Package

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Type Package

Title Loads Shapefiles of Official Spatial Data Sets of Brazil

Version 1.0

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URL https://github.com/ipeaGIT/geobr

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

Description Easy access to shapefiles of the Brazilian Institute of Geography and Statistics (IBGE) <https://www.ibge.gov.br/> and other official spatial data sets of Brazil as 'sf' objects in R. The package includes a wide range of geographic datasets available at various geographic scales and for various years.

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Encoding UTF-8

LazyData TRUE

Depends R (>= 3.4.0)

Suggests ggplot2,
mapview,
knitr,
rio,
rmarkdown

Imports dplyr,
httr,
readr,
sf,
utils

RoxygenNote 6.1.1

VignetteBuilder knitr

R topics documented:

`geobr` `geobr` *package*

Description

Easy access to shapefiles of the Brazilian Institute of Geography and Statistics (IBGE) and other official spatial data sets of Brazil

Details

See the README on GitHub

`grid_state_correspondence_table`

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

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Description

Built-in dataset

- `code_uf`: IBGE code of State (2-digit, numeric)
- `name_state`: Title-case name of state (character)
- `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 2019-06-17

`read_biomes` *Download official data of Brazilian biomes as an sf object.*

Description

This data set covers the whole of Brazil and it includes the polygons of all of all biomes present in Brazilian territory. The last update of the data was 2004 (only year for which the data is currently available). The original data comes from IBGE and can be found at https://geoftp.ibge.gov.br/informacoes_ambientais/est
.

Usage

```
read_biomes(year)
```

Arguments

`year`	A date number in YYYY format.

See Also

Other general area functions: `read_census_tract`, `read_country`, `read_meso_region2`, `read_micro_region`, `read_municipality`, `read_region`, `read_state`, `read_statistical_grid`, `read_weighting_area`

`read_census_tract` *Download shape files of census tracts of the Brazilian Population Census (Only years 2000 and 2010 are currently available).*

Description

Download shape files of census tracts of the Brazilian Population Census (Only years 2000 and 2010 are currently available).

Usage

```
read_census_tract(code_tract, year = NULL, zone = "urban")
```

Arguments

`code_tract`	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 census tracts of that state. If code_tract="all", all census tracts of the country are loaded.
`year`	Year of the data (defaults to 2010)
`zone`	"urban" or "rural" census tracts come in separate files in the year 2000 (defaults to "urban")

See Also

Other general area functions: read_biomes, read_country, read_meso_region2, read_micro_region, read_municipality, read_region, read_state, read_statistical_grid, read_weighting_area

Examples

```
library(geobr)

# 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)
```

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read_country

Download shape file of Brazil as sf objects. Data at scale 1:250,000, using Geodetic reference system "SIRGAS2000" and CRS(4674)

Description

Download shape file of Brazil as sf objects. Data at scale 1:250,000, using Geodetic reference system "SIRGAS2000" and CRS(4674)

Usage

```
read_country(year = NULL)
```

Arguments

year	Year of the data (defaults to 2010)

See Also

Other general area functions: read_biomes, read_census_tract, read_meso_region2, read_micro_region, read_municipality, read_region, read_state, read_statistical_grid, read_weighting_area

Examples

```
library(geobr)

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

`read_disaster_risk_area` *Download official data of disaster risk areas as an sf object.*

Description

This function reads the the official data of disaster risk areas in Brazil. 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'). Orignal data were generated by IBGE and CEMADEM. 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-risco-no-brasil.html

Usage

```
read_disaster_risk_area(year)
```

Arguments

`year`	A year number in YYYY format.

Examples

```
library(geobr)

# Read all disaster risk areas in an specific year
  i <- read_disaster_risk_area(year=2018)
```

`read_health_facilities` *Download geolocated data of health facilities as an sf object.*

Description

Data comes from the National Registry of Healthcare facilities (Cadastro Nacional de Estabelecimentos de Saúde - CNES), originally collected by the Brazilian Ministry of Health. The date of the last data update is registered in the database in the columns 'date_update' and 'year_update'. These data uses Geodetic reference system "SIRGAS2000" and CRS(4674). The coordinates of each facility was 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 final 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. More information available at http://dados.gov.br/dataset/cnes

Usage

```
read_health_facilities(code)
```

Arguments

code	The 7-digit code of a municipality. If the two-digit code or a two-letter abbreviation of a state is passed, (e.g. 33 or "RJ") the function will load all healthcare facilities of that state. If code="all", all facilities of the country are loaded.

Examples

```
library(geobr)

# Read the health facilities of state 11
  h <- read_health_facilities(code=11)

# Read the health facilities of state "AM"
  h <- read_health_facilities(code="AM")

# Read all health facilities of the country
  h <- read_health_facilities(code="all")
```

read_indigenous_land *Download official data of indigenous lands as an sf object.*

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 (FUNAI) and can be found at http://www.funai.gov.br/index.php/shape. 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)
```

Arguments

date	A date numer in YYYYMM format.

