



Number of hospitals of the biggest cities around the world

Coursera Capstone Project



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A close-up portrait of a woman with long, dark hair, wearing a white surgical mask. The image has a teal or cyan color cast. The background is blurred, showing hints of an outdoor setting with other people.

***Are we
prepared?***



Are the cities prepared?

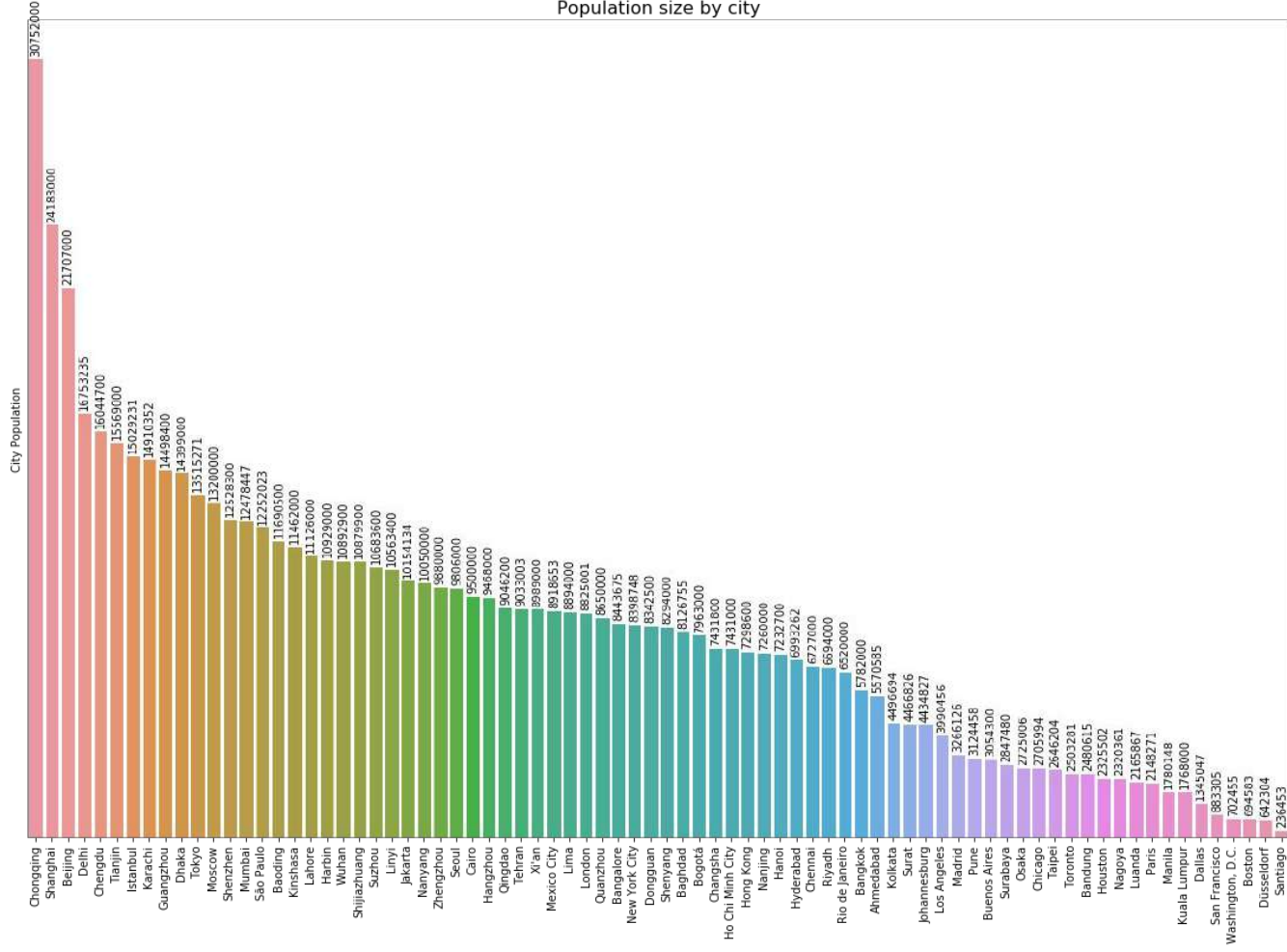
- Pandemics, catastrophic events, and other public calamities can lead cities hospital infrastructure to collapse.
- The biggest cities of the world have high demographic density and high citizen per hospital rate.
- Different cities around the world have similar attributes and could be clustered for comparison analysis.



