

# Week 14 Programming Assignment

Instructor: Chien-Hao Fu

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**Due: 5/29/2019**

## Data Source

Original population data downloaded from Kaiser Family Foundation, which is based on analysis of the Census Bureau's American Community Survey (ACS). Accessed 5/12/2019 from <https://www.kff.org/other/state-indicator/distribution-by-age/>

## Preparation

1. Install the following packages
  - `maps`
  - `maptool`
  - `broom`
  - `rgdal`
  - `rgeos`
2. Download and import the file: `pop_m.rds` as object `pop.m` with the function:

```
read_rds("file_path")
```

3. Load the packages from Step 1 and `tidyverse`
4. Take a moment to examine the data frames

## Part I

Task: Practice Scoped Verbs of `dplyr`

- (a) 請找出全美，每年各成年工作人口年齡組別 (19~64) 佔各州總人口比例之中位數
- Tip: Use `group_by` and `summarise_at`
  - Use `vars()` to select variables
- (b) 請找出哪些州，曾有任一人口年齡組別佔比大於 0.3
- Tip: Use `filter_at`
  - Use `vars()` to *remove* variables that should not be included in the comparison
- (c) 請將答案及程式碼填入 `W14 Student Submission.docx`

## Part II

Task: Draw a map using the data from the `maps` package and the plotting functions in `ggplot2`

Follow the steps to create a map that highlights selected countries of the world map

- Use the `map_data` function to load the dataset `world` into a dataframe: `world_map`
- Use the `map_data` function to select a subset of regions (ex: Brazil, Russia, India, China and South Africa) from the world dataset and save it as a dataframe: (ex: BRICS )
  - Hint: you can use the following command to see the full list of countries

```
sort(unique(world_map$region))
```

- Use `ggplot` to draw the map, set the dataset to `world_map`
  - Map `x` to `long`, `y` to `lat`, and `group` to `group`

- Use `geom_polygon` to draw the world map. Set the fills and colors appropriately.
- Use `geom_polygon` again to draw the selected countries. Here (in this function) you should set the dataset to the your second dataframe (ex: BRICS). Set the fills and colors appropriately.

Your map may look similar to the following:

