

**SWRK 730**

**Assignment 2 - Joining Tables**

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**Introduction**

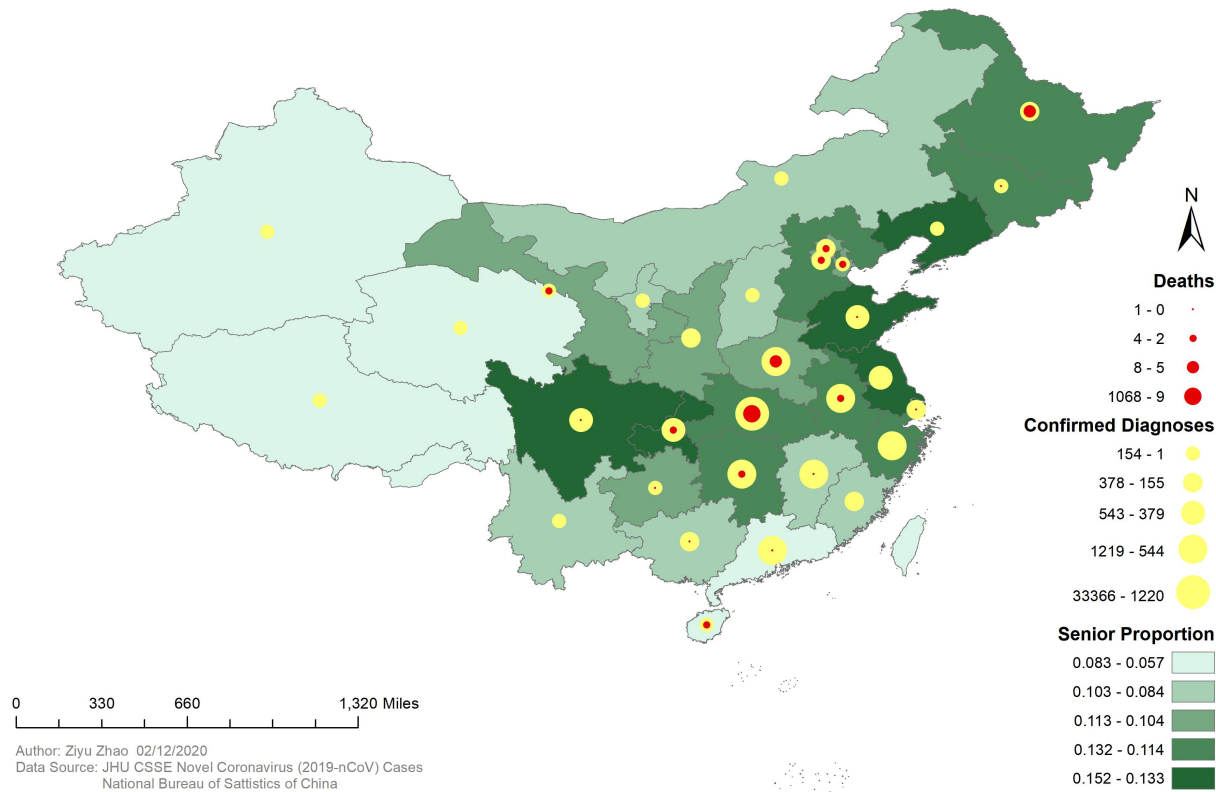
The outbreak of COVID-19 (Corona Virus Disease 2019) in China has brought serious challenges to Chinese medical and healthcare system. As the number of confirmed diagnoses rises every minute, Chinese hospital's capacity to accommodate patients and local governments' ability to respond to the need of resources reallocation are undergoing huge tests. This series of maps aims at giving a rough evaluation of Chinese provinces' public health systems against the background of COVID from the aspects of medical needs from elderly population, governmental public health expenditures and medical resources distribution.

**Data Source**

1. COVID Confirmed Diagnoses: [COVID-19 CSSE GIS and Data, JHU](#)
2. Other Statistics: [Chinese National Bureau of Statistics](#)
  - (1) [Population Census](#)
  - (2) [Governmental Revenue and Budget](#)
  - (3) [Public Health Statistics](#)

## Map 1

**2019-nCoV Diagnoses and Province Senior Population Rate (02/12)**



According to statistics, elderly people of 65 years old and above are most susceptible to COVID-19 infection and have a high mortality rate.

This map depicts the proportion of senior population in each province and the counts of confirmed COVID-19 Diagnoses and deaths on three layers.

