

# Chapter 2 Exercise

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2/13/2022

## Loading Libraries

```
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   1.0.7
## 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(tidycensus)
# census_api_key("ea26feb1a3870fc890f9d802b8db001ebce20b7e", install = TRUE)
```

1. Review the available geographies in tidycensus from the geography table in this chapter. Acquire data on median age (variable B01002\_001) for a geography we have not yet used.

Median Age of the Maryland County Subdivision.

```
median_age <- get_acs(
  geography = "county subdivision",
  variables = "B01002_001",
  state = "MD")
```

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

```
View(median_age)
```

2. Use the `load_variables()` function to find a variable that interests you that we haven't used yet. Use `get_acs()` to fetch data from the 2015-2019 ACS for counties in the state where you live, where you

## have visited, or where you would like to visit.

PA Counties for variable B18102\_029 which is Female: 18 to 34 years: With a hearing difficulty

```
v19 <- load_variables(2019, "acs5", cache = TRUE)
View(v19)
```

```
Pa_34yr_femalehearing <- get_acs(
  geography = "county",
  variables = "B18102_029",
  state = "PA")
```

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

```
View(Pa_34yr_femalehearing)
```

# Chapter 3 Exercise

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## Loading Libraries

```
library(tidycensus)
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  1.0.7
## 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()
```

The ACS Data Profile includes a number of pre-computed percentages which can reduce your data wrangling time. The variable in the 2015-2019 ACS for “percent of the population age 25 and up with a bachelor’s degree” is DP02\_0068P. For a state of your choosing, use this variable to determine:

- The county with the highest percentage in the state
  - Chester County is the highest with 53% estimated
- The county with the lowest percentage in the state
  - Forest County is the lowest with 8.1% estimated
- The median value for counties in your chosen state
  - Median Value for PA Counties is 21.3%

```
bachelors_25up <- get_acs(
  geography = "county",
  state = "PA" ,
  variables = "DP02_0068P",
  year = 2019
)
```

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

```
## Using the ACS Data Profile
```

```
arrange(bachelors_25up, desc(estimate))
```

```
## # A tibble: 67 x 5
##   GEOID NAME                variable estimate moe
##   <chr> <chr>                <chr>      <dbl> <dbl>
## 1 42029 Chester County, Pennsylvania DP02_0068P      53    0.6
## 2 42091 Montgomery County, Pennsylvania DP02_0068P     49.3    0.4
## 3 42027 Centre County, Pennsylvania DP02_0068P     45.5    1.1
## 4 42003 Allegheny County, Pennsylvania DP02_0068P     41.6    0.3
## 5 42017 Bucks County, Pennsylvania DP02_0068P     41.3    0.6
## 6 42045 Delaware County, Pennsylvania DP02_0068P      39    0.6
## 7 42041 Cumberland County, Pennsylvania DP02_0068P     36.6    0.9
## 8 42019 Butler County, Pennsylvania DP02_0068P      36    0.8
## 9 42093 Montour County, Pennsylvania DP02_0068P     31.6    2.6
## 10 42043 Dauphin County, Pennsylvania DP02_0068P     30.8    1.1
## # ... with 57 more rows
```

```
arrange(bachelors_25up, estimate)
```

```
## # A tibble: 67 x 5
##   GEOID NAME                variable estimate moe
##   <chr> <chr>                <chr>      <dbl> <dbl>
## 1 42053 Forest County, Pennsylvania DP02_0068P       8.1    1.9
## 2 42087 Mifflin County, Pennsylvania DP02_0068P      11.9    1.2
## 3 42057 Fulton County, Pennsylvania DP02_0068P      13.6    1.1
## 4 42023 Cameron County, Pennsylvania DP02_0068P      13.7    2.6
## 5 42067 Juniata County, Pennsylvania DP02_0068P      14.5    1.4
## 6 42009 Bedford County, Pennsylvania DP02_0068P      14.7     1
## 7 42033 Clearfield County, Pennsylvania DP02_0068P      15.1    0.8
## 8 42105 Potter County, Pennsylvania DP02_0068P      15.4    1.1
## 9 42065 Jefferson County, Pennsylvania DP02_0068P      15.9     1
## 10 42111 Somerset County, Pennsylvania DP02_0068P      15.9    0.8
## # ... with 57 more rows
```

```
median(bachelors_25up$estimate)
```

```
## [1] 21.3
```

# Chapter 4 Exercise

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2/13/2022

## Chapter 4 Exercise

Libraries

```
library(tidycensus)
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   1.0.7
## 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(ggplot2)
```

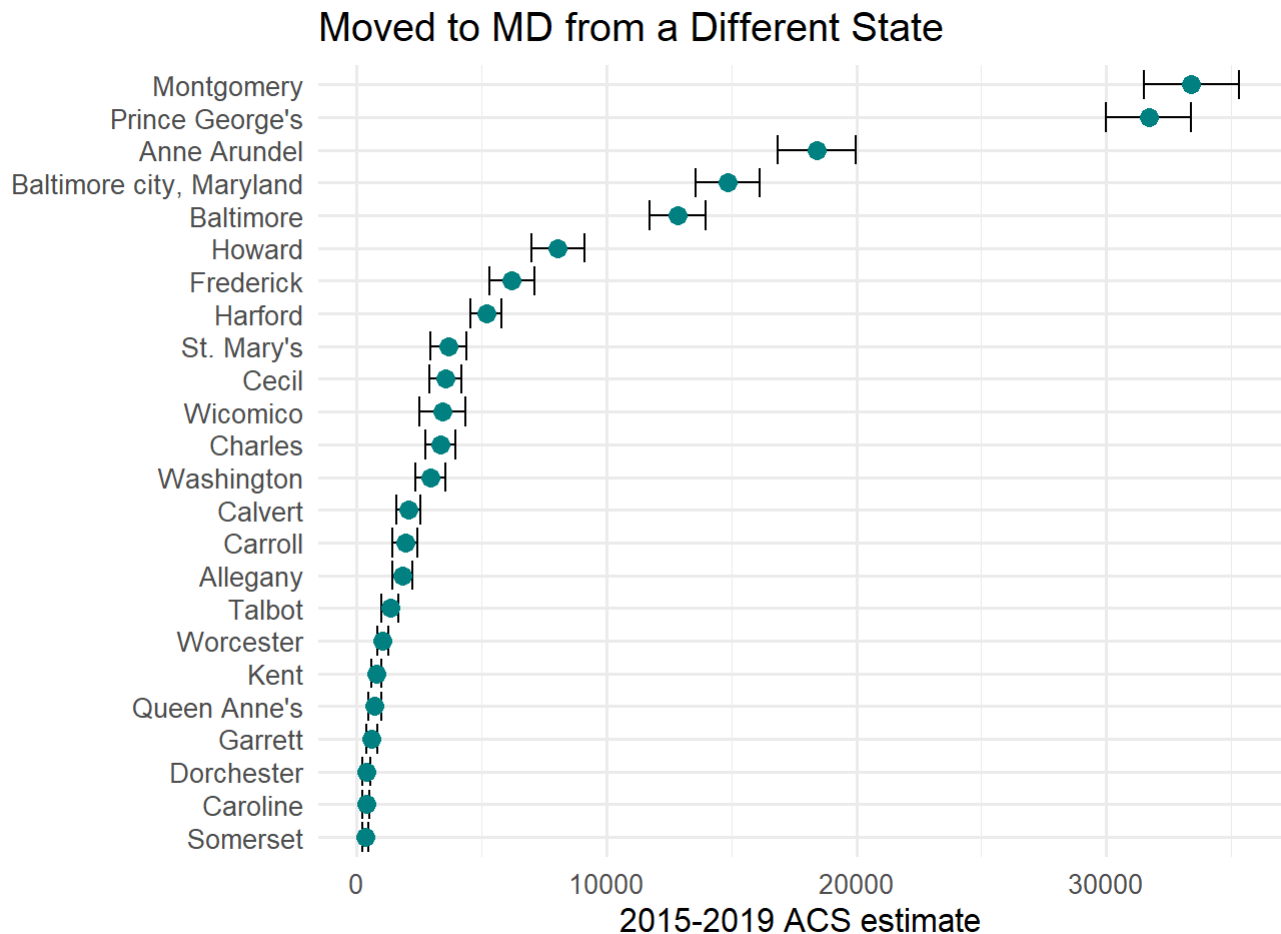
Choose a different variable in the ACS and/or a different location and create a margin of error visualization of your own.

```
v19 <- load_variables(2019, "acs5", cache = TRUE)
View(v19)

md_moving <- get_acs(
  state = "MD",
  geography = "county",
  variables = c(tot_diffstate = "B07003_013"),
  year = 2019
)>%
  mutate(NAME = str_remove(NAME, " County, Maryland"))
```

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

```
ggplot(md_moving, aes(x = estimate, y = reorder(NAME, estimate))) +
  geom_errorbarh(aes(xmin = estimate - moe, xmax = estimate + moe)) +
  geom_point(size = 3, color = "#008080") +
  theme_minimal(base_size = 12.5) +
  labs(title = "Moved to MD from a Different State",
       x = "2015-2019 ACS estimate",
       y = "")
```



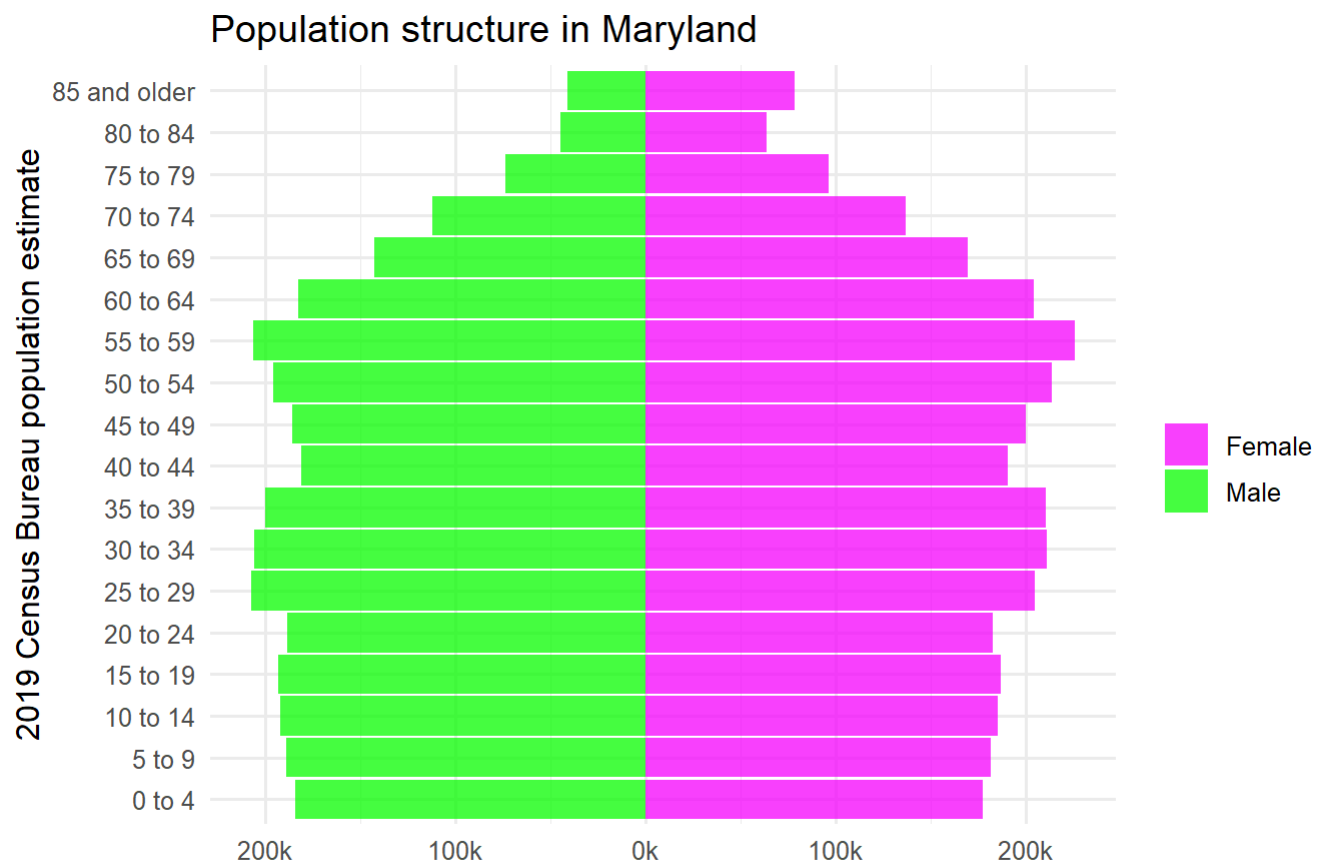
Modify the population pyramid code to create a different, customized population pyramid. You can choose a different location (state or county), different colors/plot design, or some combination!

```

maryland <- get_estimates(
  geography = "state",
  state = "MD",
  product = "characteristics",
  breakdown = c("SEX", "AGEGROUP"),
  breakdown_labels = TRUE,
  year = 2019
)
md_filtered <- filter(maryland, str_detect(AGEGROUP, "^Age"),
  SEX != "Both sexes") %>%
  mutate(value = ifelse(SEX == "Male", -value, value))
md_pyramid <- ggplot(md_filtered,
  aes(x = value,
    y = AGEGROUP,
    fill = SEX)) +
  geom_col(width = 0.95, alpha = 0.75) +
  theme_minimal(base_family = "Verdana",
    base_size = 12) +
  scale_x_continuous(labels = function(x) paste0(abs(x / 1000), "k")) +
  scale_y_discrete(labels = function(y) str_remove_all(y, "Age\\s|\\syears")) +
  scale_fill_manual(values = c("#F500FC", "#07FC00")) +
  labs(x = "",
    y = "2019 Census Bureau population estimate",
    title = "Population structure in Maryland",
    fill = "",
    caption = "Data source: US Census Bureau population estimates & tidycensus R package")

md_pyramid

```



Data source: US Census Bureau population estimates & tidycensus R package