Examples

```
library(geobr)

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

read_meso_region2 *Download shape files of meso region as sf objects. Data at scale 1:250,000, using Geodetic reference system "SIRGAS2000" and CRS(4674)*

Description

Download shape files of meso region as sf objects. Data at scale 1:250,000, using Geodetic reference system "SIRGAS2000" and CRS(4674)

Usage

```
read_meso_region2(code_meso, year = NULL)
```

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", all meso regions of the country are loaded.
year	Year of the data (defaults to 2010)

See Also

Other general area functions: read_biomes, read_census_tract, read_country, read_micro_region, read_municipality, read_region, read_state, read_statistical_grid, read_weighting_area

Examples

```
library(geobr)

# 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_micro_region` *Download shape files of micro region as sf objects. Data at scale 1:250,000, using Geodetic reference system "SIRGAS2000" and CRS(4674)*

Description

Download shape files of micro region as sf objects. Data at scale 1:250,000, using Geodetic reference system "SIRGAS2000" and CRS(4674)

Usage

```
read_micro_region(code_micro, year = NULL)
```

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", all micro regions of the country are loaded.
`year`	Year of the data (defaults to 2010)

See Also

Other general area functions: read_biomes, read_census_tract, read_country, read_meso_region2, read_municipality, read_region, read_state, read_statistical_grid, read_weighting_area

Examples

```
library(geobr)

# 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_meso="AM", year=2000)

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

`read_municipality` *Download shape files of Brazilian municipalities as sf objects. Data at scale 1:250,000, using Geodetic reference system "SIRGAS2000" and CRS(4674)*

Description

Download shape files of Brazilian municipalities as sf objects. Data at scale 1:250,000, using Geodetic reference system "SIRGAS2000" and CRS(4674)

Usage

```
read_municipality(code_muni, year = NULL)
```

Arguments

`code_muni`	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 municipalities of that state. If code_muni="all", all municipalities of the country will be loaded.
`year`	Year of the data (defaults to 2010)

See Also

Other general area functions: `read_biomes`, `read_census_tract`, `read_country`, `read_meso_region2`, `read_micro_region`, `read_region`, `read_state`, `read_statistical_grid`, `read_weighting_area`

Examples

```
library(geobr)

# 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_region` *Download shape file of Brazil Regions as sf objects. Data at scale 1:250,000, using Geodetic reference system "SIRGAS2000" and CRS(4674)*

Description

Download shape file of Brazil Regions as sf objects. Data at scale 1:250,000, using Geodetic reference system "SIRGAS2000" and CRS(4674)

Usage

```
read_region(year = NULL)
```

Arguments

`year`	Year of the data (defaults to 2010)

See Also

Other general area functions: `read_biomes`, `read_census_tract`, `read_country`, `read_meso_region2`, `read_micro_region`, `read_municipality`, `read_state`, `read_statistical_grid`, `read_weighting_area`

Examples

```
library(geobr)

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

read_state *Download shape files of Brazilian states as sf objects. Data at scale 1:250,000, using Geodetic reference system "SIRGAS2000" and CRS(4674)*

Description

Download shape files of Brazilian states as sf objects. Data at scale 1:250,000, using Geodetic reference system "SIRGAS2000" and CRS(4674)

Usage

```
read_state(code_state, year = NULL)
```

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", all states will be loaded.
year	Year of the data (defaults to 2010)

See Also

Other general area functions: read_biomes, read_census_tract, read_country, read_meso_region2, read_micro_region, read_municipality, read_region, read_statistical_grid, read_weighting_area

Examples

```
library(geobr)

# 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 shape files of IBGE's statistical grid (200 x 200 meters) as sf objects. Data at scale 1:250,000, using Geodetic reference system "SIRGAS2000" and CRS(4674)*

Description

Download shape files of IBGE's statistical grid (200 x 200 meters) as sf objects. Data at scale 1:250,000, using Geodetic reference system "SIRGAS2000" and CRS(4674)

Usage

```
read_statistical_grid(code_grid, year = NULL)
```

Arguments

code_grid	The 7-digit code of a grid quadrant If the two-letter abbreviation of a state is used, 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.
year	Year of the data (defaults to 2010). The only year available thus far is 2010.

See Also

Other general area functions: read_biomes, read_census_tract, read_country, read_meso_region2, read_micro_region, read_municipality, read_region, read_state, read_weighting_area

Examples

```
library(geobr)

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

# Read all municipalities of a state at a given year
  state_grid <- read_statistical_grid(code_grid = "RJ")
```

---

read_weighting_area *Download shape files of Census Weighting Areas (area de ponderação) of the Brazilian Population Census. Only 2010 data is currently available.*

Description

Download shape files of Census Weighting Areas (area de ponderação) of the Brazilian Population Census. Only 2010 data is currently available.

Usage

```
read_weighting_area(code_weighting, year = NULL)
```

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	Year of the data (defaults to 2010)

See Also

Other general area functions: read_biomes, read_census_tract, read_country, read_meso_region2, read_micro_region, read_municipality, read_region, read_state, read_statistical_grid

Examples

```
library(geobr)

# 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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