

Package ‘mapcan’

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Type Package

Title Tools for Plotting Canadian Choropleth Maps and Choropleth Alternatives

Version 0.0.1

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Description A variety of functions that make it easy to plot standard choropleth maps as well as choropleth alternatives in 'ggplot2'.

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Encoding UTF-8

LazyData true

Depends R (>= 2.10)

RoxygenNote 6.1.1

Imports dplyr, ggplot2, magrittr

Suggests knitr

VignetteBuilder knitr

NeedsCompilation no

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census_divisions_2016 *Census divisions (2016)*

Description

A data set with geographic information for Canadian census divisions

Usage

census_divisions_2016

Format

A data.frame with 91430 rows and 13 variables:

long Longitude

lat Latitude

order Order of layers

hole Polygon hole (TRUE or FALSE)

piece Piece

id Uniquely identifies a census division (composed of the 2-digit province/territory unique identifier followed by the 2-digit census division code).

group Group

census_division_name Census division name

census_divison_type Census division type

pr_alpha Province or territory 2-letter identifier

pr_sgc_code Province Standard Geographical Classification (SGC) code.

pr_english Province name (English)

pr_french Province name (French)

Source

<https://www12.statcan.gc.ca/census-recensement/2011/geo/bound-limit/bound-limit-2016-eng.cfm> (under Statistics Canada Open Licence <https://www.statcan.gc.ca/eng/reference/licence>)

census_divisions_2016_carto

Census divisions cartogram data frame (territories included) (2016)

Description

A data set with geographic information for Canadian census divisions, census boundary divisions distorted by population size, territories included

Usage

census_divisions_2016_carto

Format

A data.frame with 57513 rows and 18 variables:

long Longitude

lat Latitude

order Order of layers

hole Polygon hole (TRUE or FALSE)

piece Piece

census_code Uniquely identifies a census division (composed of the 2-digit province/territory unique identifier followed by the 2-digit census division code).

group Group

census_division_name Census division name

census_division_type Census division type

pr_sgc_code Province Standard Geographical Classification (SGC) code.

population_2016 Population of census division in 2016

population_density_2016 Population density (individuals per square kilometer) in 2016

land_area_2016 Land area of census division

population_2011 Population of census division in 2011

pr_alpha Province or territory 2-letter identifier

pr_english Province name (English)

pr_french Province name (French)

Source

<https://www12.statcan.gc.ca/census-recensement/2011/geo/bound-limit/bound-limit-2016-eng.cfm> (under Statistics Canada Open Licence <https://www.statcan.gc.ca/eng/reference/licence>)

census_divisions_2016_noterr_carto

Census divisions cartogram data frame (territories excluded) (2016)

Description

A data set with geographic information for Canadian census divisions, census boundary divisions distorted by population size, territories excluded

Usage

census_divisions_2016_noterr_carto

Format

A data.frame with 35410 rows and 18 variables:

long Longitude

lat Latitude

order Order of layers

hole Polygon hole (TRUE or FALSE)

piece Piece

census_code Uniquely identifies a census division (composed of the 2-digit province/territory unique identifier followed by the 2-digit census division code).

group Group

census_division_name Census division name

census_division_type Census division type

pr_sgc_code Province Standard Geographical Classification (SGC) code.

population_2016 Population of census division in 2016

population_2016 Population density (individuals per square kilometer) in 2016

land_area_2016 Land area of census division

population_2011 Population of census division in 2011

pr_alpha Province or territory 2-letter identifier

pr_english Province name (English)

pr_french Province name (French)

Source

<https://www12.statcan.gc.ca/census-recensement/2011/geo/bound-limit/bound-limit-2016-eng.cfm> (under Statistics Canada Open Licence <https://www.statcan.gc.ca/eng/reference/licence>)

census_pop2016	<i>Census division population data for 2011 and 2016</i>
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Description

A data set with population data at the census level for 2011 and 2016

Usage

census_pop2016

Format

A data.frame with 293 rows and 11 variables:

census_division_code Uniquely identifies a census division (composed of the 2-digit province/territory unique identifier followed by the 2-digit census division code).

census_division_name Census division name

census_divison_type Census division type

pr_sgc_code Province Standard Geographical Classification (SGC) code.

pr_english Province or territory name (English).

population_2016 2016 Population of Province

population_density_2016 Population density (individuals per square kilometer) in 2016

land_area_2016 Land area of census division

population_2011 2011 Population of Province

pr_alpha Province or territory 2-letter identifier

pr_french Province or territory name (French).

