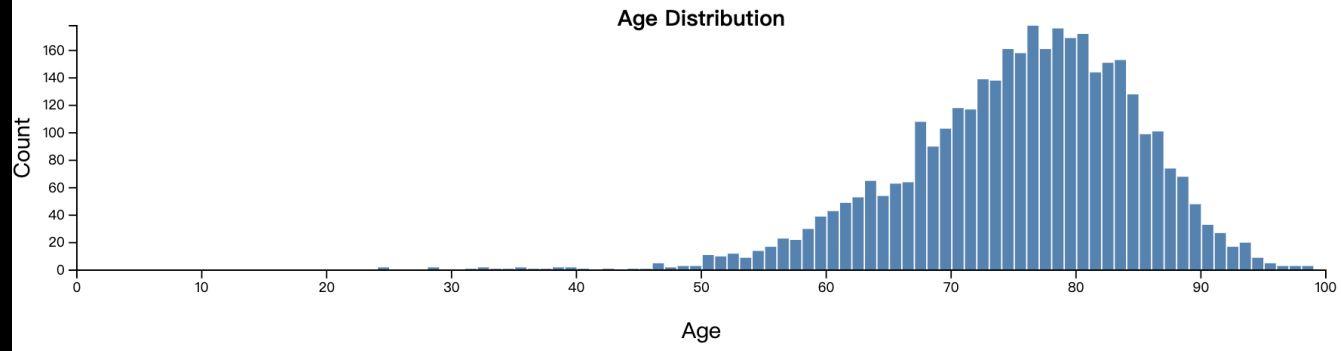
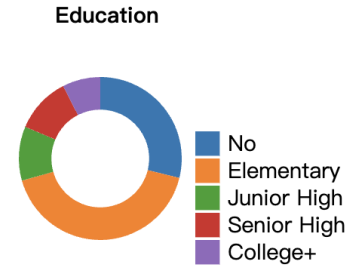
D3: Static Visualization