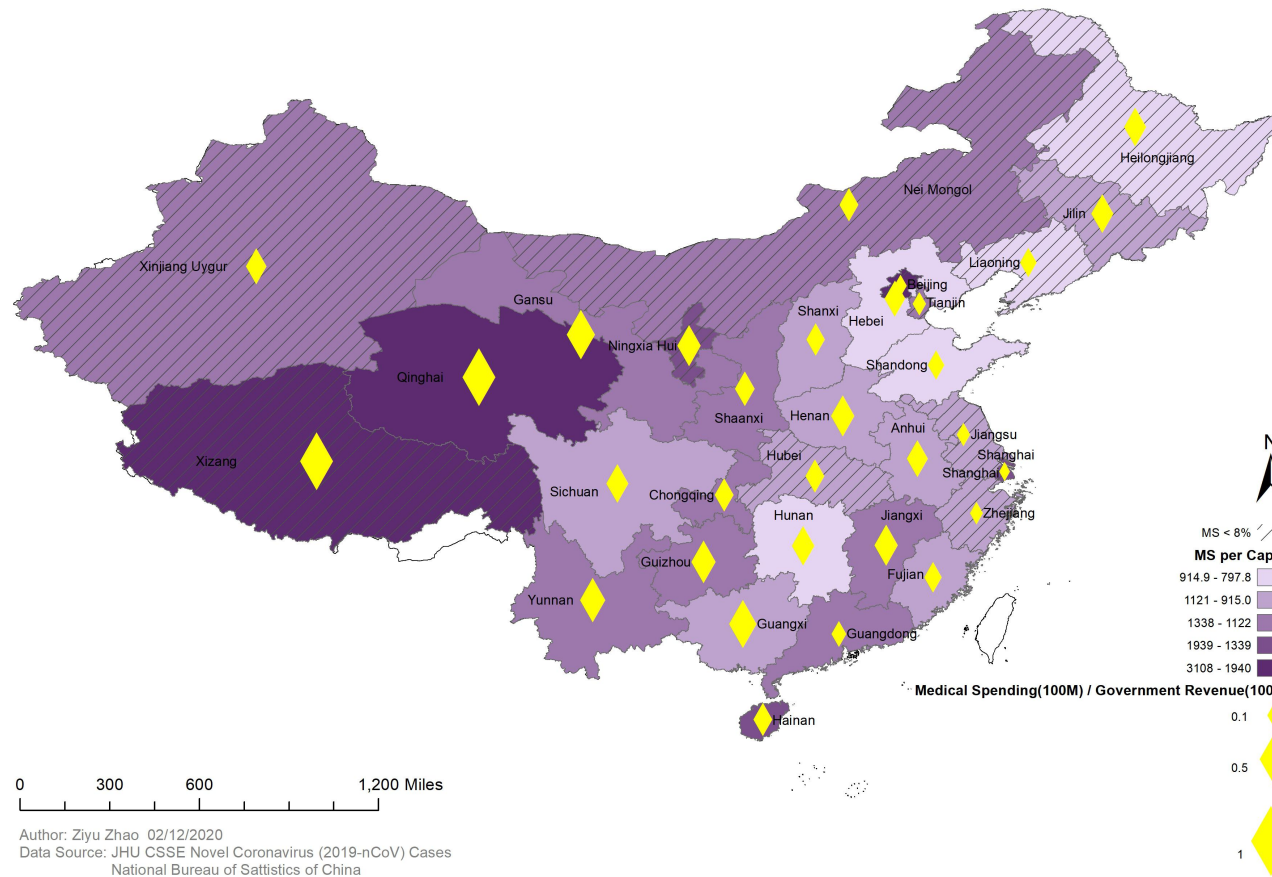
The base layer uses Natural Breaks and colors provinces with higher proportion of population with darker shade of green. Provinces and municipalities such as Sichuan, Chongqing, Liaoning, Shandong and Jiangsu, have senior proportion rate higher than 13.3% and should put more healthcare resources on elderly people's care-taking COVID prevention wise.

The second and third layer on top uses gradual symbols to illustrate the size of confirmed diagnoses and deaths in each province.

With information from three layers combined, the provinces bordering Hubei or have high senior population rate should put special emphasis on making sure that the disease prevention measures and policies cover the elderly, and the elderly understand the significance of self-protection.

## Map 2

China Provinces Public Health Expenditure (2018)



This map depicts Chinese national public health financing conditions (2018) with three layers.

The base layer depicts the public healthcare expenditure (CNY) per capita. Using Natural Breaks to group provincial governments' healthcare spending per capita into 5 ranks, this layer shows that some provinces such as Hunan, Shandong, Hebei, Liaoning and Heilongjiang are relatively underfunded with less than 1,000 yuan/year for every resident.