Source

<https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/hlt-fst/pd-pl/comprehensive.cfm>, (under Statistics Canada Open Licence <https://www.statcan.gc.ca/eng/reference/licence>)

federal_election_results

Canadian federal election results data

Description

A data set with information on Canadian federal election results, dating back to 1997

Usage

federal_election_results

Format

A data.frame with 37111 rows and 12 variables:

riding_name_english Federal electoral district name in English.

riding_name_french Federal electoral district name in French.

riding_code Uniquely identifies a federal electoral district (composed of the 2-digit province/territory unique identifier followed by the 3-digit federal electoral district code).

pr Province or territory name (English and French).

population Population of federal riding.

voter_turnout Voter turnout

candidate Name of winning candidate

election_year Year of election (1997, 2000, 2004, 2006, 2008, 2011, and 2015 election included.)

party Winning party in riding

pr_alpha Province or territory 2-letter identifier

pr_french Province or territory name (French).

pr_english Province or territory name (English).

pr_sgc_code Province Standard Geographical Classification (SGC) code.

Source

<http://www.elections.ca/content.aspx?section=ele&dir=pas&document=index&lang=e>, (under Open Government Licence <https://open.canada.ca/en/open-government-licence-canada>)

federal_ridings	<i>Federal ridings</i>
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Description

A data set with geographic information for Canadian federal ridings (2013 representation order)

Usage

federal_ridings

Format

A data.frame with 46830 rows and 15 variables:

long Longitude

lat Latitude

order Order of layers

hole Polygon hole (TRUE or FALSE)

piece Piece

riding_code Uniquely identifies a federal electoral district (composed of the 2-digit province/territory unique identifier followed by the 3-digit federal electoral district code).

group Group

riding_name_english Federal electoral district name in English.

riding_name_french Federal electoral district name in French.

province_sgc_code Province Standard Geographical Classification (SGC) code

pr_english Province name (English)

pr_french Province name (French)

pr_alpha Province or territory 2-letter identifier

Source

<https://www12.statcan.gc.ca/census-recensement/2011/geo/bound-limit/bound-limit-2016-eng.cfm>, (under Statistics Canada Open Licence <https://www.statcan.gc.ca/eng/reference/licence>)

federal_riding_bins *Canadian federal riding bins (used for tile plots)*

Description

A data set with coordinates for the `mapcan::riding_binplot()` function.

Usage

```
federal_riding_bins
```

Format

A data.frame with 944 rows and 8 variables:

y y-axis of riding bins (corresponds to longitude)

x x-axis of riding bins (corresponds to latitude)

pr_alpha Province or territory 2-letter identifier

representation_order Representation order. Specifies boundaries/number of seats for a given election (e.g. the 2015 election used the 2013 representation order, with 338 seats).

pr_french Province or territory name (French).

pr_english Province or territory name (English).

pr_sgc_code Province Standard Geographical Classification (SGC) code.

riding_code Uniquely identifies a federal electoral district (composed of the 2-digit province/territory unique identifier followed by the 3-digit federal electoral district code).

federal_riding_hexagons

Canadian federal riding hexagons (used for hexagonal tile plots)

Description

A data set with coordinates for the `mapcan::riding_binplot()` function.

Usage

```
federal_riding_hexagons
```


Format

A data.frame with 6629 rows and 15 variables:

long y-axis of riding hexagons

lat x-axis of riding hexagons

order Order of layers

hole Polygon hole (TRUE or FALSE)

piece Piece

group Group

representation_order Representation order. Specifies boundaries/seats for a given election (e.g. the 2015 election used the 2013 representation order, with 338 seats).

pr_french Province or territory name (French).

pr_english Province or territory name (English).

pr_sgc_code Province Standard Geographical Classification (SGC) code.

riding_code Uniquely identifies a federal electoral district (composed of the 2-digit province/territory unique identifier followed by the 3-digit federal electoral district code).

mapcan

Canadian maps function

Description

A function that returns a data frame with map data, for use in ggplot.

Usage

```
mapcan(boundaries, type, province = all, territories = TRUE)
```

Arguments

boundaries	Unquoted expression specifying boundary divisions. Options are province, census, and ridings.
type	Unquoted expression specifying type of map. Options are standard (for a standard geographic map), cartogram (for a map that alters the geography of the map based on population size at the province or census division level), and bins (for a binned map of federal electoral districts).
province	An unquoted expression specifying province to plot. Acceptable input is French or English province names, or two-letter provincial abbreviations. Default is to plot all provinces.
territories	A logical value indicating whether or not to include territories in the the returned data frame, default is FALSE

Examples

```
mapcan(boundaries = census, type = standard)
```

provinces_noterr_carto

Provinces and territories cartogram data (territories excluded)

Description

A data set with geographic information for Canadian provinces and territories, boundary divisions distorted by population size. Territories excluded.

Usage

provinces_noterr_carto

Format

A data.frame with 16797 rows and 11 variables:

long Longitude

lat Latitude

order Order of layers

hole Polygon hole (TRUE or FALSE)

piece Piece

pr_english Province or territory name (English).

group Group

population 2016 Population of Province

pr_alpha Province or territory 2-letter identifier

pr_french Province or territory name (French).

province_sgc_code Province Standard Geographical Classification (SGC) code

Source

<https://www12.statcan.gc.ca/census-recensement/2011/geo/bound-limit/bound-limit-2016-eng.cfm>, (under Statistics Canada Open Licence <https://www.statcan.gc.ca/eng/reference/licence>)

provinces_territories *Provinces and territories standard geographic data*

Description

A data set with geographic information for Canadian provinces and territories

Usage

provinces_territories

Format

A data.frame with 37111 rows and 10 variables:

long Longitude

lat Latitude

order Order of layers

hole Polygon hole (TRUE or FALSE)

piece Piece

province_sgc_code Province Standard Geographical Classification (SGC) code

group Group

pr_english Province or territory name (English).

pr_french Province or territory name (French).

pr_alpha Province or territory 2-letter identifier

Source

<https://www12.statcan.gc.ca/census-recensement/2011/geo/bound-limit/bound-limit-2016-eng.cfm>, (under Statistics Canada Open Licence <https://www.statcan.gc.ca/eng/reference/licence>)

provinces_territories_carto

Provinces and territories cartogram data (territories included)

Description

A data set with geographic information for Canadian provinces and territories, boundary divisions distorted by population size. Territories included.

Usage

provinces_territories_carto

Format

A data.frame with 40064 rows and 12 variables:

long Longitude

lat Latitude

order Order of layers

hole Polygon hole (TRUE or FALSE)

piece Piece

pr_english Province or territory name (English).

group Group

population 2016 Population of Province

pr_alpha Province or territory 2-letter identifier

pr_french Province or territory name (French).

province_sgc_code Province Standard Geographical Classification (SGC) code

Source

<https://www12.statcan.gc.ca/census-recensement/2011/geo/bound-limit/bound-limit-2016-eng.cfm>, (under Statistics Canada Open Licence <https://www.statcan.gc.ca/eng/reference/licence>)

province_pop_annual *Annual provincial populations data frame dating back to 1971*

Description

A data set with annual information on provincial and territorial populations dating back to 1971.

Usage

```
province_pop_annual
```

Format

A data.frame with 638 rows and 3 variables:

province English name of province

population Population of province

year Year

quebec_provincial_results
Quebec provincial election results data

Description

A data set with information on 2018 Quebec provincial election results

Usage

quebec_provincial_results

Format

A data.frame with 125 rows and 6 variables:

party Winning party of riding.
vote_share Percentage of vote won by winning candidate.
riding_code Uniquely identifies a provincial electoral district
riding_name Riding name (lowercase)
riding_name Riding name (uppercase)

quebec_prov_ridings2018
Quebec provincial ridings geographic data

Description

A data set with geographic information for Quebec provincial ridings

Usage

quebec_prov_ridings2018

Format

A data.frame with 23995 rows and 11 variables:

long y-axis of riding hexagons
lat x-axis of riding hexagons
order Order of layers
hole Polygon hole (TRUE or FALSE)
piece Piece

riding_code Uniquely identifies a provincial electoral district
group Group
riding_name Riding name (lowercase)
riding_name Riding name (uppercase)
centroid_long Longitude for riding centroids (useful for labeling)
centroid_lat Latitude for riding centroids (useful for labeling)

quebec_riding_bins *Quebec provincial riding bins (used for tile plots)*

Description

A data set with coordinates for the `mapcan::riding_binplot()` function.