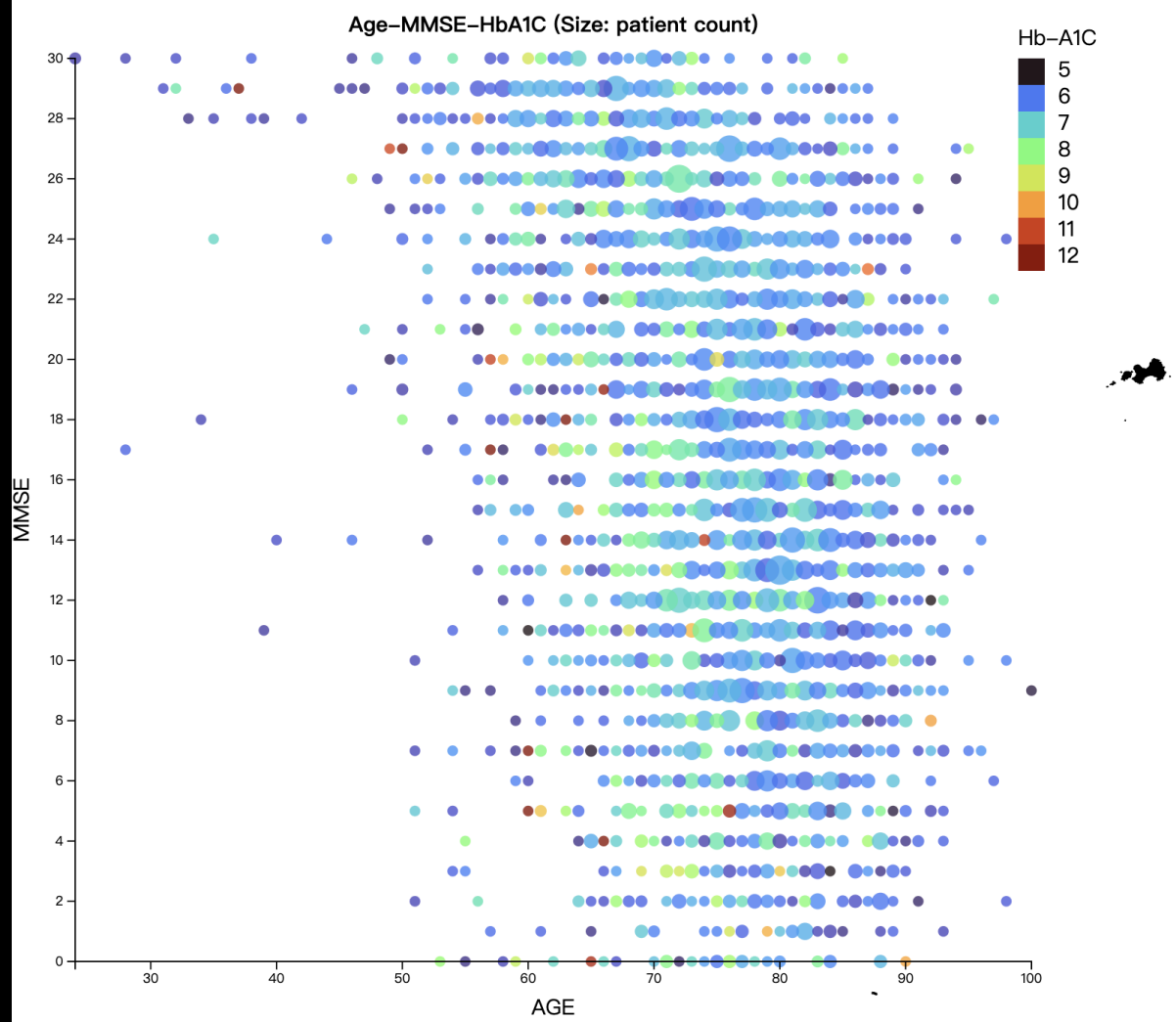
Homework2

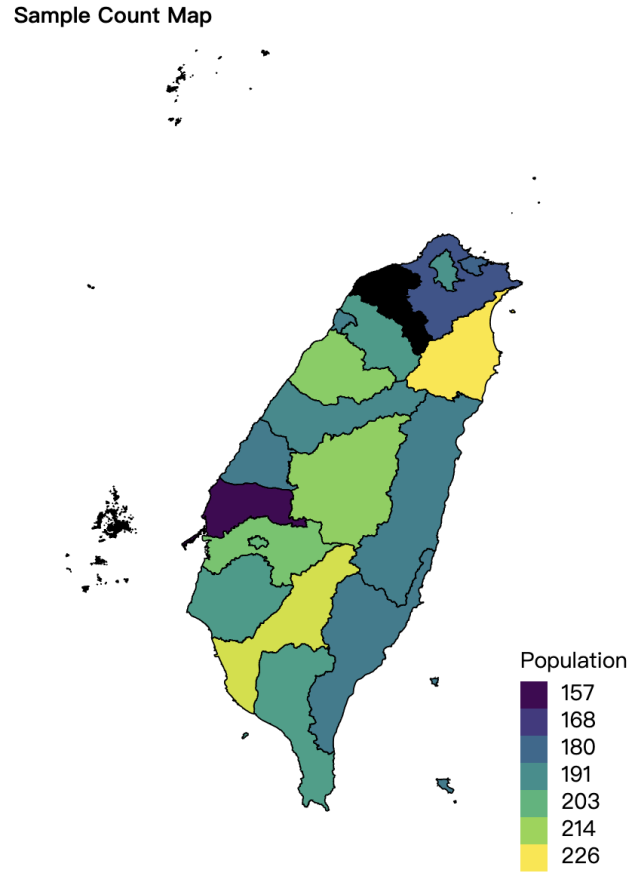
Your result does not have to be the same as this screenshot.

The dataset I provide to you is different.









