

# Package ‘covid19br’

October 13, 2021

**Type** Package

**Title** Brazilian COVID-19 Pandemic Data

**Version** 0.1.3

**Description** Set of functions to import COVID-19 pandemic data into R. The Brazilian COVID-19 data, obtained from the official Brazilian repository at [<https://covid.saude.gov.br/>](https://covid.saude.gov.br/), is available at country, region, state, and city-levels. The package also downloads the world-level COVID-19 data from the John Hopkins University's repository.

**URL** <https://fndemarqui.github.io/covid19br/>

**BugReports** <https://github.com/fndemarqui/covid19br/issues>

**Encoding** UTF-8

**License** AGPL (>= 3)

**Depends** R (>= 3.5.0)

**Imports** data.table,  
dplyr,  
rio,  
rlang,  
sf,  
tidyr

**Suggests** ggrepel,  
kableExtra,  
knitr,  
leaflet,  
pracma,  
plotly,  
rmarkdown,  
testthat,  
tidyverse

**LazyData** true

**RoxygenNote** 7.1.2

**VignetteBuilder** knitr

## R topics documented:

add_epi_rates . . . . .	2
add_geo . . . . .	3
covid19br . . . . .	4
downloadCovid19 . . . . .	4
election2018Cities . . . . .	5
election2018Regions . . . . .	6
election2018States . . . . .	6
ibgeCities . . . . .	7
ibgeRegions . . . . .	8
ibgeStates . . . . .	8
ipeaCities . . . . .	9
ipeaRegions . . . . .	10
ipeaStates . . . . .	11
mundi . . . . .	11

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add_epi_rates	<i>Adding incidence, mortality and lethality rates to the downloaded data</i>
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### Description

This function adds the incidence, mortality and lethality rates to a given data set downloaded by the covid19br::downloadCovid19() function.

### Usage

```
add_epi_rates(data, ...)
```

### Arguments

data	a data set downloaded using the covid19br::downloadCovid19() function.
...	further arguments passed to other methods.

### Details

The function add\_epi\_rates() was designed to work with the original names of the variables accumDeaths, accummCases and pop available in the data set downloaded by the covid19br::downloadCovid19(). For this reason, this function must be used before any change in such variable names.

### Value

the data set with the added incidence, mortality and lethality rates.

### Author(s)

Fabio N. Demarqui <fndemarqui@est.ufmg.br>

**Examples**

```
library(covid19br)

brazil <- downloadCovid19(level = "brazil")
brazil <- add_epi_rates(brazil)
```

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**add\_geo***Adding the geometry to the downloaded data for drawing maps*

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**Description**

This function adds the necessary geometry for drawing maps to a given data set downloaded by the covid19br::downloadCovid19() function.

**Usage**

```
add_geo(data, ...)
```

**Arguments**

data	a data set downloaded using the covid19br::downloadCovid19() function.
...	further arguments passed to other methods.

**Details**

The function add\_geo() was designed to work with the original names of the variables available in the data set downloaded by the covid19br::downloadCovid19(). For this reason, this function must be used before any change in such variable names.

**Value**

the data set with the added georeferenced data.

**Author(s)**

Fabio N. Demarqui <fndemarqui@est.ufmg.br>

**Examples**

```
library(covid19br)

regions <- downloadCovid19(level = "regions")
regions_geo <- add_geo(regions)
```

covid19br

*Brazilian COVID-19 Pandemic Data.***Description**

The package provides a function to automatically import Brazilian COVID-19 pandemic data into R. Brazilian data is available on the country, region, state, and city levels, and are obtained from the official Brazilian repository at <https://covid.saude.gov.br/>. The package also downloads the world-level COVID-19 data from the John Hopkins University's repository at <https://github.com/CSSEGISandData/COVID-19>.

**Author(s)**

Fábio N. Demarqui, Cristiano C. Santos, and Matheus B. Costa.

downloadCovid19

*Function to download COVID-19 data from web repositories***Description**

This function downloads the pandemic COVID-19 data at Brazil and World basis. Brazilian data is available at national, region, state, and city levels, whereas the world data are available at the country level.

**Usage**

```
downloadCovid19(level = c("brazil", "regions", "states", "cities", "world"))
```

**Arguments**

level            the desired level of data aggregation: "brazil" (default), "regions", "states", "cities", and "world".

