Package 'fairHousingMap'

September 12, 2023

Type Package

Title Create CTCAC/HCD Fair Housing Map

Version 0.1.0

Author Who wrote it

Maintainer The package maintainer <yourself@somewhere.net>

Description Code that produces the CTCAC/HCD Fair Housing Map

License What license is it under?

Encoding UTF-8

LazyData true

Imports sf,
sp,
testthat,
tidycensus,
tidyverse

Suggests tigris,
mapview,
testthat (>= 3.0.0),

RoxygenNote 7.2.3

Config/testthat/edition 3

R topics documented:

`all_census_data` *Loads all ACS and decennial Census data into a single data frame.*

Description

Downloads all relevant decennial and ACS data from Census API using tidycensus, then derives percentages and calculates margins of error for derived variables.

Usage

```
all_census_data(
  year = current_year,
  geo = "tract",
  write = FALSE,
  read = !write
)

read_census_data(year = current_year, geo = "tract")

read_acs_data(year = current_year, geo = "tract")
```

Arguments

`year`	designates the map year's filepaths
`geo`	tract or block group
`write`	write the intermediate file
`read`	read an existing intermediate file

Details

To use the Census APIs, sign up for an API key. Add Census API key to .Renviron profile and call it CENSUS_KEY. censusapi will use it by default. Within R, run:
Add key to .Renviron
'Sys.setenv(CENSUS_KEY= 'YOURKEYHERE')'
Reload .Renviron
'readRenviron("~/.Renviron")'
Check to see that the expected key is output in your R console
'Sys.getenv("CENSUS_KEY")'
'tidycensus::census_api_key('YOURKEYHERE', overwrite = TRUE, install = TRUE)'

Value

a data frame

Source

Census API

tract/bg area: https://mcdc.missouri.edu/applications/geocorr2022.html

Examples

```
all_census_data(read = F) # downloads decennial and acs data for the current map year at the tract level
```

`create_regions` *Create file that distinguishes between regions and rural areas*

Description

'create_regions' evaluates which regions that each county belongs to, then uses 'rural_overlay' to pinpoint rural tracts. 'rural_overlay' merges block centers with the rural_shapefile, and classifies the population of any block with its centroid inside the rural shapefile as rural. It then collapses to tract level, and any tract with over 50 percent population rural is classified as "Rural Areas." 'rural_overlay' is executed within the 'create_regions' function, and is separated for testing convenience only. For creating data, only 'create_regions' is necessary to run.

Usage

```
create_regions(year = current_year, write = FALSE, read = !write)

rural_overlay(
  block_points,
  rural_area,
  create_overlay = NULL,
  year = current_year,
  collapse = TRUE
)
```

Arguments

`year`	designates the map year's filepaths
`write`	write the intermediate file
`block_points`	block centroids generated by 'read_block_centers'.
`create_overlay`	allows for running only the sp::over function separately to reduce debugging time. To use, first assign location_overlay(create_overlay = T) to a variable, then use location_overlay(create_overlay = variable) to run the rest of the function.
`collapse`	aggregates blocks into tract and assigns tracts to rural or urban designation. Setting this to FALSE allows the user to view the block-level designation.
`rural_overlay`	rural shapefile.

Value

a data frame

Source

shape_CA_tract created using tigris package: /data-raw/R/generate_census_shapes.R

list of TCAC rural counties: https://www.treasurer.ca.gov/ctcac/Cover-memo.pdf

Examples

```
create_regions(write = T) # computes and writes the region designations file to the intermediate directory
```

`current_year` *Reader functions for zipped files*

Description

Reader functions for zipped files

Usage

```
current_year
```

Arguments

`name`	file within zip directory
`type`	Can be 'excel', 'csv', 'tsv', or 'table'

Format

An object of class `numeric` of length 1.

Value

the raw data file

Examples

```
read_zip(acs_variables, year = 2024, type = 'csv')
```

`filepaths` *Shortcuts to zipped files in the data-raw directory. See '?read_zip'*

Description

Shortcuts to zipped files in the data-raw directory. See '?read_zip'

Usage

```
filepaths(year = current_year)
```

Arguments

`year`	designates the map year's filepaths

Value

filepaths to raw data are loaded into environment

Examples

```
filepaths(year = 2024)
```

`final_opp` *Returns the final TCAC data frame output*

Description

'final_raw' loads and combines all intermediate files with economic, education, and environmental indicators. 'final_prepare'creates the high poverty and segregated designation and flags unreliable data. 'final_opp' creates the final opportunity scores and designations. 'final_raw' and 'final_prepare' are both inputs into 'final_opp'. Only 'final_opp' is necessary to run for generating new data.

