Package 'fairHousingMap'

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Type Package

Title Functions to produce the CTCAC/HCD AFFH Mapping Tool

Version 2.0

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Description Processes various datasets from the census, CA department of education, and CalEnviro-Screen, among others, and classifies geographies in terms of opportunity, gentrification, and segregated areas of poverty. The package is designed to streamline the workflow for the annual update process.

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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",
  testing_handle = FALSE,
  test_name = ""
)
```

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

Note

school_distances depends on all_census_data. The 2023 handle is included in order to run 2023 school_distances at 2020 geos, required to implement 3-year rolling averages of education data in the 2025 map.

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,
  testing_handle = FALSE
)

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	*Includes miscellaneous helpers, including setting the default year, reader functions for zipped files, and data visualization themes.*

Description

Includes miscellaneous helpers, including setting the default year, reader functions for zipped files, and data visualization themes.

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')
```

---

data_dict_2024	*AFFH Mapping Tool data dictionary. Includes all variables included in the 2024 mapping interface.*

Usage

```
?data_dict_2024
```

---

data_dict_2025	*AFFH Mapping Tool data dictionary. Includes all variables included in the 2025 mapping interface.*

Usage

```
?data_dict_2025
```

---

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

Note

Year 2023 filepaths are used to process 2023 OM education data at 2020 geographies, which is required for implementation of 3-year rolling education averages.

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, reduced = TRUE, cog = FALSE)

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

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

Arguments

year	designates the map year's filepaths
write	write the final output
cog	logical to write COG referenced shapefile for HCD to be used in housing element update process.
geo	allows for opportunity to be assessed at the tract level in urban areas and block group in rural areas
output	'reduced' returns only variables necessary for the map. If 'full', include all intermediate variables.

Value

a data frame

Note

2025 implements a 3-year rolling average of education indicators. The change is enacted in the final_raw function.

Examples

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

---

final_opp_public *Generates public summary files*

Description

Loads final opportunity and neighborhood change data and creates excel workbook summary files, shapefiles, and data dictionaries

Usage

```
final_opp_public(year = current_year, write = FALSE, change = FALSE)
```

Arguments

year	designates the map year's filepaths
write	whether to write new opportunity summary files
change	whether to write new change summary files

Examples

```
final_opp_public(year = 2024, write = TRUE, change = TRUE)
```

---

hello *Hello, World!*

Description

Prints 'Hello, world!'.

Usage

```
hello()
```

Examples

```
hello()
```

---

opp_lihtc_devels *Plot 9 CHPC Preservation Database 2025 CTCAC/HCD Opportunity Map opp_lihtc_devels() Plot 9 Cutoff year is 2019 for 9 with application years 2015 or newer for 9 the spatial join of lihtc developments to neighborhood categories. plot_lihtc_devels() reads the output of the former, summarizes and plots the data, and the figures are saved as .tiff files in the products/charts directory. The code below was adjusted in September, 2024 for analysis to be included in the draft 2025 OM FAQ. opp_lihtc_devels() # call first plot_lihtc_devels() # call second*

---

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)

of neighborhood change is code 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, testing_handle = 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
```

---

tribal_overlap   *Create tribal land flag*

Description

Imports tribal lands under of the control of federally-recognized tribes, computes intersection with Census tracts, and flags any tract where at least 25 percent of the geography's land area is within federally-recognized tribal lands. In final_data.R, High-Poverty & Segregated is not assessed in tracts where the tribal land flag is raised.

Usage

```
tribal_overlap(year = current_year)
```

Arguments

year   designates the map year's filepaths

Value

a dataframe

Examples

```
tribal_overlap(year = 2024) # loads tracts with flag for tribal land
```

---

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 decided to avoid re-interpolating the data.

Usage

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

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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