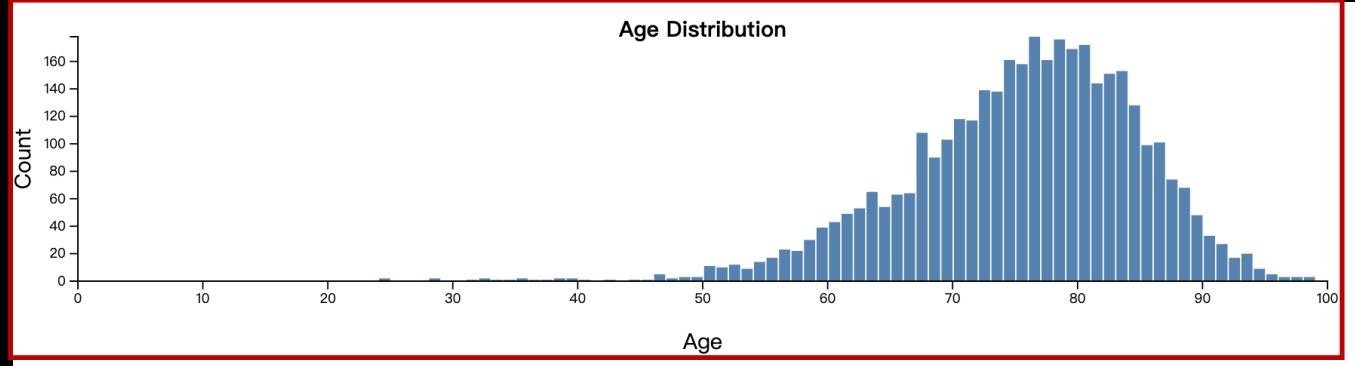
Dataset

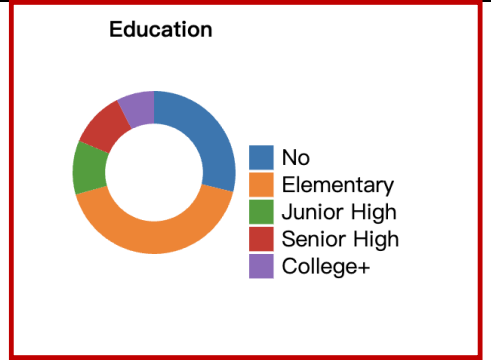
- data_loc.csv
  - A dementia dataset (However, the dataset is NOT real. I just use the scenario, but I generate the dataset. If you see any thing count-intuitive, that is normal.)
  - Data attributes (each row is a patient)
    - Age: just patient's age (integer)
    - Education: how many years of education did the patient receive (integer)
    - Hb-A1C: Glycated Hemoglobin (float)
    - MMSE: the score of Mini-Mental State Examination (integer)
    - Location: which city/county is the patient living? (integer)
- taiwan.json: map of Taiwan

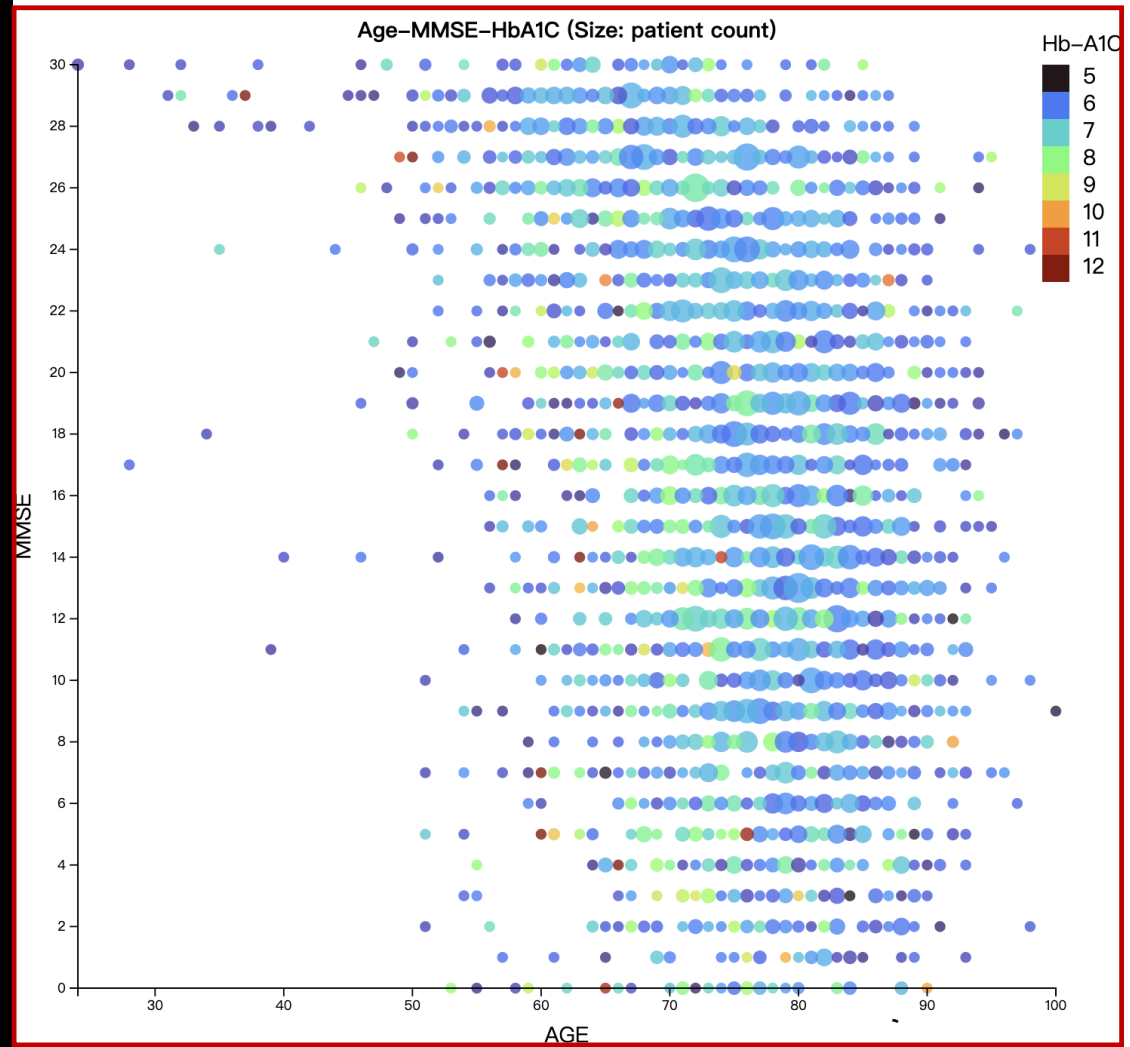
Deadline?