**Details**

The Brazilian data provided by the Brazilian government at its official repository (<https://covid.saude.gov.br/>) is available in multiple xlsx files. Those files contains data aggregated at national, state, and city geographic levels. Because importing such data file into R requires a considerable amount of RAM (currently over 4G), the data is daily downloaded and then made available in smaller/lighter binary files on the GitHub repository (<https://github.com/dest-ufmg/covid19repo>) maintained by the authors' package.

**Value**

a tibble containing the downloaded data at the specified level.

**Examples**

```
library(covid19br)

# Downloading Brazilian COVID-19 data:
brazil <- downloadCovid19(level = "brazil")
regions <- downloadCovid19(level = "regions")
states <- downloadCovid19(level = "states")
cities <- downloadCovid19(level = "cities")

# Downloading world COVID-19 data:
world <- downloadCovid19(level = "world")
```

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election2018Cities	<i>Results of the 2018 presidential election in Brazil by city.</i>
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**Description**

Data set containing the results of the 2018 presidential election in Brazil.

**Format**

A data frame with 5570 rows and 6 variables:

- region: regions' names
- state: states' names.
- city: cities' names.
- region\_code: numerical code attributed to regions
- state\_code: numerical code attributed to states
- mesoregion\_code: numerical code attributed to mesoregions
- microregion\_code: numerical code attributed to microregions
- city\_code: numerical code attributed to cities
- Bolsonaro: count of votes obtained by the President-elected Jair Bolosnaro.
- Haddad: count of votes obtained by the defeated candidate Fernando Haddad.
- pop: estimated population in 2019.

**Author(s)**

Fabio N. Demarqui <fndemarqui@est.ufmg.br>

**Source**

Tribunal Superior Eleitoral (TSE). URL: <https://www.tse.jus.br/eleicoes/estatisticas>.

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election2018Regions	<i>Results of the 2018 presidential election in Brazil by region.</i>
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**Description**

Data set containing the results of the 2018 presidential election in Brazil.

**Format**

A data frame with 5 rows and 4 variables:

- region: regions' names.
- Bolsonaro: count of votes obtained by the President-elected Jair Bolosnaro.
- Haddad: count of votes obtained by the defeated candidate Fernando Haddad.
- pop: estimated population in 2019.

**Author(s)**

Fabio N. Demarqui <fndemarqui@est.ufmg.br>

**Source**

Tribunal Superior Eleitoral (TSE). URL: <https://www.tse.jus.br/eleicoes/estatisticas>.

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election2018States	<i>Results of the 2018 presidential election in Brazil by state.</i>
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**Description**

Data set containing the results of the 2018 presidential election in Brazil.

**Format**

A data frame with 27 rows and 5 variables:

- region: regions' names.
- state: states' names.
- Bolsonaro: count of votes obtained by the President-elected Jair Bolosnaro.
- Haddad: count of votes obtained by the defeated candidate Fernando Haddad.
- pop: estimated population in 2019.

**Author(s)**

Fabio N. Demarqui <fndemarqui@est.ufmg.br>

**Source**

Tribunal Superior Eleitoral (TSE). URL: <https://www.tse.jus.br/eleicoes/estatisticas>.

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ibgeCities

*City-level georeferenced data*

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**Description**

Data set obtained from the Instituto Brasileiro de Geografia e Estatística (IBGE) with data on the Brazilian population and geographical information on city level.

**Format**

A data frame with 5570 rows and 10 variables:

- region: regions' names
- state: states' names.
- city: cities' names.
- pop: estimated population in 2019.
- region\_code: numerical code attributed to regions
- state\_code: numerical code attributed to states
- mesoregion\_code: numerical code attributed to mesoregions
- microregion\_code: numerical code attributed to microregions
- city\_code: numerical code attributed to cities
- geometry: georeferenced data needed to plot maps.
- area: area (in Km<sup>2</sup>) of the brazilian cities
- demoDens: demographic density of the brazilian cities.

**Author(s)**

Fabio N. Demarqui <[fndemarqui@est.ufmg.br](mailto:fndemarqui@est.ufmg.br)>

**Source**

Instituto Brasileiro de Geografia e Estatística (IBGE):

- Shapefiles: <https://www.ibge.gov.br/geociencias/downloads-geociencias.html>
- Population: <https://www.ibge.gov.br/estatisticas/sociais/populacao/9103-estimativas-de-populacao.html?=&t=resultados>

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ibgeRegions	<i>Region-level georeferenced data</i>
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### Description

Data set obtained from the Instituto Brasileiro de Geografia e Estatística (IBGE) with data on the Brazilian population and geographical information on region level.

