

# Week 10 Programming Assignment

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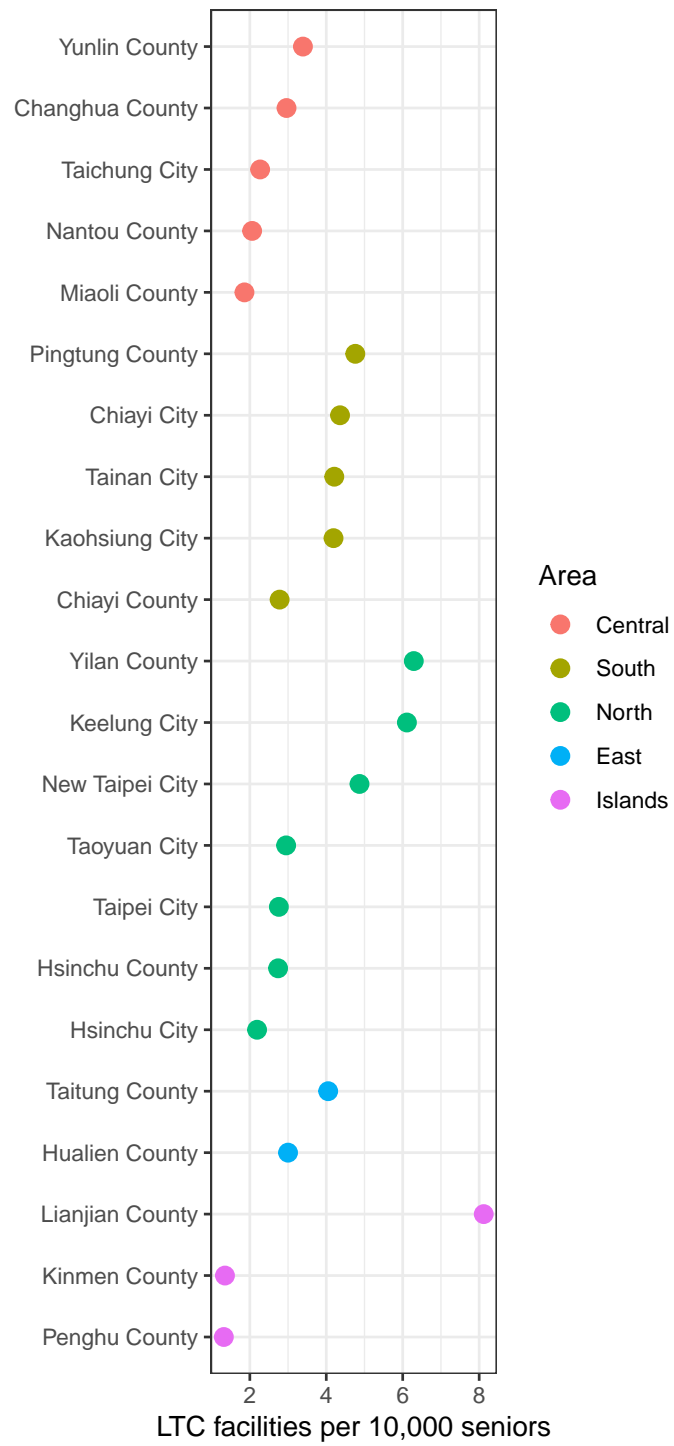
**Due: 5/01/2019**

## **Preparation**

1. Go to the course website and download the following file:  
`dot_plot2019.RData`
2. Load the data using `load("dot_plot2019.RData")`
3. Load the package: `tidyverse`

## **Programming Assignment**

Goal: Use the data frame `sub_2015_city` to draw a plot that is as close to the following as possible:



## Instructions

1. Create a factor variable `area` using `fct_recode()` or `fct_collapse()`
  - The variable should include the following five levels:
  - “North” should consist of the following cities: “Taipei City”, “New Taipei City”, “Keelung City”, “Taoyuan City”, “Hsinchu City”, “Hsinchu County”, “Yilan County”
  - “Central” should consist of the following cities: “Miaoli County”, “Taichung City”, “Changhua County”, “Nantou County”, “Yunlin County”
  - “South” should consist of the following cities: “Chiayi City”, “Chiayi County”, “Tainan City”, “Kaohsiung City”, “Pingtung County”
  - “East” should consist of the following cities: “Hualien County”, “Taitung County”
  - “Islands” should consist of the following cities: “Penghu County”, “Kinmen County”, “Lianjian County”
  - Note: the names of the cities are listed on the course website in the description of the assignment
2. Reorder the factor variable: `city`
  - Drop unused factor levels
  - Arrange the data frame to be sorted first by `area`, then by `avg_nh`
  - Reorder the variable via the function `fct_inorder()`
3. Draw the dotplot by mapping the variables to correct visual elements
  - Map the variable `avg_nh` to the `x` position
  - Map the variable `city` to the `y` position
  - Map `color` to `area`
4. Draw the dots via the `geom_point()` function
5. Custimize the plot
  - Label the visual elements (including `x`, `y`, and `color`)

- Use “+ `theme_bw()`” to change the look of the plot
6. Submit your plot and source codes to the course website
    - Export the plot with `ggsave()`. Make sure it is in an appropriate aspect ratio
    - Save your source codes as an R file

**Bonus tasks**

1. Use the piping operator `%>%` to simplify your code
2. Custimize the shape of point symbols