Package ‘choroplethr’

July 7, 2023

Title  Simplify the Creation of Choropleth Maps in R

Description  Choropleths are thematic maps where geographic regions, such as states, are colored according to some metric, such as the number of people who live in that state. This package simplifies this process by 1. Providing ready-made functions for creating choropleths of common maps. 2. Providing data and API connections to interesting data sources for making choropleths. 3. Providing a framework for creating choropleths from arbitrary shapefiles. 4. Overlaying those maps over reference maps from Google Maps.

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Admin1Choropleth

An R6 object for creating Administration Level 1 choropleths.

Description

An R6 object for creating Administration Level 1 choropleths.
An R6 object for creating Administration Level 1 choropleths.

Super class

choroplethr::Choropleth -> Admin1Choropleth

Methods

Public methods:

• Admin1Choropleth$new()
• Admin1Choropleth$clone()

Method new():

Usage:
Admin1Choropleth$new(country.name, user.df)

Method clone(): The objects of this class are cloneable with this method.

Usage:
Admin1Choropleth$clone(deep = FALSE)

Arguments:
deep Whether to make a deep clone.
Admin1RegionChoropleth

An R6 object for creating Administration Level 1 choropleths based on regions.

Description

Compare with the Admin1Choropleth object, which creates Admin 1 choropleths based on Countries. This function is useful if you want a map that spans multiple countries - Especially if it only needs to include a portion of a country.

Super class

choroplethr::Choropleth -> Admin1RegionChoropleth

Methods

Public methods:

- Admin1RegionChoropleth$new()
- Admin1RegionChoropleth$clone()

Method new():

Usage:

Admin1RegionChoropleth$new(user.df)

Method clone(): The objects of this class are cloneable with this method.

Usage:

Admin1RegionChoropleth$clone(deep = FALSE)

Arguments:

depth Whether to make a deep clone.

admin1_choropleth

Create an admin1-level choropleth for a specified country

Description

The map used comes from ?admin1.map in the choroplethrAdmin1 package. See ?get_admin_countries and ?get_admin_regions in the choroplethrAdmin1 package for help with the spelling of regions.
admin1_choropleth

Usage

admin1_choropleth(
  country.name,
  df,
  title = "",
  legend = "",
  num_colors = 7,
  zoom = NULL,
  reference_map = FALSE
)

Arguments

country.name  The name of the country. Must exactly match how the country is named in the 
"country" column of ?admin1.regions in the choroplethrAdmin1 package.
df             A data.frame with a column named "region" and a column named "value". Elements in the "region" column must exactly match how regions are named in the 
"region" column in ?admin1.regions in the choroplethrAdmin1 package.
title          An optional title for the map.
legend         An optional name for the legend.
num_colors     The number of colors on the map. A value of 1 will use a continuous scale. A 
value in [2, 9] will use that many colors.
zoom           An optional vector of regions to zoom in on. Elements of this vector must ex-
                actionly match the names of regions as they appear in the "region" column of ?ad-
                min1.regions.
reference_map  If true, render the choropleth over a reference map from Google Maps.

Examples

## Not run:
library(choroplethrAdmin1)
data(df_japan_census)
head(df_japan_census)
# set the value we want to map to be the 2010 population estimates
df_japan_census$value=df_japan_census$pop_2010
# default map of all of japan
admin1_choropleth("japan",
  df_japan_census,
  "2010 Japan Population Estimates",
  "Population")

# zoom in on the Kansai region and use a continuous scale
kansai = c("mie", "nara", "wakayama", "kyoto", "osaka", "hyogo", "shiga")
admin1_choropleth("japan",
  df_japan_census,
  kansai,
  "2010 Japan Population Estimates",
  "Population", 
  num_colors = 7,
  zoom = kansai)
Create a map of Administrative Level 1 regions

Description

Unlike `admin1_choropleth`, the regions here can span multiple countries.

Usage

```r
df_japan_census,
“2010 Japan Population Estimates”,
“Population”,
1,
kansai,
reference_map = TRUE)
```

Arguments

df A data.frame with a column named "region" and a column named "value". Elements in the "region" column must exactly match how regions are named in the "region" column in `?admin1.regions` in the choroplethrAdmin1 package
title An optional title for the map.
legend An optional name for the legend.
num_colors The number of colors on the map. A value of 1 will use a continuous scale. A value in [2, 9] will use that many colors.
zoom An optional vector of regions to zoom in on. Elements of this vector must exactly match the names of regions as they appear in the "region" column of `?admin1.regions`.
reference_map If true, render the choropleth over a reference map from Google Maps.
**calculate_percent_change**

Details

The map used comes from `?admin1.map` in the choroplethrAdmin1 package. See `?get_admin_countries` and `?get_admin_regions` in the choroplethrAdmin1 package for help with the spelling of regions.

Examples

```r
## Not run:
library(choroplethrAdmin1)

# map of continental us + southern canada
data("continental_us_states")
lower_canada = c("british columbia", "alberta", "saskatchewan", "manitoba", "ontario", "quebec")
regions = c(lower_canada, continental_us_states)
df = data.frame(region=regions, value=sample(1:length(regions)))
admin1_region_choropleth(df)

## End(Not run)
```

---

**calculate_percent_change**

*Calculate the percentage change between two choroplethr dataframes.*

Description

Merges `df1` and `df2` on column named "region", and computes percentage change from `df1$value` to `df2$value`. Result is in the new "value" column, and rounded to two digits.

Usage

```r
calculate_percent_change(df1, df2)
```

Arguments

- `df1` A dataframe with columns named "region" and "value"
- `df2` A dataframe with columns named "region" and "value"

Examples

```r
## Not run:
# load median age estimates from 2010 and 2015
data(df_state_age_2010)
data(df_state_age_2015)

df_age_diff = calculate_percent_change(df_state_age_2010, df_state_age_2015)
```
Choropleth

The base Choropleth object.

Description

The base Choropleth object.

The base Choropleth object.

Methods

Public methods:

- Choropleth$new()
- Choropleth$render()
- Choropleth$get_min_long()
- Choropleth$get_max_long()
- Choropleth$get_min_lat()
- Choropleth$get_max_lat()
- Choropleth$get_bounding_box()
- Choropleth$get_x_scale()
- Choropleth$get_y_scale()
- Choropleth$get_reference_map()
- Choropleth$get_choropleth_as_polygon()
- Choropleth$render_with_reference_map()
- Choropleth$clip()
- Choropleth$discretize()
- Choropleth$bind()
- Choropleth$prepare_map()
- Choropleth$get_scale()
- Choropleth$theme_clean()
- Choropleth$theme_inset()
- Choropleth$format_levels()
- Choropleth$set_zoom()
- Choropleth$get_zoom()
- Choropleth$set_num_colors()
- Choropleth$clone()

Method new():

```r
state_choropleth(df_age_diff,
    title = "Percent Change in Median Age, 2010-2015",
    legend = "Percent Change",
    num_colors = 0)

## End(Not run)
```
Usage:
Choropleth$new(map.df, user.df)

Method render():
Usage:
Choropleth$render()

Method get_min_long():
Usage:
Choropleth$get_min_long()

Method get_max_long():
Usage:
Choropleth$get_max_long()

Method get_min_lat():
Usage:
Choropleth$get_min_lat()

Method get_max_lat():
Usage:
Choropleth$get_max_lat()

Method get_bounding_box():
Usage:
Choropleth$get_bounding_box(long_margin_percent, lat_margin_percent)

Method get_x_scale():
Usage:
Choropleth$get_x_scale()

Method get_y_scale():
Usage:
Choropleth$get_y_scale()

Method get_reference_map():
Usage:
Choropleth$get_reference_map()

Method get_choropleth_as_polygon():
Usage:
Choropleth$get_choropleth_as_polygon(alpha)

Method render_with_reference_map():
Usage:
Choropleth$render_with_reference_map(alpha = 0.5)
Method clip():
Usage:
Choropleth$clip()

Method discretize():
Usage:
Choropleth$discretize()

Method bind():
Usage:
Choropleth$bind()

Method prepare_map():
Usage:
Choropleth$prepare_map()

Method get_scale():
Usage:
Choropleth$get_scale()

Method theme_clean():
Usage:
Choropleth$theme_clean()

Method theme_inset():
Usage:
Choropleth$theme_inset()

Method format_levels():
Usage:
Choropleth$format_levels(x, nsep = " to ")

Method set_zoom():
Usage:
Choropleth$set_zoom(zoom)

Method get_zoom():
Usage:
Choropleth$get_zoom()

Method set_num_colors():
Usage:
Choropleth$set_num_colors(num_colors)

Method clone(): The objects of this class are cloneable with this method.
Usage:
Choropleth$clone(deep = FALSE)
Arguments:
derep: Whether to make a deep clone.
** choroplethr_animate  

*Animate a list of choropleths*

---

**Description**

Given a list of choropleths, represented as `ggplot2` objects

1. Save the individual images to the working directory with the naming convention "choropleth_1.png", "choropleth_2.png", etc.
2. Write a file called "animated_choropleth.html" which contains a viewer which animates them.

**Usage**

```r
choroplethr_animate(choropleths)
```

**Arguments**

`choropleths`  
A list of choropleths represented as `ggplot2` objects.

**Value**

Nothing. However, a variable number of files are written to the current working directory.

**Author(s)**

Ari Lamstein (R code) and Brian Johnson (JavaScript, HTML and CSS code)

**Examples**

```r
## Not run:  
data(df_president_ts)  
?df_president_ts  # time series of all US presidential elections 1789-2012

# create a list of choropleths of presidential election results for each year
choropleths = list()
for (i in 2:ncol(df_president_ts)) {
  df = df_president_ts[, c(1, i)]
  colnames(df) = c("region", "value")
  title = paste0("Presidential Election Results: ", colnames(df_president_ts)[i])
  choropleths[[i-1]] = state_choropleth(df, title=title)
}

# set working directory and animate
setwd("~/Desktop")
choroplethr_animate(choropleths)

## End(Not run)
```
choroplethr_wdi

Create a country-level choropleth using data from the World Bank’s World Development Indicators (WDI)

Description

Create a country-level choropleth using data from the World Bank’s World Development Indicators (WDI)

Usage

```r
choroplethr_wdi(
  code = "SP.POP.TOTL",
  year = 2012,
  title = "",
  num_colors = 7,
  zoom = NULL
)
```

Arguments

- `code` The WDI code to use.
- `year` The year of data to use.
- `title` A title for the map. If not specified, automatically generated to include WDI code and year.
- `num_colors` The number of colors to use on the map. A value of 1 will use a continuous scale, and a value in [2, 9] will use that many colors.
- `zoom` An optional list of countries to zoom in on. Must come from the "name" column in ?country.regions.

Value

A choropleth.

References

Uses the WDI function from the WDI package by Vincent Arel-Bundock.

Examples

```r
## Not run:
# See http://data.worldbank.org/indicator/SP.POP.TOTL
choroplethr_wdi(code="SP.POP.TOTL", year=2012, title="2012 Population Estimates", num_colors=1)

# See http://data.worldbank.org/indicator/SP.DYN.LE00.IN
choroplethr_wdi(code="SP.DYN.LE00.IN", year=2012, title="2012 Life Expectancy Estimates")
```
congress116.regions

A data.frame containing geographic metadata about the Congressional Districts of the 116th US Congress

Description

Column region is how the Census Bureau refers to the geography. Note that this region is a 4-character string, and so has a leading 0 if necessary. The first two characters are the state FIPS code, and the second two characters are the district ID. States that only have 1 district (i.e., a representative "at large") have district 00. All other states start at 01.

Usage

data(congress116.regions)

continental_us_states


Description


Usage

data(continental_us_states)

Author(s)

Ari Lamstein
Description

An R6 object for creating country-level choropleths.

Super class

`choroplethr::Choropleth` -> `CountryChoropleth`

Methods

Public methods:

- `CountryChoropleth$new()`
- `CountryChoropleth$clone()`

Method `new()`:

Usage:

CountryChoropleth$new(user.df)

Method `clone()`:

The objects of this class are cloneable with this method.

Usage:

CountryChoropleth$clone(deep = FALSE)

Arguments:

deep Whether to make a deep clone.

country_choropleth

Create a country-level choropleth

Description

The map used is country.map in the choroplethrMaps package. See country.regions for an object which can help you coerce your regions into the required format.

Usage

country_choropleth(df, title = "", legend = "", num_colors = 7, zoom = NULL)
CountyChoropleth

Create a county-level choropleth

Description

Create a county-level choropleth

Super classes

choroplethr::Choropleth $>$ choroplethr::USAColorMap $>$ CountyChoropleth
CountyZoomChoropleth

Methods

Public methods:

- CountyZoomChoropleth$new()
- CountyZoomChoropleth$clip()
- CountyZoomChoropleth$clone()

Method new():

Usage:
CountyZoomChoropleth$new(user.df)

Method clip():

Usage:
CountyZoomChoropleth$clip()

Method clone(): The objects of this class are cloneable with this method.

Usage:
CountyZoomChoropleth$clone(deep = FALSE)

Arguments:

- deep Whether to make a deep clone.

CountyZoomChoropleth

Create a county-level choropleth that zooms on counties, not states.

Description

Create a county-level choropleth that zooms on counties, not states.
Create a county-level choropleth that zooms on counties, not states.

Super class

choroplethr::Choropleth -> CountyZoomChoropleth

Methods

Public methods:

- CountyZoomChoropleth$new()
- CountyZoomChoropleth$render()
- CountyZoomChoropleth$clone()

Method new():

Usage:
CountyZoomChoropleth$new(user.df)

Method render():


Usage:
CountyZoomChoropleth$render()

Method `clone()`: The objects of this class are cloneable with this method.
Usage:
CountyZoomChoropleth$clone(deep = FALSE)

Arguments:
deep Whether to make a deep clone.

---

`county_choropleth`  
*Create a choropleth of US Counties*

Description

The map used is `county.map` in the `choroplethrMaps` package. See `country.regions` in the `choroplethrMaps` package for an object which can help you coerce your regions into the required format.

Usage

```r
county_choropleth(
  df,
  title = "",
  legend = "",
  num_colors = 7,
  state_zoom = NULL,
  county_zoom = NULL,
  reference_map = FALSE
)
```

Arguments

- **df**  
  A data.frame with a column named "region" and a column named "value". Elements in the "region" column must exactly match how regions are named in the "region" column in `county.map`.

- **title**  
  An optional title for the map.

- **legend**  
  An optional name for the legend.

- **num_colors**  
  The number of colors to use on the map. A value of 0 uses a divergent scale (useful for visualizing negative and positive numbers), A value of 1 uses a continuous scale (useful for visualizing outliers), and a value in [2, 9] will use that many quantiles.

- **state_zoom**  
  An optional vector of states to zoom in on. Elements of this vector must exactly match the names of states as they appear in the "region" column of `state.regions`.

- **county_zoom**  
  An optional vector of counties to zoom in on. Elements of this vector must exactly match the names of counties as they appear in the "region" column of `county.regions`.

- **reference_map**  
  If true, render the choropleth over a reference map from Google Maps.
Examples

```r
## Not run:
# default parameters
data(df_pop_county)
county_choropleth(df_pop_county, 
  title = "US 2012 County Population Estimates", 
  legend = "Population")

# zoom in on california and add a reference map
county_choropleth(df_pop_county, 
  title = "California County Population Estimates", 
  legend = "Population", 
  state_zoom = "california", 
  reference_map = TRUE)

# continuous scale
data(df_pop_county)
county_choropleth(df_pop_county, 
  title = "US 2012 County Population Estimates", 
  legend = "Population", 
  num_colors = 1, 
  state_zoom = c("california", "oregon", "washington"))

library(dplyr)
library(choroplethrMaps)
data(county.regions)

# show the population of the 5 counties (boroughs) that make up New York City
nyc_county_names = c("kings", "bronx", "new york", "queens", "richmond")
nyc_county_fips = county.regions %>%
  filter(state.name == "new york" & county.name %in% nyc_county_names) %>%
  select(region)
county_choropleth(df_pop_county, 
  title = "Population of Counties in New York City", 
  legend = "Population", 
  num_colors = 1, 
  county_zoom = nyc_county_fips$region)

## End(Not run)
```

county_choropleth_acs Create a US County choropleth from ACS data

Description

Creates a US County choropleth using the US Census’ American Community Survey (ACS) data. Requires the acs package to be installed, and a Census API Key to be set with the acs’s api.key.install function. Census API keys can be obtained at http://www.census.gov/developers/tos/key_request.html.
county_choropleth_acs

Usage

```r
county_choropleth_acs(
  tableId,  # The id of an ACS table
  endyear = 2011,  # The end year of the survey to use. See acs.fetch and http://1.usa.gov/1geFSSj
  span = 5,  # The span of time to use. See acs.fetch and http://1.usa.gov/1geFSSj
  num_colors = 7,  # The number of colors on the map. A value of 1 will use a continuous scale. A
                   # value in [2, 9] will use that many colors.
  state_zoom = NULL,  # An optional vector of states to zoom in on. Elements of this vector must exactly
                      # match the names of states as they appear in the "region" column of ?state.regions.
  county_zoom = NULL  # An optional vector of counties to zoom in on. Elements of this vector must
                      # exactly match the names of counties as they appear in the "region" column of
                      # ?county.regions.
)
```

Arguments

- `tableId`: The id of an ACS table
- `endyear`: The end year of the survey to use. See acs.fetch and http://1.usa.gov/1geFSSj for details.
- `span`: The span of time to use. See acs.fetch and http://1.usa.gov/1geFSSj for details.
- `num_colors`: The number of colors on the map. A value of 1 will use a continuous scale. A value in [2, 9] will use that many colors.
- `state_zoom`: An optional vector of states to zoom in on. Elements of this vector must exactly match the names of states as they appear in the "region" column of ?state.regions.
- `county_zoom`: An optional vector of counties to zoom in on. Elements of this vector must exactly match the names of counties as they appear in the "region" column of ?county.regions.

Value

A choropleth.

References

Uses the acs package created by Ezra Haber Glenn.

See Also

- api.key.install in the acs package which sets an Census API key for the acs library
  which contains a list of all ACS surveys.

Examples

```r
## Not run:
# median income, all counties in US
county_choropleth_acs("B19301")

# continuous scale, zooming in on all counties in New York, New Jersey and Connecticut
county_choropleth_acs("B19301", num_colors=1, state_zoom=c("new york", "new jersey", "connecticut"))

# zooming in on the 5 counties (boroughs) that make up New York City
```
library(dplyr)
library(choroplethrMaps)
data(county.regions)

nyc_county_names=c("kings", "bronx", "new york", "queens", "richmond")
nyc_county_fips = county.regions %>%
  filter(state.name=="new york" & county.name %in% nyc_county_names) %>%
  select(region)
county_choropleth_acs("B19301", num_colors=1, county_zoom=nyc_county_fips$region)

## End(Not run)

df_congress116_demographics

A data.frame containing demographic statistics about the 116th Congressional Districts

Description

A data.frame containing demographic statistics about the 116th Congressional Districts

Usage

data(df_congress116_demographics)

References

Data comes from the 2018 5-year American Community Survey (ACS). Data generated by ?get_congressional_district_demographics

df_congress116_party

A data.frame containing party affiliation data about the Congressional Districts of 116th US Congress

Description

Contains the party affiliation of each member elected to the House of Representatives of the 116th Congress, along with metadata. Note that party affiliation is of who the citizens voted for, and not who is currently (July 30, 2020) serving. Currently three members have resigned since being elected, one switched party and one died. For details of how this data was compiled, please see function get_congressional_116_party_data in file get_congress_116_party_data. That file ships with this package, but is not exported, since it relies on scraping data from Wikipedia, and that web page is subject to change.