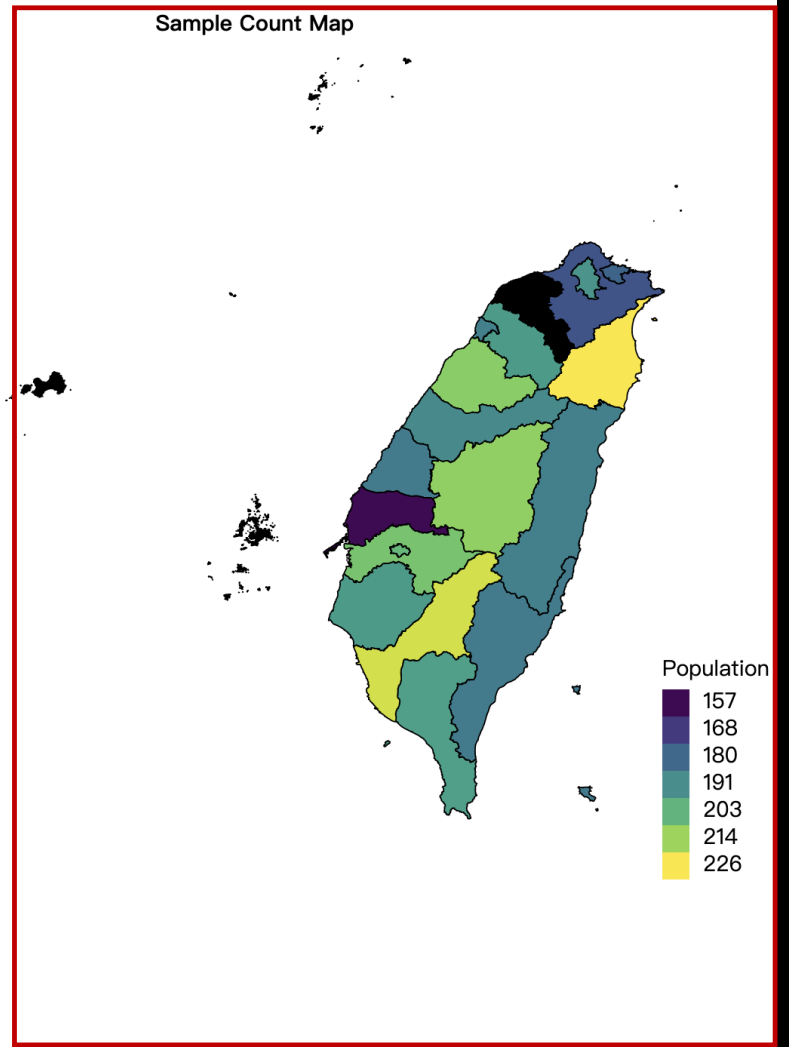
- What do we have to know (D3) to make this homework done?
  - 01_BeforeD3
  - 02_Selection
  - 03_DataBinding
  - 04_Scale_Axis
  - 05_BasicShape
  - 06_Map
- You will have 2 weeks from now on to do this homework

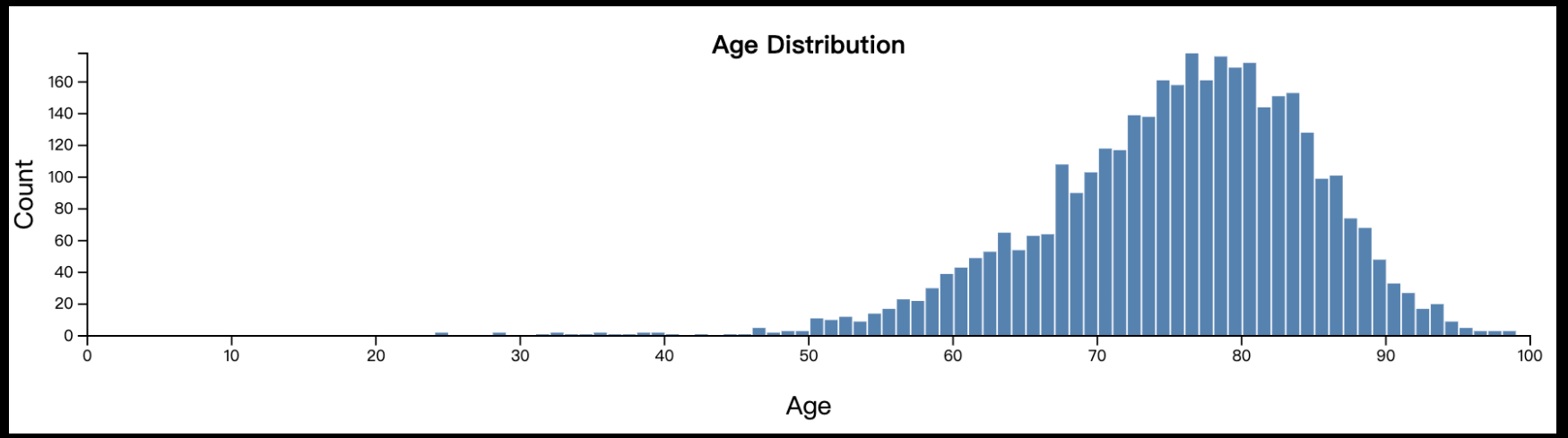
4 subplots


Age Distribution
Count
Age
0
10
20
30
40
50
60
70
80
90
100
0
20
40
60
80
100
120
140
160