Usage

`quebec_riding_bins`

Format

A `data.frame` with 125 rows and 6 variables:

y y-axis of riding bins (corresponds to longitude)

x x-axis of riding bins (corresponds to latitude)

riding_code Riding code

region Region

riding_simplified Simplified riding name

riding_name Riding name

quebec_riding_hexagons *Quebec provincial riding hexagons (used for hexagonal tile plots)*

Description

A data set with coordinates for the `mapcan::riding_binplot()` function.

Usage

`quebec_riding_hexagons`

Format

A data.frame with 6629 rows and 15 variables:

long y-axis of riding hexagons
lat x-axis of riding hexagons
order Order of layers
hole Polygon hole (TRUE or FALSE)
piece Piece
group Group
y y-axis of riding hexagon center
x x-axis of riding hexagon center
region Region
riding_simplified Simplified riding name
riding_name Riding name
riding_code Riding code

riding_binplot

Canadian federal ridings tile plot function

Description

A function that returns a data frame with map data, for use in ggplot.

Usage

```
riding_binplot(riding_data, riding_col = riding_code, value_col,
  continuous = TRUE, arrange = FALSE, riding_border_col = "white",
  year = 2015, riding_border_size = 1, provincial = FALSE,
  shape = "square", province, legend_name = "default")
```

Arguments

riding_data	A dataframe with a continuous or categorical riding-level characteristic and a riding code variable.
riding_col	An unquoted character expression specifying the riding code variable from the dataframe provided in riding_data.
value_col	An unquoted character expression specifying the column or categorical riding level characteristic you would like to visualize.
continuous	logical. Specify as FALSE if the variable is categorical (e.g. for winning party) and TRUE if the variable is continuous.

arrange	logical. Specify as TRUE if variable should be ranked according to value within provinces and FALSE to plot values according to riding coordinates. Because the binned ridings are only a rough approximation of their actual location, arrange = TRUE is often preferable.
riding_border_col	To ensure the appearance of stand alone tiles, set 'riding_border_col' to be the same as the background colour of the plot. Default is "white".
year	Election year. Options are 1997, 2000, 2004, 2006, 2008, 2011 and 2015. This will change the number of tiles to correspond to the number of ridings in the election of the specified year. Default is 2015
riding_border_size	Change the size of tiles. Larger values make smaller tiles. Default is 1.
provincial	logical. Specify as FALSE for provincial (not federal) ridings of a single province. If provincial = TRUE, specify a 2-letter provincial abbreviation for the province in the province argument. Default is FALSE (i.e. the default is to provide federal electoral boundaries). (Note: this argument is still in development, only Quebec provincial boundaries are available at the moment.)
shape	Unquoted character expression specifying shape of tiles. Options are square and hexagon, default is square.
province	An unquoted character expression specifying the 2-letter provincial abbreviation of the province for which provincial electoral boundaries are desired. (Note: this argument is still in development, only Quebec provincial boundaries are available at the moment.)
legend_name	Quoted character expression specifying the title of the legend. The variable name will be used as a default if no value is supplied.

Examples

```
election_2015 <- federal_election_results[federal_election_results$election_year == 2015, ]

riding_binplot(riding_data = election_2015, riding_col = riding_code,
value_col = party, continuous = FALSE, arrange = TRUE)
```

riding_info

Canadian federal riding population information

Description

A data set with information on Canadian federal election results, dating back to 1997

Usage

```
riding_info
```


Format

A data.frame with 37111 rows and 12 variables:

party Winning party in riding

riding_code Riding code

population_2011 Population of riding in 2011

population_2016 Population of riding in 2016

Source

<http://www.elections.ca/content.aspx?section=ele&dir=pas&document=index&lang=e>, (under Open Government Licence <https://open.canada.ca/en/open-government-licence-canada>)

theme_mapcan

Mapcan theme

Description

A ggplot theme that removes unnecessary components of map plots. Builds on theme_bw().

Usage

```
theme_mapcan(legend_position = "bottom", base_size = 12,  
             base_family = "")
```

Arguments

`legend_position` Position of legend, default is "bottom"

`base_size` Base font size (default is 12)

`base_family` Base font family

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