Usage

data(df_congress116_party)
df_county_demographics

A data.frame containing demographic statistics for each county in the United States.

Description

A data.frame containing demographic statistics for each county in the United States.

Usage

data(df_county_demographics)

References

Data comes from the 2013 5-year American Community Survey (ACS). Data generated by ?get_county_demographics.

Examples

## Not run:
library(choroplethr)
data(df_county_demographics)

# examine the 2013, 5-year county percent hispanic estimates as a boxplot and choropleth

# the boxplot shows the distribution
boxplot(df_county_demographics$percent_hispanic)

# the choropleth map shows the location of the values
# first set the 'value' column to be the column we want to render
df_county_demographics$value = df_county_demographics$percent_hispanic
county_choropleth(df_county_demographics)

## End(Not run)

df_japan_census

A data.frame containing basic demographic information about Japan.

Description

A data.frame containing basic demographic information about Japan.

Usage

data(df_japan_census)
df_pop_country

References

---

df_ny_tract_demographics
A data.frame containing demographic statistics for each Census Tract in New York State.

Description
A data.frame containing demographic statistics for each Census Tract in New York State.

Usage
data(df_ny_tract_demographics)

References
Data comes from the 2013 5-year American Community Survey (ACS). Data generated by ?get_tract_demographics.

---

df_pop_country
A data.frame containing population estimates for Countries in 2012.

Description
A data.frame containing population estimates for Countries in 2012.

Usage
data(df_pop_country)

References
Taken from the WDI package with code SP.POP.TOTL for year 2012.
**df_pop_county**

A data.frame containing population estimates for US Counties in 2012.

**Description**

A data.frame containing population estimates for US Counties in 2012.

**Usage**

data(df_pop_county)

**References**

Taken from the US American Community Survey (ACS) 5 year estimates.

---

**df_pop_ny_tract**

A data.frame containing population estimates for all Census Tracts in New York State in 2012.

**Description**

A data.frame containing population estimates for all Census Tracts in New York State in 2012.

**Usage**

data(df_pop_ny_tract)

**References**

Taken from the US American Community Survey (ACS) 5 year estimates.

---

**df_pop_state**

A data.frame containing population estimates for US States in 2012.

**Description**

A data.frame containing population estimates for US States in 2012.

**Usage**

data(df_pop_state)

**References**

Taken from the US American Community Survey (ACS) 5 year estimates.
**df_president**  
*A data.frame containing election results from the 2012 US Presidential election.*

### Description

A data.frame containing election results from the 2012 US Presidential election.

### Usage

```r
data(df_president)
```

### Author(s)

Ari Lamstein and Richard Careaga

### References

Taken from the FEC website on 11/21/2014.

---

**df_president_ts**  
*A data.frame containing all US presidential election results from 1789 to 2012*

### Description

Legend:

- R = Republican
- D = Democratic
- DR = Democratic-Republican
- W = Whig
- F = Federalist
- GW = George Washington
- NR = National Republican
- SD = Southern Democrat
- PR = Progressive
- AI = American Independent
- SR = States' Rights
- PO = Populist
- CU = Constitutional Union
- I = Independent
df_state_age_2010

- ND = Northern Democrat
- KN = Know Nothing
- AM = Anti-Masonic
- N = Nullifier
- SP = Split evenly

Usage

data(df_president_ts)

References


---

df_state_age_2010  A data.frame containing median age estimates for US states in 2010

Description

A data.frame containing median age estimates for US states in 2010

Usage

data(df_state_age_2010)

References

Taken from the US American Community Survey (ACS) 5 year estimates.

---

df_state_age_2015  A data.frame containing median age estimates for US states in 2015

Description

A data.frame containing median age estimates for US states in 2015

Usage

data(df_state_age_2015)

References

Taken from the US American Community Survey (ACS) 5 year estimates.
df_state_demographics  A data.frame containing demographic statistics for each state plus the District of Columbia.

Description
A data.frame containing demographic statistics for each state plus the District of Columbia.

Usage
data(df_state_demographics)

References
Data comes from the 2013 5-year American Community Survey (ACS). Data generated by \texttt{get_state_demographics}.

Examples
## Not run:
library(choroplethr)
data(df_state_demographics)

# examine the 2013, 5-year state percent hispanic estimates as a boxplot and choropleth
# the boxplot shows the distribution
boxplot(df_state_demographics$percent_hispanic)

# the choropleth map shows the location of the values
# first set the 'value' column to be the column we want to render
df_state_demographics$value = df_state_demographics$percent_hispanic
state_choropleth(df_state_demographics)

## End(Not run)

---

\texttt{double_map}  \texttt{Place two maps side by side}

Description
With an optional title. Especially useful for contrasting choropleth maps both with and without a reference map underneath.