### Format

A data frame with 5 rows and 4 variables:

- region: regions' names
- pop: estimated population in 2019.
- region\_code: numerical code attributed to regions
- geometry: georeferenced data needed to plot maps.
- area: area (in Km<sup>2</sup>) of the brazilian regions.
- demoDens: demographic density of the brazilian regions.

### Author(s)

Fabio N. Demarqui <fndemarqui@est.ufmg.br>

### Source

Instituto Brasileiro de Geografia e Estatística (IBGE):

- Shapefiles: <https://www.ibge.gov.br/geociencias/downloads-geociencias.html>
- Population: <https://www.ibge.gov.br/estatisticas/sociais/populacao/9103-estimativas-de-populacao.html?=&t=resultados>

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ibgeStates	<i>State-level georeferenced data</i>
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### Description

Data set obtained from the Instituto Brasileiro de Geografia e Estatística (IBGE) with data on the Brazilian population and geographical information on state level.



**Format**

A data frame with 27 rows and 6 variables:

- region: regions' names
- state: states' names.
- pop: estimated population in 2019.
- region\_code: numerical code attributed to regions
- state\_code: numerical code attributed to states
- geometry: georeferenced data needed to plot maps.
- area: area (in Km<sup>2</sup>) of the brazilian states.
- demoDens: demographic density of the brazilian states.

**Author(s)**

Fabio N. Demarqui <fndemarqui@est.ufmg.br>

**Source**

Instituto Brasileiro de Geografia e Estatística (IBGE):

- Shapefiles: <https://www.ibge.gov.br/geociencias/downloads-geociencias.html>
- Population: <https://www.ibge.gov.br/estatisticas/sociais/populacao/9103-estimativas-de-populacao.html?=&t=resultados>

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ipeaCities

*Brazilian development human indexes by cities*

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**Description**

Data set on the development human indexes provided the Instituto de Pesquisa Econômica Aplicada in 2010.

**Format**

A data frame with 5570 rows and 9 variables:

- region: regions' names.
- state: states' names.
- city: states' names.
- city\_code: numerical code attributed to cities
- DHI: development human index.
- EDHI: educational development human index.
- LDHI: longevity development human index.
- IDHI: income development human index.
- pop: estimated population in 2019.

**Author(s)**

Fabio N. Demarqui <fndemarqui@est.ufmg.br>

**Source**

Instituto de Pesquisa Econômica Aplicada (IPEA). URL: <https://www.ipea.gov.br/ipeageo/bases.html>.

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ipeaRegions

*Brazilian development human indexes by regions*

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**Description**

Data set on the development human indexes provided the Instituto de Pesquisa Econômica Aplicada in 2010.

**Format**

A data frame with 5 rows and 6 variables:

- region: regions' names.
- DHI: development human index.
- EDHI: educational development human index.
- LDHI: longevity development human index.
- IDHI: income development human index.
- pop: estimated population in 2019.

**Author(s)**

Fabio N. Demarqui <fndemarqui@est.ufmg.br>

**Source**

Instituto de Pesquisa Econômica Aplicada (IPEA). URL: <https://www.ipea.gov.br/ipeageo/bases.html>.

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ipeaStates*Brazilian development human indexes by states*

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**Description**

Data set on the development human indexes provided the Instituto de Pesquisa Econômica Aplicada in 2010.

**Format**

A data frame with 27 rows and 6 variables:

- region: regions' names.
- state: states' names.
- DHI: development human index.
- EDHI: educational development human index.
- LDHI: longevity development human index.
- IDHI: income development human index.
- pop: estimated population in 2019.

**Author(s)**

Fabio N. Demarqui <fndemarqui@est.ufmg.br>

**Source**

Instituto de Pesquisa Econômica Aplicada (IPEA). URL: <https://www.ipea.gov.br/ipeageo/bases.html>.

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mundi*World-level georeferenced data*

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**Description**

Data set extracted from the R package `rnaturalearthdata`.

**Format**

A data frame with 241 rows and 12 variables:

- country: country's name
- continent: continent's name
- region: regions' names
- subregion: subregion's name
- pop: estimated population
- pais: country's name in Portuguese
- country\_code: numerical code attributed to countries
- continent\_code: numerical code attributed to continents
- region\_code: numerical code attributed to regions
- subregion\_code: numerical code attributed to subregions
- geometry: georeferenced data needed to plot maps.

**Author(s)**

Fabio N. Demarqui <fndemarqui@est.ufmg.br>

**Source**

R package `rnaturalearthdata`.