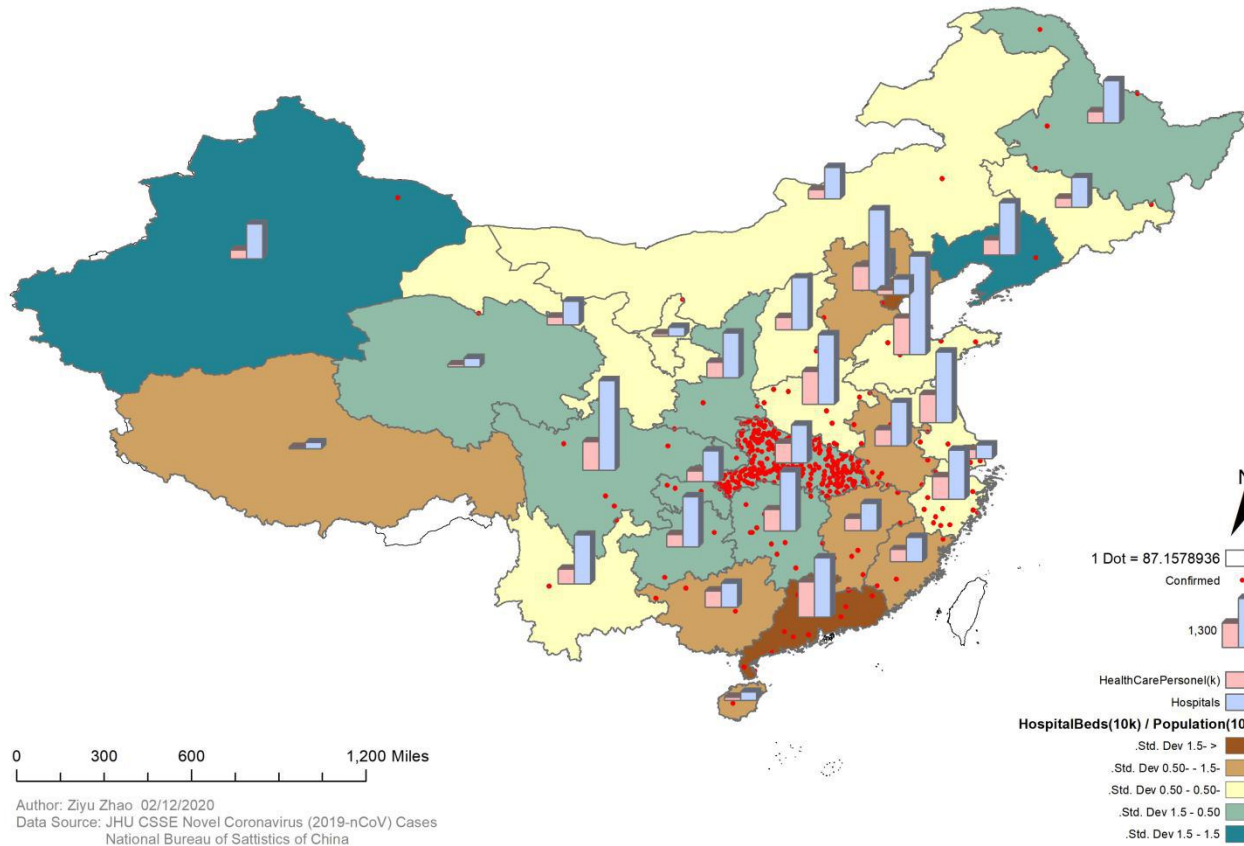
The second layer with yellow diamond gradual symbols illustrates the statistics of governmental medical spending divided by governmental taxation revenue. And the third layer shadows the areas where the ratio of healthcare spending to governmental revenue is less than 8% (the recommended standard of WTO).

While the statistics above have many influencing factors and closely reflect local economy and demography, they also

point out that some places, e.g. Hubei, need to increase investment into people's healthcare welfare and improve people's well-being.

### Map 3

#### Hospitals and Healthcare Personnel (2018)



Author: Ziyu Zhao 02/12/2020  
Data Source: JHU CSSE Novel Coronavirus (2019-nCoV) Cases  
National Bureau of Statistics of China

This three-layer map pictures the distribution of medical resources in Chinese first-level administrative districts.

The base layer uses the statistics of available hospital beds in 2018 divided by local population to calculate a place's capacity to accommodate patients. Using standard deviation to rank the capacity, the goal is to evaluate local conditions against national average. Reading from the map, Guangdong Province and Tianjin are statistically short of beds given the size of local population.

The dot density layer illustrates the number of confirmed cases of COVID. And the bar graph layer shows the number of hospitals and professional medical staff (k) in each province. With information combined from these two layers, we can see that the quantities of hospitals and healthcare personnel in Hubei province, where the disease is most wildly spreading, are dramatically small given current condition.

And the problem of understaff may require cross-regional staffing at the national level. This also explains the necessity of Wuhan and bordering cities to build temporary square cabin hospitals to accommodate patients.

## Conclusion

This series of maps aims at briefly evaluating the preparedness of Chinese medical and healthcare system in front of unexpected and disastrous epidemics. The results show that there is still a lot of room for improvement in the way the country finances, regulates and supports the public health sector.

The outbreak of COVID has exposed many problems existing in Chinese society. That 9-month pregnant nurse shouldn't have felt the need of sticking to her post even at times like this; that 80-year-old grandma shouldn't have felt the need of donating all her 20k savings while still lives under a leaky roof; that young doctor at early 30s shouldn't have to sacrifice his life to blow the whistle and make truth heard. But they did, and more like them are still going through the similar. Our country owes these people who are way lovelier than they should have to be a better healthcare system, better social security policies, more trustworthy and well-regulated charitable organizations, and freedom of speech. Hope I can be part of the solution one day and hope I will take actions more than I can talk.