Usage
double_map(map1, map2, title = "")
Arguments

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>map1</td>
<td>The first map</td>
</tr>
<tr>
<td>map2</td>
<td>The second map</td>
</tr>
<tr>
<td>title</td>
<td>An optional title</td>
</tr>
</tbody>
</table>

filter_to_voting_congressional_districts

*Remove non-voting Congressional Districts from a data.frame*

Description

The data.frame must have a column named region with a 4-character Congressional District code. Remove districts that have a district code of 98 (non-voting) or ZZ (undefined district). See https://www.census.gov/geographies/mapping-files/2019/dec/rdo/116-congressional-district-bef.html At the time this function was created, tidycensus returned 5 non-voting districts. See https://github.com/walkerke/tidycensus/issues/277

Usage

```r
filter_to_voting_congressional_districts(df)
```

Arguments

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>df</td>
<td>A data.frame. Must have a column named region that contains character vectors of length 4. The first 2 characters should be a state FIPS code and the second 2 characters should be a Congressional District Number</td>
</tr>
</tbody>
</table>

get_acs_data

*Returns a list representing American Community Survey (ACS) estimates*

Description

Given a map, ACS tableId, endyear and span. Prompts user for the column id if there are multiple tables. The first element of the list is a data.frame with estimates. The second element is the ACS title of the column. Requires the acs package to be installed, and a Census API Key to be set with the acs’s api.key.install function. Census API keys can be obtained at http://api.census.gov/data/key_signup.html

Usage

```r
get_acs_data(  
  tableId,  
  map,  
  endyear = 2012,  
  span = 5,  
  column_idx = -1,  
  include_moe = FALSE  
)
```
get_congressional_district_demographics

Arguments

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>tableId</td>
<td>The id of an ACS table</td>
</tr>
<tr>
<td>map</td>
<td>The map you want to use. Must be one of &quot;state&quot;, &quot;county&quot; or &quot;zip&quot;.</td>
</tr>
<tr>
<td>endyear</td>
<td>The end year of the survey to use. See acs.fetch and <a href="http://1.usa.gov/1geFSSj">http://1.usa.gov/1geFSSj</a> for details.</td>
</tr>
<tr>
<td>span</td>
<td>The span of time to use. See acs.fetch and <a href="http://1.usa.gov/1geFSSj">http://1.usa.gov/1geFSSj</a> for details.</td>
</tr>
<tr>
<td>column_idx</td>
<td>The optional column id of the table to use. If not specified and the table has multiple columns, you will be prompted for a column id.</td>
</tr>
<tr>
<td>include_moe</td>
<td>Whether to include the 90 percent margin of error.</td>
</tr>
</tbody>
</table>

See Also


Examples

```r
## Not run:
library(Hmisc)  # for cut2
# States with greater than 1M residents
df = get_acs_data("B01003", "state")[[1]] # population
df$value = cut2(df$value, cuts=c(0,1000000,Inf))
state_choropleth(df, title="States with a population over 1M", legend="Population")

# Counties with greater than or greater than 1M residents
df = get_acs_data("B01003", "county")[[1]] # population
df$value = cut2(df$value, cuts=c(0,1000000,Inf))
county_choropleth(df, title="Counties with a population over 1M", legend="Population")
## End(Not run)
```

Description

The data comes from the American Community Survey (ACS). The variables are: total population, percent White not Hispanic, Percent Black or African American not Hispanic, percent Asian not Hispanic, percent Hispanic all races, per-capita income, median rent and median age.

Usage

```r
get_congressional_district_demographics(year = 2018, survey = "acs5")
```
get_county_demographics

**get_county_demographics**

*Get a handful of demographic variables on US Counties from the US Census Bureau as a data.frame.*

**Description**

The data comes from the American Community Survey (ACS). The variables are: total population, percent White not Hispanic, Percent Black or African American not Hispanic, percent Asian not Hispanic, percent Hispanic all races, per-capita income, median rent and median age.

**Usage**

```r
get_county_demographics(endyear = 2013, span = 5)
```

**Arguments**

- `endyear` - The end year for the survey
- `span` - The span of the survey

**References**

The choroplethr guide to Census data: http://www.arilamstein.com/open-source/choroplethr/mapping-us-census-data/


**Examples**

```r
## Not run:
# get some demographic data on US counties from the 2010 5-year ACS
df = get_county_demographics(endyear=2010, span=5)
colnames(df)

# analyze the percent of people who are white not hispanic
# a boxplot shows the distribution
boxplot(df$percent_white)

# a choropleth map shows the location of the values
# set the 'value' column to be the column we want to render
df$value = df$percent_white
county_choropleth(df)

## End(Not run)
```
get_state_demographics

Get a handful of demographic variables on US States from the US Census Bureau as a data.frame.

Description

The data comes from the American Community Survey (ACS). The variables are: total population, percent White not Hispanic, Percent Black or African American not Hispanic, percent Asian not Hispanic, percent Hispanic all races, per-capita income, median rent and median age.

Usage

get_state_demographics(endyear = 2013, span = 5)

Arguments

dendyear: The end year for the survey

span: The span of the survey

References

The choroplethr guide to Census data: http://www.arilamstein.com/open-source/choroplethr/mapping-us-census-data/


Examples

## Not run:
# get some demographic data on US states from the 2010 5-year ACS
df = get_state_demographics(endyear=2010, span=5)
colnames(df)

# analyze the percent of people who are white not hispanic
# a boxplot shows the distribution
boxplot(df$percent_white)

# a choropleth map shows the location of the values
# set the 'value' column to be the column we want to render
df$value = df$percent_white
state_choropleth(df)

## End(Not run)
get_tract_demographics

Get a handful of demographic variables on Census Tracts in a State from the US Census Bureau as a data.frame.

Description

The data comes from the American Community Survey (ACS). The variables are: total population, percent White not Hispanic, Percent Black or African American not Hispanic, percent Asian not Hispanic, percent Hispanic all races, per-capita income, median rent and median age.

Usage

get_tract_demographics(
  state_name,
  county_fips = NULL,
  endyear = 2013,
  span = 5
)

Arguments

state_name The name of the state. See ?state.regions for proper spelling and capitalization.
county_fips An optional vector of county fips codes within the state. Useful to set because getting data on all tracts can be slow.
endyear The end year for the survey
span The span of the survey

References

The choroplethr guide to Census data: http://www.arilamstein.com/open-source/choroplethr/mapping-us-census-data/

get_tract_map

Get a map of tracts in a state, as a data.frame

Description

The map returned is exactly the same map which tract_choropleth uses. It is downloaded using the "tracts" function in the tigris package, and then it is modified for use with choropleth.

Usage

get_tract_map(state_name)
Arguments

state_name  The name of the state. See ?state.regions for proper spelling and capitalization.

Description

Create a state-level choropleth

Super classes

choroplethr::Choropleth -> choroplethr::USAChoropleth -> StateChoropleth

Methods

Public methods:

• StateChoropleth$new()
• StateChoropleth$render()
• StateChoropleth$clone()

Method new():

Usage:
StateChoropleth$new(user.df)

Method render():

Usage:
StateChoropleth$render()

Method clone(): The objects of this class are cloneable with this method.

Usage:
StateChoropleth$clone(deep = FALSE)

Arguments:

deep  Whether to make a deep clone.
state_choropleth

Create a choropleth of US States

Description
The map used is state.map in the package choroplethrMaps. See state.regions in the choroplethrMaps package for a data.frame that can help you coerce your regions into the required format.

Usage

```r
state_choropleth(
  df,
  title = "",  
  legend = "",  
  num_colors = 7,  
  zoom = NULL,  
  reference_map = FALSE
)
```

Arguments

- `df` A data.frame with a column named "region" and a column named "value". Elements in the "region" column must exactly match how regions are named in the "region" column in state.map.
- `title` An optional title for the map.
- `legend` An optional name for the legend.
- `num_colors` The number of colors to use on the map. A value of 0 uses a divergent scale (useful for visualizing negative and positive numbers), A value of 1 uses a continuous scale (useful for visualizing outliers), and a value in [2, 9] will use that many quantiles.
- `zoom` An optional vector of states to zoom in on. Elements of this vector must exactly match the names of states as they appear in the "region" column of ?state.regions.
- `reference_map` If true, render the choropleth over a reference map from Google Maps.

Examples

```r
## Not run:
# default parameters
data(df_pop_state)
state_choropleth(df_pop_state,
  legend = "Population")

# choropleth over reference map of continental usa
data(continental_us_states)
state_choropleth(df_pop_state,
```

---

**state_choropleth**  
Create a choropleth of US States

---

**Description**

The map used is state.map in the package choroplethrMaps. See state.regions in the choroplethrMaps package for a data.frame that can help you coerce your regions into the required format.

**Usage**

```r
state_choropleth(
  df,
  title = "",  
  legend = "",  
  num_colors = 7,  
  zoom = NULL,  
  reference_map = FALSE
)
```

**Arguments**

- `df` A data.frame with a column named "region" and a column named "value". Elements in the "region" column must exactly match how regions are named in the "region" column in state.map.
- `title` An optional title for the map.
- `legend` An optional name for the legend.
- `num_colors` The number of colors to use on the map. A value of 0 uses a divergent scale (useful for visualizing negative and positive numbers), A value of 1 uses a continuous scale (useful for visualizing outliers), and a value in [2, 9] will use that many quantiles.
- `zoom` An optional vector of states to zoom in on. Elements of this vector must exactly match the names of states as they appear in the "region" column of ?state.regions.
- `reference_map` If true, render the choropleth over a reference map from Google Maps.

**Examples**

```r
## Not run:
# default parameters
data(df_pop_state)
state_choropleth(df_pop_state,
  legend = "Population")

# choropleth over reference map of continental usa
data(continental_us_states)
state_choropleth(df_pop_state,
```
state_choropleth_acs

Create a US State choropleth from ACS data

Description

Creates a choropleth of US States using the US Census’ American Community Survey (ACS) data. Requires the acs package to be installed, and a Census API Key to be set with the acs’s api.key.install function. Census API keys can be obtained at http://www.census.gov/developers/tos/key_request.html.

