Week 8 Programming Assignment

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4/11/2019

Due: 4/17/2019

Preparation

1. Continue from last week, you should have the following data frame in your environment:
   - `sub_data2015`
     - This data frame should contain all observations in 2015, excluding those from Taiwan and Total
2. Load the `tidyverse` package

Programming Assignment, Part I:

Task

Rank each city by their per capita tax revenue (平均每人稅賦) within the geographical areas (North, Central, South, East, and Islands). It should be ranked in descending orders; i.e. the city with the highest per capita tax revenue should be ranked as the first.

Tips

- Dataset: `sub_data2015`
- Variable: `tax_incidence`
- Use `group_by()` to group the observations
- Use `mutate()` and `min_rank()` to generate the ranking

- Use `arrange()` to sort the observations
- Try to use the piping operator `%>%`

Programming Assignment, Part II

Task

Create an ordered, colorized chart to visualize the population changes by city in 2015

Steps

1. Visualize cities' population changes
    - Dataset: `sub_data2015`
    - Function: `geom_col()`
    - Variables: `pop_change`, `city`
    - In your code, add this line to make the city names more readable:

```
  + theme(axis.text.x = element_text(angle=60, hjust=1))
```

2. Continuing Step 1, now we draw a bar graph with sorted population changes
    - Hint: use the reorder() function within the `aes()` function
    - Use the `labs()` function to write the titles for x- and y-axes
        - e.g.: `+ labs( x= "...", y= "..." )`
3. Continuing Step 2, colorize cities with positive population changes with a different color than those with negative population changes
    - Create a variable to indicate whether the population change of a city is positive or negative
    - Then map the variable to the `fill` of the bars
4. Continuing Step 3, use color value `"#CCEEFF"` for negative changes and `"#FFDDDD"` for positive changes. Also change the outline of bars to black
    - Hint: use scale_fill_manual() function

- You can turn off the guide with the option: `guide = FALSE` inside the `scale_fill_manual()` function
- Feel free to pick your own colors!

Complete "W8 Student Submission.docx" and submit your answers, plot, and source codes to the course website.

Your plots may look similar to the following: