Package ‘edbuildmapr’

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Type Package

Title Download School District Geospatial Data, Perform Spatial Analysis, and Create Formatted Exportable Maps

Version 0.1.1

Description Import US Census Bureau, Education Demographic and Geographic Estimates Program, Composite School District Boundaries Files for 2013-2017 with the option to attach the 'EdBuild' master dataset of school district finance, student demographics, and community economic indicators for every school district in the United States. The master dataset is built from the US Census, Annual Survey of School System Finances (F33) and joins data from the National Center for Education Statistics, Common Core of Data; the US Census, Small Area Income and Poverty Estimates; and the US Census, Education Demographic and Geographic Estimates. Additional functions in the package create a dataset of all pairs of school district neighbors as either a dataframe or a shapefile and create formatted maps of selected districts at the state or neighbor level, symbolized by a selected variable in the 'EdBuild' master dataset. For full details about 'EdBuild' data processing please see 'EdBuild' (2019) <https://edbuild.org/content/dividing-lines/main/methodology>.

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Imports dplyr, magrittr, spdep, sf (>= 0.9-1), stringr, tidyselect (>= 1.0.0), tmap (>= 3.0)


BugReports https://github.com/EdBuild/edbuildmapr/issues

Encoding UTF-8

LazyData true

RoxygenNote 7.0.2

NeedsCompilation no

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| borders       | A function to define the borders between neighboring districts |

**Description**

This function allows you to create a dataframe or linestring spatial object of the borders between neighboring districts from any polygon shapefile. It is optimized for school districts in the US, but any polygon shapefile can be used.

**Usage**

```r
borders(shapefile = "2017", id = "GEOID", diff_var = "StPovRate", export = "dataframe")
```

**Arguments**

- `shapefile` The polygon shapefile for which you want to define the borders. To import the school district shapefile for school years between 2013 and 2017, input the four digit year. Import any polygon shapefile by inputting the absolute path to the shapefile on your computer. Defaults to the 2017 school district shapes.
- `id` Unique variable used to create id for each pair of neighbors. Defaults to GEOID, the unique id in Census data.
- `diff_var` Name of a numeric variable on which to rank the difference between neighbors. Use `diff_var = "options"` to print a list of the variables. Defaults to "StPovRate", which returns the percentage point difference in Student Poverty Rate.
- `export` The type of object to return, dataframe or shape. Default to dataframe.

**Format**

A data frame with 7 variables or spatial object with 8 variables:

- `year` data year
- `u_id` Unique id of neighbor pair, a compilation of id1 and id2
- `id1` Unique id of first district
- `id2` Unique id of second district
- `length` Length of border in meters for the school district shapefiles, and in the units associated with the projection of the shapefile if the user imports their own shapefile
**diff_var_1** Value of the selected diff_var for the first district
**diff_var_2** Value of the selected diff_var for the second district
**diff_in_diff_var** Difference in the selected diff_var between district one and two

**geography** Linestring spatial object if user selected to export as a shape

**Value**
A dataframe or spatial object where each observation is a neighboring pair of districts.

**See Also**

sd_shapepull, sd_neighbor_map

**Examples**

```r
dataframe_ex <- borders(shapefile = "2017",
 id = "GEOID",
 diff_var = "MHI",
 export = "dataframe")

shapefile_ex <- borders(shapefile = "2017",
 id = "GEOID",
 diff_var = "pctNW",
 export = "shape")
```

**Description**

Import US Census Bureau, Education Demographic and Geographic Estimates Program, Composite School District Boundaries Files for 2013-2017 with the option to attach EdBuild’s master dataset of school district finance, student demographics, and community economic indicators for every school district in the United States. The master dataset is built from the US Census, Annual Survey of School System Finances (F33) and joins data from the National Center for Education Statistics, Common Core of Data; the US Census, Small Area Income and Poverty Estimates; and the US Census, Education Demographic and Geographic Estimates. Additional functions in the package create a dataset of all pairs of school district neighbors as either a dataframe or a shapefile and create formatted maps of selected districts at the state or neighbor level, symbolized by a selected variable in EdBuild’s master dataset. For full details about ‘EdBuild’ data processing please see: EdBuild (2019) Dividing Lines.
**edbuildmapr functions**

The edbuildmapr functions are:

- **borders**  Create a dataframe or linestring object of the borders between neighboring districts.
- **sd_map**  Create a map all school districts in any state symbolized by a selected variable from the EdBuild master dataset.
- **sd_neighbor_map**  Create a map of any school district with its neighbors symbolized by a selected variable from the EdBuild master dataset.
- **sd_shapepull**  Import a simplified version the US Census Bureau, Education Demographic and Geographic Estimates Program (EDGE), Composite School District Boundaries File for any school year from 2013 to 2017 with the option to attach EdBuild’s master dataset of school district finance, student demographics, and community economic indicators for every school district in the US.

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**sd_map**

**A function to create a map of all school districts in a state**

**Description**

This function allows you to create a map of all school districts, in each state in the United States, symbolized by selected variables from the EdBuild master dataset.

**Usage**

```
sd_map(state="New Jersey", map_var = "Student Poverty", level = "elem", legend= TRUE)
```

**Arguments**

- **state**  The state for which you want to map school districts. Defaults to New Jersey.
- **map_var**  Variable by which to symbolize the map.
  - Student Poverty colors by student poverty rate
  - Total Revenue colors by state and local revenue per pupil
  - Local Revenue colors by local revenue per pupil
  - State Revenue colors by state revenue per pupil
  - Percent Nonwhite colors by percent nonwhite enrollment
  - Median Household Income colors by median household income
  - Median Property Value colors by owner-occupied median property value
sd_neighbor_map

- FRL colors by free and reduced price lunch rate
  Defaults to Student Poverty
level
Selects which level of school districts you want displayed in the map.
- elem displays elementary and unified districts
- secon displays secondary and unified districts
  Defaults to elem.
legend
If TRUE, legend is visible. Defaults to TRUE.

Value
An image of map which can be written out with tmap::tmap_save(map, '~/Documents/map.png')

See Also
sd_neighbor_map

Examples
map <- sd_map(state="Georgia", map_var = "Percent Nonwhite",
level = "elem", legend= TRUE)

sd_neighbor_map A function to create a map of a school district and its neighbors

Description
This function allows you to create a map of any school district with its neighbors symbolized by a selected variable.

Usage
sd_neighbor_map(school_district = NULL,
map_var = "Student Poverty", legend= TRUE, type = "like")

Arguments
school_district
Seven digit NCESID of the school district. Default is NULL.
map_var
Variable by which to symbolize the map.
- Student Poverty colors by student poverty rate
- Total Revenue colors by state and local revenue per pupil
- Local Revenue colors by local revenue per pupil
- State Revenue colors by state revenue per pupil
- Percent Nonwhite colors by percent nonwhite enrollment
sd_shapepull

- Median Household Income colors by owner-occupied median household income
- Median Property Value colors by median property value
- FRL colors by free and reduced price lunch rate

Defaults to Student Poverty

legend

If TRUE, legend is visible. Defaults to TRUE.

type

Indicate which types of neighbors to return. Defaults to "like", returning a map of neighbors of the same district type (unified to unified, elementary to elementary and secondary to secondary). To view all neighbors use "all". This becomes important for districts like Chicago which have upwards of 50 neighboring school districts, but only 1 type-like neighbor. Chicago is a unified district with 1 unified neighbor, 16 secondary neighbors, and 32 elementary neighbors.

Value

An image of map which can be written out with tmap::tmap_save(map, '~/Documents/map.png')

See Also

sd_map

Examples

map <- sd_neighbor_map(school_district = "2601103", "Median Household Income")

sd_shapepull  A function to import school district shapefiles

Description

This function allows you to import a simplified version of the US Census Bureau, Education Demographic and Geographic Estimates Program (EDGE), Composite School District Boundaries File.

Usage

sd_shapepull(data_year = "2017", with_data=FALSE)

Arguments

data_year  Four digit year of shapefile data you would like to pull. Available for any school year from 2013 to 2017.

with_data  TRUE to attach EdBuild’s school district master dataset to shapefile. Defaults to FALSE.
sd.shapepull

Format

Simple feature collection with 6 fields:

- **GEOID**: Unique school district ID, character
- **NAME**: School district name, character string
- **sdType**: School district level, character string
- **FIPS**: State ID, character
- **State**: State name, character
- **Postal**: State postal code, character

**geometry**: sfc_MULTIPOLYGON

Value

A spatial object where each row is a school district.

Source


Examples

sd_shp_17 <- sd_shapepull("2017")
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