <- read_micro_region(code_micro=12, year=2017)
  micro <- read_micro_region(code_micro="AM", year=2000)

# Read all micro regions at a given year
  micro <- read_micro_region(code_micro="all", year=2010)
```

---

read_municipality   *Download spatial data of Brazilian municipalities*

Description

Data at scale 1:250,000, using Geodetic reference system "SIRGAS2000" and CRS(4674).

Usage

```
read_municipality(
  code_muni = "all",
  year = 2010,
  simplified = TRUE,
  showProgress = TRUE,
  cache = TRUE,
  keep_areas_operacionais = FALSE
)
```

Arguments

code_muni
: The 7-digit identification code of a municipality. If code_muni = "all" (Default), the function downloads all municipalities of the country. Alternatively, if a two-digit identification code or a two-letter uppercase abbreviation of a state is passed (e.g. 33 or "RJ"), all municipalities of that state will be downloaded. Municipality identification codes can be consulted with the geobr::lookup_muni() function.

year
: Numeric. Year of the data in YYYY format. Defaults to 2010.

simplified
: Logic FALSE or TRUE, indicating whether the function should return the data set with 'original' spatial resolution or a data set with 'simplified' geometry. Defaults to TRUE. For spatial analysis and statistics users should set simplified = FALSE. Borders have been simplified by removing vertices of borders using st_simplify{sf} preserving topology with a dTolerance of 100.

showProgress
: Logical. Defaults to TRUE display progress bar.

cache
: Logical. Whether the function should read the data cached locally, which is faster. Defaults to cache = TRUE. By default, geobr stores data files in a temporary directory that exists only within each R session. If cache = FALSE, the function will download the data again and overwrite the local file.

keep_areas_operacionais
: Logic. Whether the function should keep the polygons of Lagoas dos Patos and Lagoa Mirim in the State of Rio Grande do Sul (considered as areas estaduais operacionais). Defaults to FALSE.

Value

An "sf" "data.frame" object

See Also

Other area functions: read_amazon(), read_biomes(), read_capitals(), read_comparable_areas(), read_country(), read_disaster_risk_area(), read_health_facilities(), read_health_region(), read_immediate_region(), read_indigenous_land(), read_intermediate_region(), read_meso_region(), read_metro_area(), read_micro_region(), read_municipal_seat(), read_neighborhood(), read_pop_arrangements(), read_region(), read_schools(), read_semiarid(), read_state(), read_statistical_grid(), read_urban_area(), read_urban_concentrations(), read_weighting_area()

Examples

```
# Read specific municipality at a given year
mun <- read_municipality(code_muni = 1200179, year = 2017)

# Read all municipalities of a state at a given year
mun <- read_municipality(code_muni = 33, year = 2010)
mun <- read_municipality(code_muni = "RJ", year = 2010)

# Read all municipalities of the country at a given year
mun <- read_municipality(code_muni = "all", year = 2018)
```

---

read_municipal_seat *Download spatial data of municipal seats (sede dos municipios) in Brazil*

Description

This function reads the official data on the municipal seats (sede dos municipios) of Brazil. The data brings the geographical coordinates (lat lon) of municipal seats for various years between 1872 and 2010. Original data were generated by Brazilian Institute of Geography and Statistics (IBGE).

Usage

```
read_municipal_seat(year = 2010, showProgress = TRUE, cache = TRUE)
```

Arguments

year	Numeric. Year of the data in YYYY format. Defaults to 2010.
showProgress	Logical. Defaults to TRUE display progress bar.
cache	Logical. Whether the function should read the data cached locally, which is faster. Defaults to cache = TRUE. By default, geobr stores data files in a temporary directory that exists only within each R session. If cache = FALSE, the function will download the data again and overwrite the local file.

Value

An "sf" "data.frame" object

See Also

Other area functions: read_amazon(), read_biomes(), read_capitals(), read_comparable_areas(), read_country(), read_disaster_risk_area(), read_health_facilities(), read_health_region(), read_immediate_region(), read_indigenous_land(), read_intermediate_region(), read_meso_region(), read_metro_area(), read_micro_region(), read_municipality(), read_neighborhood(), read_pop_arrangements(), read_region(), read_schools(), read_semiarid(), read_state(), read_statistical_grid(), read_urban_area(), read_urban_concentrations(), read_weighting_area()

Examples