Usage

```
final_opp(
  year = current_year,
  write = FALSE,
  output = "reduced",
  as_geo = FALSE
)

final_raw(year = current_year, geo = "tract", write = FALSE)

final_prepare(year = current_year, geo = "tract", .data = NULL)
```

Arguments

`year`	designates the map year's filepaths
`write`	write the final output
`output`	'reduced' returns only variables necessary for the map. If 'full', return all intermediate variables.
`as_geo`	logical to return sf object
`geo`	allows for opportunity to be assessed at the tract level in urban areas and block group in rural areas

Value

a data frame

Examples

```
final_opp(year = 2024, write = TRUE) # writes the final output
```

final_opp_data *Data Dictionary*

Description

Final TCAC 2024 data dictionary

Usage

```
data(final_2024)
```

Format

A data frame with 10,144 rows and 146 variables

Details

Annual TCAC dataset containing all data used in final designation of tcac tract categories: The variables are as follows:

- fips: Census tract ID
- fips_bg: Census block group ID

hello *Hello, World!*

Description

Prints 'Hello, world!'.

Usage

```
hello()
```

Examples

```
hello()
```

read_educ_pov *Imports education data and writes the relevant variables to the intermediate directory*

Description

Imports education data and writes the relevant variables to the intermediate directory

Usage

```
read_educ_pov(year = current_year)
```

Arguments

year	designates the appropriate filepaths
write	write the intermediate file
read	read an existing intermediate file

Details

Reading data is weighted by total enrollment of schools that return 4th-grade test scores. FRPM data is limited to and weighted by enrollment in schools that serve elementary school students. Grad data is weighted by high school enrollment.

Value

a data frame

Source

School data: https://www.cde.ca.gov/ds/si/ds/pubschls.asp

Test data: https://caaspp-elpac.ets.org/caaspp/ResearchFileListSB?

FRPM: http://www.cde.ca.gov/ds/sd/sd/filessp.asp

Cohort Grad data: https://www.cde.ca.gov/ds/ad/filesacgr.asp

Examples

```
graduation_rates() # reads an existing intermediate file at the default year
```

read_neighborhood_change *Import Neighborhood Change Data*

Description

Imports neighborhood change data generated by CHPC identifying non-rural tracts that have experienced both long-term (since 2000) and recent change (since 2013) racial/ethnic and economic change.

Usage

```
read_neighborhood_change(year = current_year)
```

Arguments

year	designates the map year's filepaths

Author(s)

Matt Alvarez-Nissen 'mnissen@chpc.net'

Examples

```
neighborhood_change(year = 2024) # imports neighborhood change output and reduces to necessary variables
```

read_tract_centers *Reads pop-weighted centroids of Census tracts, block groups, and blocks*

Description

Reads pop-weighted centroids of Census tracts, block groups, and blocks

Usage

```
read_tract_centers(as_shape = FALSE, year = current_year)
```

Arguments

as_shape	returns shapefile
year	designates the map year's filepaths

Value

a data frame

Source

tract/bg centroids: https://www.census.gov/geographies/reference-files/time-series/geo/centers-population.html

block centroids: https://mcdc.missouri.edu/applications/geocorr2022.html

Examples

```
read_tract_centers(as_shape = T) # returns tract centroids as shapefile based on the default year
```

`school_distances` *Creates tract/block group education scores*

Description

Creates tract/block group education scores

Usage

```
school_distances(
  year = current_year,
  geo = "tract",
  write = FALSE,
  read = !write
)
```

Arguments

`year`	designates the appropriate filepaths
`geo`	tract or bg
`write`	write the intermediate file
`read`	read an existing intermediate file

Details

Finds school distance to tract or block group centroids, and averages the reading and math scores, frpm, and graduation rates of the three nearest schools. 4th grade and FRPM are weighted by the enrollment of schools that serve 4th-graders, and graduation rates are weighted by cohort size.

Value

a data frame

Examples

```
school_distances(year = 2024, geo = 'tract', write = TRUE, read = FALSE) # writes a new file to the intermediate
```

shape_rural *Create rural designation shapefile*

Description

Imports USDA shapefile for areas ineligible for rural designation, then shrinks to only California data and subtracts them from the complete California shapefile to get a rural areas shapefile.

Usage

```
shape_rural(year = current_year, write = FALSE)
```

Arguments

year	designates the map year's filepaths
write	whether to write the intermediate shapefile

Value

a shapefile

Source

USDA areas ineligible for rural development housing programs: https://www.sc.egov.usda.gov/data/data_files.html

Changes in 2019 detailed: https://www.rd.usda.gov/files/CA-SFH-NoticeRuralAreaReview-Final-4.16.18.pdf

Examples

```
shape_rural(write = T) # computes and writes the rural shapefile to the intermediate directory
```

xwalk_ces *Create site-based environmental hazards variable*

Description

Imports CalEnviroScreen 4.0 site-based measurements (cleanup sites, hazardous waste, groundwater threats, solid waste) from the final 2023 TCAC file, creates a binary score for tracts in the bottom 5 crosswalks to 2020 tracts using an overlay method of >= 5 until OEHHA updates to 2020 boundaries. The overlay approach was chosen over a weighted allocation (e.g. by area or population) because the site-based measures are already interpolated by OEHHA from points to tracts, and the research partners wanted to avoid re-interpolating already interpolated data.

Usage

```
xwalk_ces(year = current_year, write = FALSE, read = !write)
```

Arguments

`year`	designates the appropriate filepaths
`write`	write the intermediate file
`read`	read an existing intermediate file

Value

a data frame

Examples

```
xwalk_ces(year = 2024, write = TRUE) # writes a new file to the intermediate directory
```

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