Usage

```r
state_choropleth_acs(
  tableId,
  endyear = 2011,
  span = 5,
  num_colors = 7,
  zoom = NULL
)
```
TractChoropleth

Arguments

- **tableId**: The id of an ACS table
- **endyear**: The end year of the survey to use. See `acs.fetch` and http://1.usa.gov/1geFSSj for details.
- **span**: The span of time to use. See `acs.fetch` and http://1.usa.gov/1geFSSj for details.
- **num_colors**: The number of colors on the map. A value of 1 will use a continuous scale. A value in [2, 9] will use that many colors.
- **zoom**: An optional list of states to zoom in on. Must come from the "name" column in `state.regions`.

Value

A choropleth.

References

Uses the `acs` package created by Ezra Haber Glenn.

See Also

- `api.key.install` in the `acs` package which sets an Census API key for the `acs` library
  which contains a list of all ACS surveys.

Examples

```r
## Not run:
# median income, default parameters
state_choropleth_acs("B19301")

# continuous scale, zooming in on New York, New Jersey and Connecticut
state_choropleth_acs("B19301", num_colors=1, zoom=c("new york", "new jersey", "connecticut"))
## End(Not run)
```

TractChoropleth

An R6 object for creating choropleths of Census Tracts.

Description

An R6 object for creating choropleths of Census Tracts.

An R6 object for creating choropleths of Census Tracts.

Super class

`choroplethr::Choropleth` -> `TractChoropleth`
Methods

**Public methods:**
- `TractChoropleth$new()`
- `TractChoropleth$set_zoom_tract()`
- `TractChoropleth$clone()`

**Method new():**

*Usage:*

`TractChoropleth$new(state_name, user.df)`

**Method set_zoom_tract():**

*Usage:*

`TractChoropleth$set_zoom_tract(county_zoom, tract_zoom)`

**Method clone():** The objects of this class are cloneable with this method.

*Usage:*

`TractChoropleth$clone(deep = FALSE)`

*Arguments:*

deep Whether to make a deep clone.

---

```r
tract_choropleth Create a choropleth of Census Tracts in a particular state.
```

**Description**

Create a choropleth of Census Tracts in a particular state.

**Usage**

```r
tract_choropleth(
  df,
  state_name,
  title = "",
  legend = "",
  num_colors = 7,
  tract_zoom = NULL,
  county_zoom = NULL,
  reference_map = FALSE
)
```
Arguments

df
A data.frame with a column named "region" and a column named "value".

state_name
The name of the state. See ?state.regions for proper spelling and capitalization.

title
An optional title for the map.

legend
An optional name for the legend.

num_colors
The number of colors to use on the map. A value of 0 uses a divergent scale
(useful for visualizing negative and positive numbers), A value of 1 uses a con-
tinuous scale (useful for visualizing outliers), and a value in [2, 9] will use that
many quantiles.

tract_zoom
An optional vector of tracts to zoom in on. Elements of this vector must exactly
match the names of tracts as they appear in the "region" column of the object
returned from "get_tract_map".

county_zoom
An optional vector of county FIPS codes to zoom in on. Elements of this vector
must exactly match the names of counties as they appear in the "county.fips.numeric"
column of the object returned from "get_tract_map".

reference_map
If true, render the choropleth over a reference map from Google Maps.

See Also

https://www.census.gov/data/academy/data-gems/2018/tract.html for more information
on Census Tracts

Description

Normal choropleth that draws Alaska and Hawaii as insets. In addition to a columns named "region"
and "value", also requires a column named "state".

Super class

choroplethr::Choropleth -> USAChoropleth

Methods

Public methods:

- USAChoropleth$new()
- USAChoropleth$render()
- USAChoropleth$render_helper()
Method new():
Usage:
USAChoropleth$new(map.df, user.df)

Method render():
Usage:
USAChoropleth$render()

Method render_helper():
Usage:
USAChoropleth$render_helper(choropleth.df, scale_name, theme)

Method render_state_outline():
Usage:
USAChoropleth$render_state_outline(states)

Method set_zoom():
Usage:
USAChoropleth$set_zoom(zoom)

Method clone(): The objects of this class are cloneable with this method.
Usage:
USAChoropleth$clone(deep = FALSE)
Arguments:
deep Whether to make a deep clone.

visualize_df_by_race_ethnicity_party
Create box plots to visualize race and ethnicity by party

Description
Requires a data.frame with specific column names. In practice, the data.frame is expected to come from a function like ?get_congressional_districts and then merged with a data.frame that has column "party".

Usage
visualize_df_by_race_ethnicity_party(df)
Arguments

df A data.frame with columns "party", "percent_white", "percent_black", "percent_asian", "percent_hispanic"

Examples

data("df_congress116_demographics")
data("df_congress116_party")
df = merge(df_congress116_demographics, df_congress116_party)
# Race and Ethnicity of the 116th Congressional Districts using data from
# the 2018 5-year American Community Survey
visualize_df_by_race_ethnicity_party(df)
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