```
# Read municipal seats in an specific year
m <- read_municipal_seat(year = 1991)
```

---

read_neighborhood | *Download spatial data of neighborhood limits of Brazilian municipalities*

Description

This data set includes the neighborhood limits of 720 Brazilian municipalities. It is based on aggregations of the census tracts from the Brazilian census. Only 2010 data is currently available.

Usage

```
read_neighborhood(
  year = 2010,
  simplified = TRUE,
  showProgress = TRUE,
  cache = TRUE
)
```

Arguments

year	Numeric. Year of the data in YYYY format. Defaults to 2010.
simplified	Logic FALSE or TRUE, indicating whether the function should return the data set with 'original' spatial resolution or a data set with 'simplified' geometry. Defaults to TRUE. For spatial analysis and statistics users should set simplified = FALSE. Borders have been simplified by removing vertices of borders using st_simplify{sf} preserving topology with a dTolerance of 100.
showProgress	Logical. Defaults to TRUE display progress bar.
cache	Logical. Whether the function should read the data cached locally, which is faster. Defaults to cache = TRUE. By default, geobr stores data files in a temporary directory that exists only within each R session. If cache = FALSE, the function will download the data again and overwrite the local file.

Value

An "sf" "data.frame" object

See Also

Other area functions: read_amazon(), read_biomes(), read_capitals(), read_comparable_areas(),
read_country(), read_disaster_risk_area(), read_health_facilities(), read_health_region(),
read_immediate_region(), read_indigenous_land(), read_intermediate_region(), read_meso_region(),
read_metro_area(), read_micro_region(), read_municipal_seat(), read_municipality(),
read_pop_arrangements(), read_region(), read_schools(), read_semiarid(), read_state(),
read_statistical_grid(), read_urban_area(), read_urban_concentrations(), read_weighting_area()

Examples

```
# Read neighborhoods of Brazilian municipalities
n <- read_neighborhood(year=2010)
```

---

read_pop_arrangements   *Download population arrangements in Brazil*

Description

This function reads the official data on population arrangements (Arranjos Populacionais) of Brazil.
Original data were generated by the Institute of Geography and Statistics (IBGE) For more in-
formation about the methodology, see details at https://www.ibge.gov.br/apps/arranjos_
populacionais/2015/pdf/publicacao.pdf

Usage

```
read_pop_arrangements(
  year = 2015,
  simplified = TRUE,
  showProgress = TRUE,
  cache = TRUE
)
```

Arguments

year	Numeric. Year of the data in YYYY format. Defaults to 2015.
simplified	Logic FALSE or TRUE, indicating whether the function should return the data set with 'original' spatial resolution or a data set with 'simplified' geometry. Defaults to TRUE. For spatial analysis and statistics users should set simplified = FALSE. Borders have been simplified by removing vertices of borders using st_simplify{sf} preserving topology with a dTolerance of 100.
showProgress	Logical. Defaults to TRUE display progress bar.

cache   Logical. Whether the function should read the data cached locally, which is faster. Defaults to cache = TRUE. By default, geobr stores data files in a temporary directory that exists only within each R session. If cache = FALSE, the function will download the data again and overwrite the local file.

Value

An "sf" "data.frame" object

See Also

Other area functions: read_amazon(), read_biomes(), read_capitals(), read_comparable_areas(), read_country(), read_disaster_risk_area(), read_health_facilities(), read_health_region(), read_immediate_region(), read_indigenous_land(), read_intermediate_region(), read_meso_region(), read_metro_area(), read_micro_region(), read_municipal_seat(), read_municipality(), read_neighborhood(), read_region(), read_schools(), read_semiarid(), read_state(), read_statistical_grid(), read_urban_area(), read_urban_concentrations(), read_weighting_area()

Examples

