languages

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#install packages

```
library(tidycensus)
census_api_key("6a61380819eb6831ddb4de227ee39abea9e9471e")
```

```
## To install your API key for use in future sessions, run this function with `install = TRUE`.
```

```
library(tidyverse)
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.1 --
```

```
## v ggplot2 3.3.5     v purrr   0.3.4
## v tibble  3.1.6     v dplyr   1.0.8
## v tidyr   1.2.0     v stringr 1.4.0
## v readr   2.1.2     v forcats 0.5.1
```

```
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
library(tigris)
```

```
## To enable
## caching of data, set `options(tigris_use_cache = TRUE)` in your R script or .Rprofile.
```

```
##
## Attaching package: 'tigris'
```

```
## The following object is masked from 'package:tidycensus':
##
##     fips_codes
```

```
options(tigris_use_cache = TRUE)

library(sf)
```

```
## Linking to GEOS 3.9.1, GDAL 3.2.1, PROJ 7.2.1; sf_use_s2() is TRUE
```

```
library(ggiraph)
library(tmap)
```

#Preparing data for languages spoken in Howard County, MD. #create hoco lang variable by calling for acs data with the get_acs() function. The geography is tract and the county is Howard County, MD. The variables are set to 5 different language classes and the summary variable is set to all language speakers. the geometry is set to true. #we need to add a field to the attribute data so we mutate and name the field "percent" which is equal to 100 * (estimate / summary_est))

```
Hoco_lang <- get_acs(
  geography = "tract",
  state = "MD",
  county = "Howard County",
  variables = c(English_only = "C16002_002",
                Spanish = "C16002_003",
                Other_indoeuro = "C16002_006",
                Asian_pacific_island = "C16002_009",
                Other = "C16002_012"),
  summary_var = "C16002_001",
  geometry = TRUE
) %>%
  mutate(percent = 100 * (estimate / summary_est))
```

```
## Getting data from the 2015-2019 5-year ACS
```

#to make the map we use the tm_shape function and call for the hoco_lang variable we made. the tm_facets function let us put all the maps we want based on the variable which are the different language classes. The tm_fill fills the hoco shapefiles with the percent field we made earlier and the census tracts are colored in shades of blue accordingly. the legend title is set with title = # the tm_layout lets us set our bg.color (background color) to grey and the adjust the legend position to fill in the empty space. The panel label background color is set to white.

```
tm_shape(Hoco_lang,
         projection = sf::st_crs(26915)) +
  tm_facets(by = "variable", scale.factor = 4) +
  tm_fill(col = "percent",
          style = "quantile",
          n = 6,
          palette = "Blues",
          title = "Language Spoken by Percent ",) +
  tm_layout(bg.color = "grey",
            legend.position = c(-0.8, 0.05),
            panel.label.bg.color = "white")
```