Education
No
Elementary
Junior High
Senior High
College+


Age–MMSE–HbA1C (Size: patient count)
Hb–A1C
5
6
7
8
9
10
11
12
MMSE
AGE
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
30
40
50
60
70
80
90
100

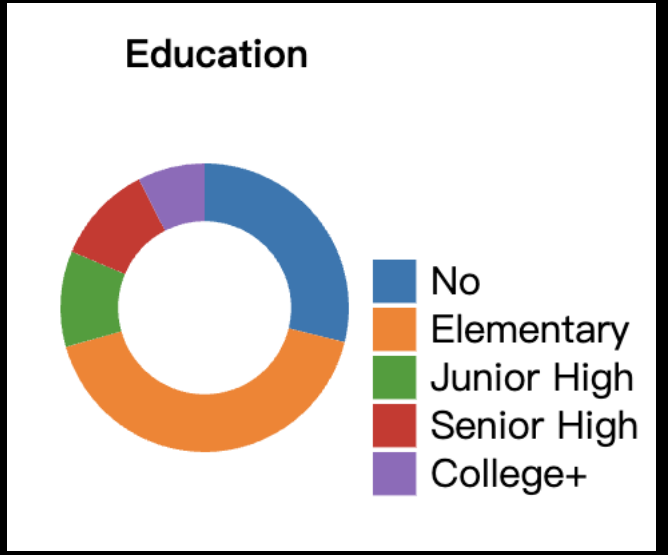

Sample Count Map
Population
157
168
180
191
203
214
226



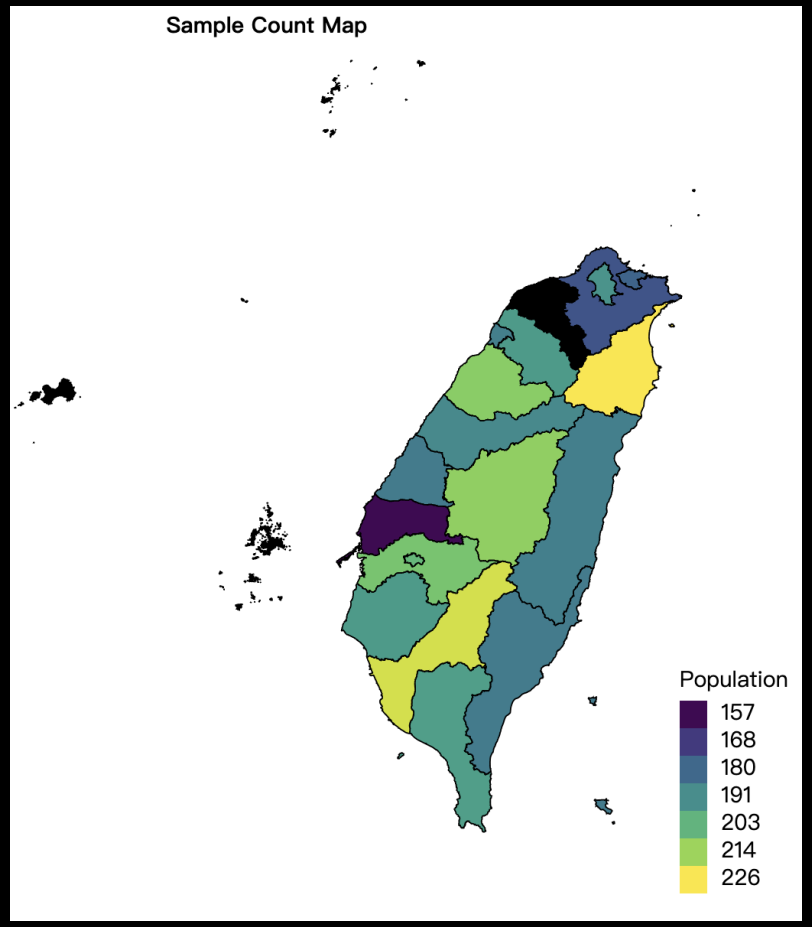
- Show the histogram of age distribution from all patients by a bar chart
- The bar chart needs
  - A title
  - X-axis with label and ticks
  - Y-axis with
- Suggestion: 100 bins for this histogram

- Donut chart to show distribution of education levels
- Education attribute:
  - 0 : No (education)
  - 1-6: Elementary
  - 7-9: Junior high school
  - 9-12: Senior high School
  - 13+: Coolege+

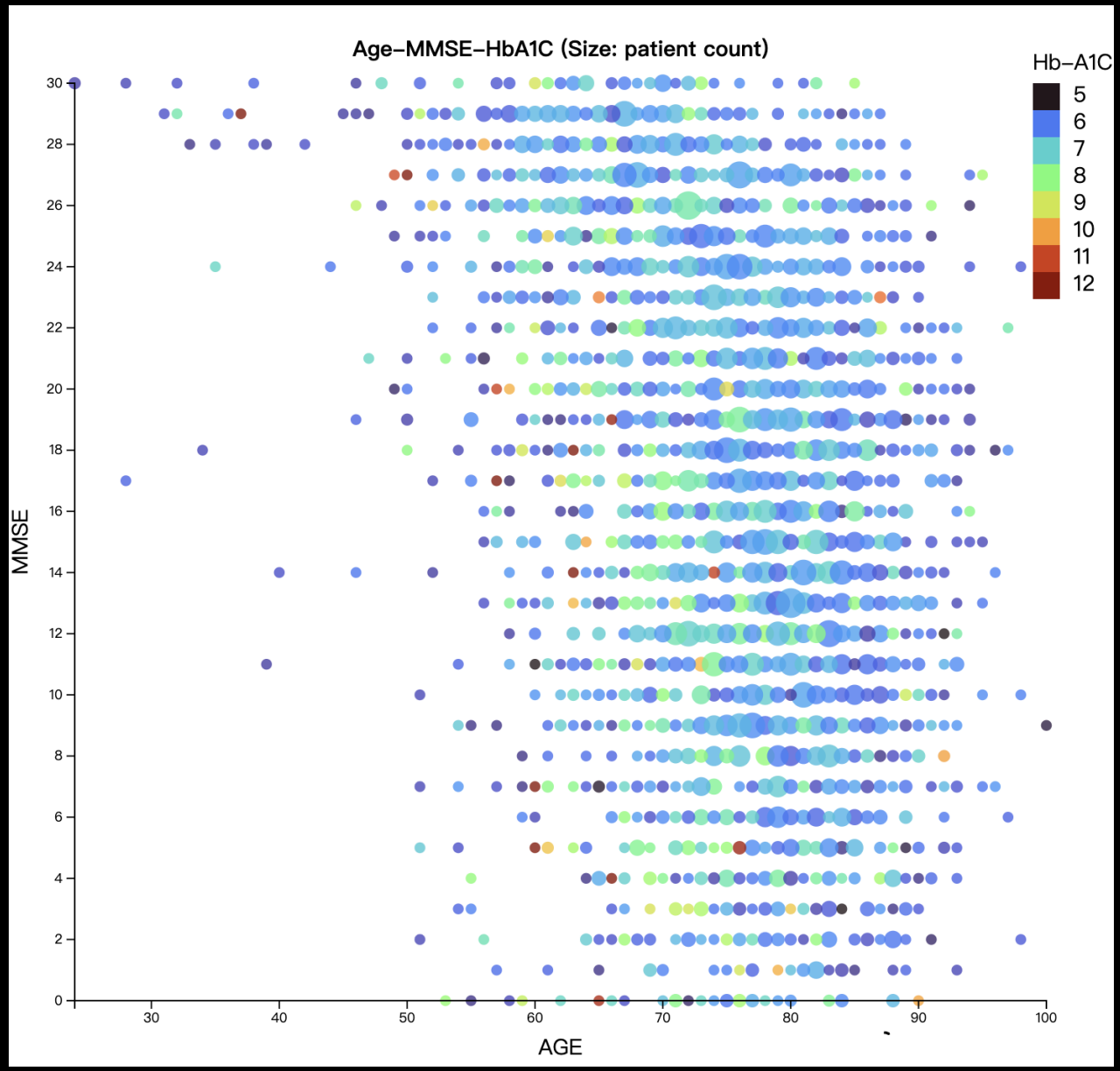
- This donut chart plot requires a title and its legend



- A choropleth map
  - Choose a sequential color map
  - Color in each city/county represent the number of patients in the city/county
- Location attribute:
  - 'ILA': 1, 'HSQ':2, 'MIA':3, 'CHA':4, 'NAN':5, 'YUN':6, 'CYQ':7, 'PIF':8, 'TTT':9, 'HUA':10, 'KEE':11, 'HSZ':12, 'CYI':13, 'TPE':14, 'KHH':15, 'TPQ':16, 'TXG':17, 'TNN':18, 'TAO’:19
  - Each integer is a city/county in Taiwan (no Lienchiang County-連江, Kinmen-金門, Penghu-澎湖)
  - You can lookup what each abbreviation means in ‘Taiwan.json’ -> object of one region -> properties -> ISO3166
- This choropleth map requires a title and its legend



- A scatter plot
  - We have to first aggregate patients with exactly same ‘age’ and ‘MMSE’ score into a group
  - Each circle represent a group
    - X-location: age of the group
    - Y-location: MMSE score of the group
    - Size: number of patient in the group
    - Color: average Hb-A1C in the group (set any Hb-A1C value smaller than 5 to 5 and greater than 12 to 12)
  - Circles map overlap with each other. You can plot semi-transparent circles for users to see through it.
- This plot requires a title, its legend, x-axis label, x-axis ticks, y-axis label and y-axis ticks



Note

- You can refer to this setup to manage the plots
  - From the top to bottom, they are the layout for the scatterplot, line chart, bar chart and map.
  - If you do not know what is this for, check Ex04-16 in our D3 lecture.
  - If you have your own way to manage your plots, you do not have to follow this suggestion.
- I strongly encourage you to well structure your code because your D3 Homework 3 will an extension of this homework. In addition, I may ask you to move you plots around (or resize these plots) in next D3 homework.

```
let scatterLeft = 0, scatterTop = 0;
let scatterTotalWidth = 500, scatterTotalHeight = 400;
let scatterMargin = {top: 10, right: 30, bottom: 30, left: 100},
    scatterWidth = scatterTotalWidth - scatterMargin.left - scatterMargin.right,
    scatterHeight = scatterTotalHeight - scatterMargin.top - scatterMargin.bottom;

let lineLeft = 0, lineTop = 400; //400 actually is scatterTotalHeight
let lineTotalWidth = 600, lineTotalHeight = 100;
let lineMargin = {top: 10, right: 30, bottom: 10, left: 100},
    lineWidth = lineTotalWidth - lineMargin.left - lineMargin.right,
    lineHeight = lineTotalHeight - lineMargin.top - lineMargin.bottom;

let barLeft = 0, barTop = 500; //500 actually is scatterTotalHeight + lineTotalHeight
let barTotalWidth = 1000, barTotalHeight = 150;
let barMargin = {top: 30, right: 30, bottom: 40, left: 100},
    barWidth = barTotalWidth - barMargin.left - barMargin.right,
    barHeight = barTotalHeight - barMargin.top - barMargin.bottom;

let mapLeft = 500-200, mapTop = 0-150;
let mapTotalWidth = 1000, mapTotalHeight = 800;
let mapMargin = {top: 10, right: 10, bottom: 10, left: 10},
    mapWidth = mapTotalWidth - mapMargin.left - mapMargin.right,
    mapHeight = mapTotalHeight - mapMargin.top - mapMargin.bottom;
```

Seek for Help?

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