```
# Read urban footprint of Brazilian cities in an specific year
uc <- read_pop_arrangements(year=2015)
```

---

read_region   *Download spatial data of Brazil Regions*

Description

Data at scale 1:250,000, using Geodetic reference system "SIRGAS2000" and CRS(4674)

Usage

```
read_region(year = 2010, simplified = TRUE, showProgress = TRUE, cache = TRUE)
```

Arguments

year   Numeric. Year of the data in YYYY format. Defaults to 2010.

simplified   Logic FALSE or TRUE, indicating whether the function should return the data set with 'original' spatial resolution or a data set with 'simplified' geometry. Defaults to TRUE. For spatial analysis and statistics users should set simplified = FALSE. Borders have been simplified by removing vertices of borders using st_simplify{sf} preserving topology with a dTolerance of 100.

showProgress   Logical. Defaults to TRUE display progress bar.

cache   Logical. Whether the function should read the data cached locally, which is faster. Defaults to cache = TRUE. By default, geobr stores data files in a temporary directory that exists only within each R session. If cache = FALSE, the function will download the data again and overwrite the local file.

Value

An "sf" "data.frame" object

See Also

Other area functions: read_amazon(), read_biomes(), read_capitals(), read_comparable_areas(), read_country(), read_disaster_risk_area(), read_health_facilities(), read_health_region(), read_immediate_region(), read_indigenous_land(), read_intermediate_region(), read_meso_region(), read_metro_area(), read_micro_region(), read_municipal_seat(), read_municipality(), read_neighborhood(), read_pop_arrangements(), read_schools(), read_semiarid(), read_state(), read_statistical_grid(), read_urban_area(), read_urban_concentrations(), read_weighting_area()

Examples

```
# Read specific year
reg <- read_region(year=2018)
```

---

read_schools   *Download geolocated data of schools*

Description

Data comes from the School Census collected by INEP, the National Institute for Educational Studies and Research Anisio Teixeira. The date of the last data update is registered in the database in the column 'date_update'. These data uses Geodetic reference system "SIRGAS2000" and CRS(4674). The coordinates of each school if collected by INEP. Periodically the coordinates are revised with the objective of improving the quality of the data. More information available at https://www.gov.br/inep/pt-br/acesso-a-informacao/dados-abertos/inep-data/catalogo-de-escolas/

Usage

```
read_schools(year = 2020, showProgress = TRUE, cache = TRUE)
```

Arguments

year	Numeric. Year of the data in YYYY format. Defaults to 2020.
showProgress	Logical. Defaults to TRUE display progress bar.
cache	Logical. Whether the function should read the data cached locally, which is faster. Defaults to cache = TRUE. By default, geobr stores data files in a temporary directory that exists only within each R session. If cache = FALSE, the function will download the data again and overwrite the local file.

Value

An "sf" "data.frame" object

See Also

Other area functions: read_amazon(), read_biomes(), read_capitals(), read_comparable_areas(),
read_country(), read_disaster_risk_area(), read_health_facilities(), read_health_region(),
read_immediate_region(), read_indigenous_land(), read_intermediate_region(), read_meso_region(),
read_metro_area(), read_micro_region(), read_municipal_seat(), read_municipality(),
read_neighborhood(), read_pop_arrangements(), read_region(), read_semiarid(), read_state(),
read_statistical_grid(), read_urban_area(), read_urban_concentrations(), read_weighting_area()

Examples

```
# Read all schools in the country
s <- read_schools( year = 2020)
```

---

read_semiarid *Download spatial data of the Brazilian Semiarid region*

Description

This data set covers the whole of Brazilian Semiarid as defined in the resolution in 23/11/2017).
The original data comes from the Brazilian Institute of Geography and Statistics (IBGE) and can be
found at https://www.ibge.gov.br/geociencias/cartas-e-mapas/mapas-regionais/15974-semiarido-brasileir
html?=&t=downloads

Usage

```
read_semiarid(
  year = 2017,
  simplified = TRUE,
  showProgress = TRUE,
  cache = TRUE
)
```

Arguments

year	Numeric. Year of the data in YYYY format. Defaults to 2017.
simplified	Logic FALSE or TRUE, indicating whether the function should return the data set with 'original' spatial resolution or a data set with 'simplified' geometry. Defaults to TRUE. For spatial analysis and statistics users should set simplified = FALSE. Borders have been simplified by removing vertices of borders using st_simplify{sf} preserving topology with a dTolerance of 100.
showProgress	Logical. Defaults to TRUE display progress bar.
cache	Logical. Whether the function should read the data cached locally, which is faster. Defaults to cache = TRUE. By default, geobr stores data files in a temporary directory that exists only within each R session. If cache = FALSE, the function will download the data again and overwrite the local file.

Value

An "sf" "data.frame" object

See Also

Other area functions: read_amazon(), read_biomes(), read_capitals(), read_comparable_areas(),
read_country(), read_disaster_risk_area(), read_health_facilities(), read_health_region(),
read_immediate_region(), read_indigenous_land(), read_intermediate_region(), read_meso_region(),
read_metro_area(), read_micro_region(), read_municipal_seat(), read_municipality(),
read_neighborhood(), read_pop_arrangements(), read_region(), read_schools(), read_state(),
read_statistical_grid(), read_urban_area(), read_urban_concentrations(), read_weighting_area()

Examples

```
# Read Brazilian semiarid
a <- read_semiarid(year=2017)
```

---

read_state   *Download spatial data of Brazilian states*

Description

Data at scale 1:250,000, using Geodetic reference system "SIRGAS2000" and CRS(4674)

Usage

```
read_state(
  code_state = "all",
  year = 2010,
  simplified = TRUE,
  showProgress = TRUE,
  cache = TRUE
)
```

Arguments

code_state	The two-digit code of a state or a two-letter uppercase abbreviation (e.g. 33 or "RJ"). If code_state="all" (the default), the function downloads all states.
year	Numeric. Year of the data in YYYY format. Defaults to 2010.
simplified	Logic FALSE or TRUE, indicating whether the function should return the data set with 'original' spatial resolution or a data set with 'simplified' geometry. Defaults to TRUE. For spatial analysis and statistics users should set simplified = FALSE. Borders have been simplified by removing vertices of borders using st_simplify{sf} preserving topology with a dTolerance of 100.
showProgress	Logical. Defaults to TRUE display progress bar.

cache   Logical. Whether the function should read the data cached locally, which is
                        faster. Defaults to `cache = TRUE`. By default, geobr stores data files in a tem-
                        porary directory that exists only within each R session. If `cache = FALSE`, the
                        function will download the data again and overwrite the local file.

Value

An `"sf"` `"data.frame"` object

See Also

Other area functions: `read_amazon()`, `read_biomes()`, `read_capitals()`, `read_comparable_areas()`,
`read_country()`, `read_disaster_risk_area()`, `read_health_facilities()`, `read_health_region()`,
`read_immediate_region()`, `read_indigenous_land()`, `read_intermediate_region()`, `read_meso_region()`,
`read_metro_area()`, `read_micro_region()`, `read_municipal_seat()`, `read_municipality()`,
`read_neighborhood()`, `read_pop_arrangements()`, `read_region()`, `read_schools()`, `read_semiarid()`,
`read_statistical_grid()`, `read_urban_area()`, `read_urban_concentrations()`, `read_weighting_area()`

Examples

```
# Read specific state at a given year
  uf <- read_state(code_state=12, year=2017)

# Read specific state at a given year
  uf <- read_state(code_state="SC", year=2000)

# Read all states at a given year
  ufs <- read_state(code_state="all", year=2010)
```

---

read_statistical_grid *Download spatial data of IBGE's statistical grid*

Description

Data at scale 1:250,000, using Geodetic reference system "SIRGAS2000" and CRS(4674)

Usage

```
read_statistical_grid(
  code_grid,
  year = 2010,
  showProgress = TRUE,
  cache = TRUE
)
```

Arguments

code_grid	If two-letter abbreviation or two-digit code of a state is passed, the function will load all grid quadrants that intersect with that state. If code_grid="all", the grid of the whole country will be loaded. Users may also pass a grid quadrant id to load an specific quadrant. Quadrant ids can be consulted at geobr::grid_state_correspondence_tal
year	Numeric. Year of the data in YYYY format. Defaults to 2010. The only year available thus far is 2010.
showProgress	Logical. Defaults to TRUE display progress bar.
cache	Logical. Whether the function should read the data cached locally, which is faster. Defaults to cache = TRUE. By default, geobr stores data files in a temporary directory that exists only within each R session. If cache = FALSE, the function will download the data again and overwrite the local file.

Value

An "sf" "data.frame" object

See Also

Other area functions: read_amazon(), read_biomes(), read_capitals(), read_comparable_areas(), read_country(), read_disaster_risk_area(), read_health_facilities(), read_health_region(), read_immediate_region(), read_indigenous_land(), read_intermediate_region(), read_meso_region(), read_metro_area(), read_micro_region(), read_municipal_seat(), read_municipality(), read_neighborhood(), read_pop_arrangements(), read_region(), read_schools(), read_semiarid(), read_state(), read_urban_area(), read_urban_concentrations(), read_weighting_area()

Examples

```
# Read a particular grid at a given year
grid <- read_statistical_grid(code_grid = 45, year=2010)

# Read the grid covering a given state at a given year
state_grid <- read_statistical_grid(code_grid = "RJ")
```

---

read_urban_area   *Download spatial data of urbanized areas in Brazil*

Description

This function reads the official data on the urban footprint of Brazilian cities in the years 2005 and 2015. Original data were generated by the Institute of Geography and Statistics (IBGE) For more information about the methodology, see details at https://biblioteca.ibge.gov.br/visualizacao/livros/liv100639.pdf

Usage

```
read_urban_area(
  year = 2015,
  code_state = "all",
  simplified = TRUE,
  showProgress = TRUE,
  cache = TRUE
)
```

Arguments

year	Numeric. Year of the data in YYYY format. Defaults to 2015.
code_state	The two-digit code of a state or a two-letter uppercase abbreviation (e.g. 33 or "RJ"). If code_state="all" (the default), the function downloads all states.
simplified	Logic FALSE or TRUE, indicating whether the function should return the data set with 'original' spatial resolution or a data set with 'simplified' geometry. Defaults to TRUE. For spatial analysis and statistics users should set simplified = FALSE. Borders have been simplified by removing vertices of borders using st_simplify{sf} preserving topology with a dTolerance of 100.
showProgress	Logical. Defaults to TRUE display progress bar.
cache	Logical. Whether the function should read the data cached locally, which is faster. Defaults to cache = TRUE. By default, geobr stores data files in a temporary directory that exists only within each R session. If cache = FALSE, the function will download the data again and overwrite the local file.

Value

An "sf" "data.frame" object

See Also

Other area functions: read_amazon(), read_biomes(), read_capitals(), read_comparable_areas(), read_country(), read_disaster_risk_area(), read_health_facilities(), read_health_region(), read_immediate_region(), read_indigenous_land(), read_intermediate_region(), read_meso_region(), read_metro_area(), read_micro_region(), read_municipal_seat(), read_municipality(), read_neighborhood(), read_pop_arrangements(), read_region(), read_schools(), read_semiarid(), read_state(), read_statistical_grid(), read_urban_concentrations(), read_weighting_area()

Examples

```
# Read urban footprint of Brazilian cities in an specific year
d <- read_urban_area(year=2005)
```

---

read_urban_concentrations

Download urban concentration areas in Brazil

Description

This function reads the official data on the urban concentration areas (Areas de Concentracao de Populacao) of Brazil. Original data were generated by the Institute of Geography and Statistics (IBGE) For more information about the methodology, see details at `https://www.ibge.gov.br/apps/arranjos_populacionais/2015/pdf/publicacao.pdf`

Usage

```
read_urban_concentrations(
  year = 2015,
  simplified = TRUE,
  showProgress = TRUE,
  cache = TRUE
)
```

Arguments

year	Numeric. A year number in YYYY format. Defaults to 2015.
simplified	Logic `FALSE` or `TRUE`, indicating whether the function should return the data set with 'original' spatial resolution or a data set with 'simplified' geometry. Defaults to `TRUE`. For spatial analysis and statistics users should set `simplified` = FALSE. Borders have been simplified by removing vertices of borders using `st_simplify{sf}` preserving topology with a dTolerance of 100.
showProgress	Logical. Defaults to `TRUE` display progress bar.
cache	Logical. Whether the function should read the data cached locally, which is faster. Defaults to `cache` = TRUE. By default, geobr stores data files in a temporary directory that exists only within each R session. If `cache` = FALSE, the function will download the data again and overwrite the local file.

Value

An `"sf"` `"data.frame"` object

See Also

Other area functions: `read_amazon()`, `read_biomes()`, `read_capitals()`, `read_comparable_areas()`, `read_country()`, `read_disaster_risk_area()`, `read_health_facilities()`, `read_health_region()`, `read_immediate_region()`, `read_indigenous_land()`, `read_intermediate_region()`, `read_meso_region()`, `read_metro_area()`, `read_micro_region()`, `read_municipal_seat()`, `read_municipality()`, `read_neighborhood()`, `read_pop_arrangements()`, `read_region()`, `read_schools()`, `read_semiarid()`, `read_state()`, `read_statistical_grid()`, `read_urban_area()`, `read_weighting_area()`

Examples

```
# Read urban footprint of Brazilian cities in an specific year
uc <- read_urban_concentrations(year=2015)
```

---

read_weighting_area   *Download spatial data of Census Weighting Areas (area de pondera-*
                       cao) of the Brazilian Population Census

---

Description

Only 2010 data is currently available.

Usage

```
read_weighting_area(
  code_weighting = "all",
  year = 2010,
  simplified = TRUE,
  showProgress = TRUE,
  cache = TRUE
)
```

Arguments

code_weighting	The 7-digit code of a Municipality. If the two-digit code or a two-letter uppercase abbreviation of a state is passed, (e.g. 33 or "RJ") the function will load all weighting areas of that state. If code_weighting="all", all weighting areas of the country are loaded.
year	Numeric. Year of the data. Defaults to 2010.
simplified	Logic FALSE or TRUE, indicating whether the function should return the data set with 'original' spatial resolution or a data set with 'simplified' geometry. Defaults to TRUE. For spatial analysis and statistics users should set simplified = FALSE. Borders have been simplified by removing vertices of borders using st_simplify{sf} preserving topology with a dTolerance of 100.
showProgress	Logical. Defaults to TRUE display progress bar.
cache	Logical. Whether the function should read the data cached locally, which is faster. Defaults to cache = TRUE. By default, geobr stores data files in a temporary directory that exists only within each R session. If cache = FALSE, the function will download the data again and overwrite the local file.

Value

An "sf" "data.frame" object

See Also

Other area functions: read_amazon(), read_biomes(), read_capitals(), read_comparable_areas(),
read_country(), read_disaster_risk_area(), read_health_facilities(), read_health_region(),
read_immediate_region(), read_indigenous_land(), read_intermediate_region(), read_meso_region(),
read_metro_area(), read_micro_region(), read_municipal_seat(), read_municipality(),
read_neighborhood(), read_pop_arrangements(), read_region(), read_schools(), read_semiarid(),
read_state(), read_statistical_grid(), read_urban_area(), read_urban_concentrations()

Examples

```
# Read specific weighting area at a given year
w <- read_weighting_area(code_weighting=5201108005004, year=2010)

# Read all weighting areas of a state at a given year
w <- read_weighting_area(code_weighting=53, year=2010) # or
w <- read_weighting_area(code_weighting="DF", year=2010)
plot(w)

# Read all weighting areas of a municipality at a given year
w <- read_weighting_area(code_weighting=5201108, year=2010)
plot(w)

# Read all weighting areas of the country at a given year
w <- read_weighting_area(code_weighting="all", year=2010)
```

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