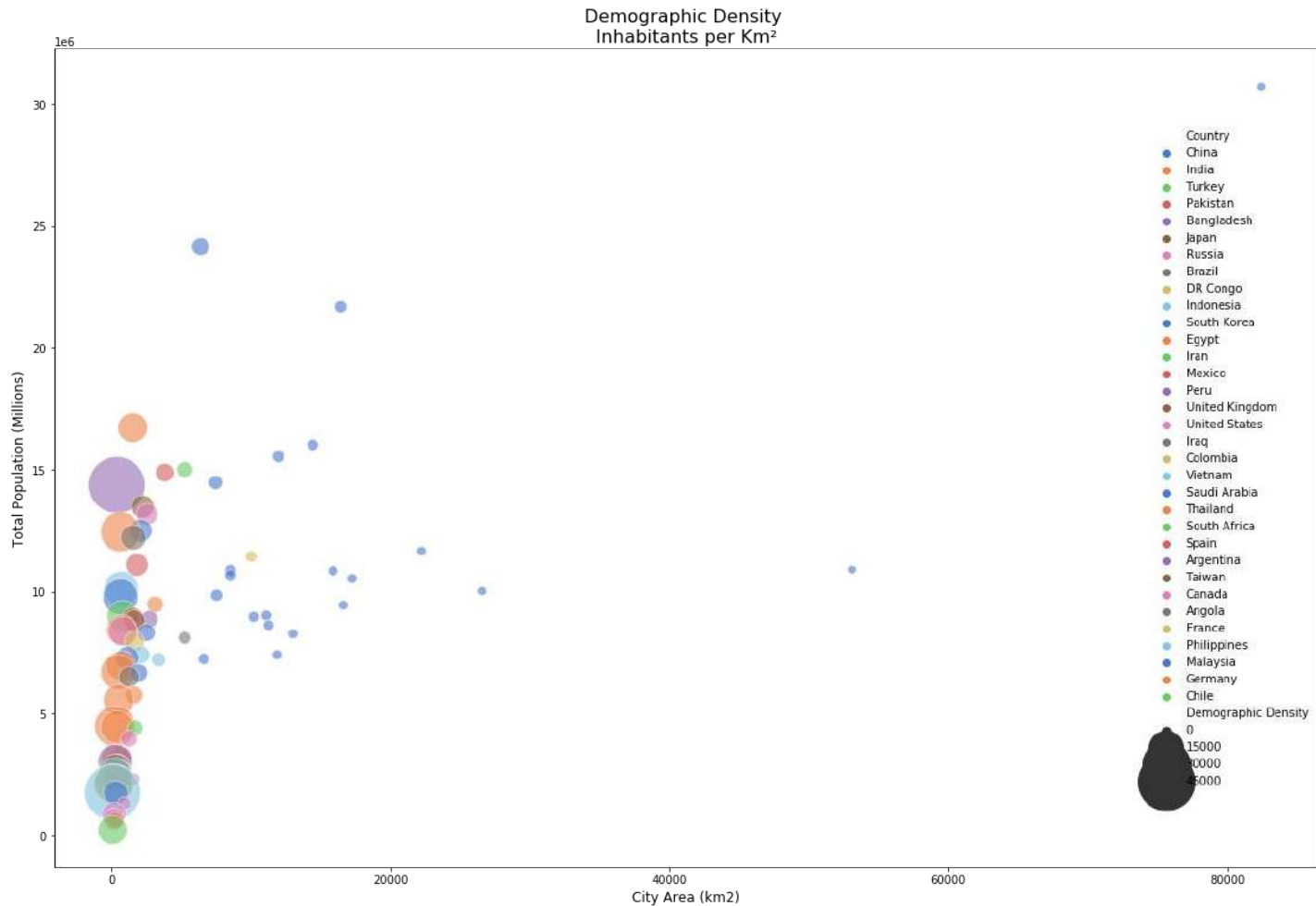
Data acquisition and cleaning

- The demographic and geographic data data of the biggest cities in the world were extracted from [Wikipedia](#).
- Latitude and longitude from each city was obtained using [Geopy](#).
- Invalid characters and annotations were removed.
- NaN values were replaced with zero.
- Wrong coordinates were fixed.

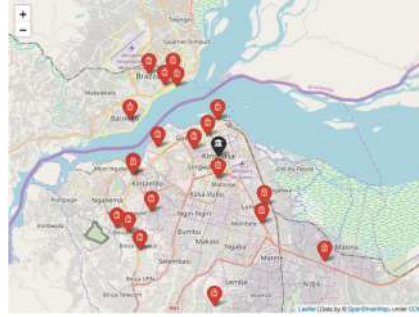
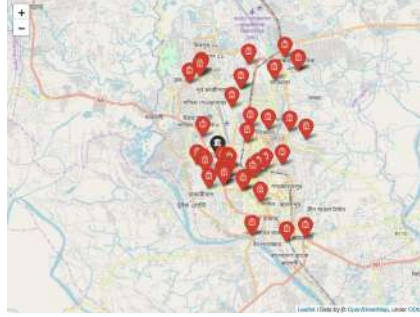
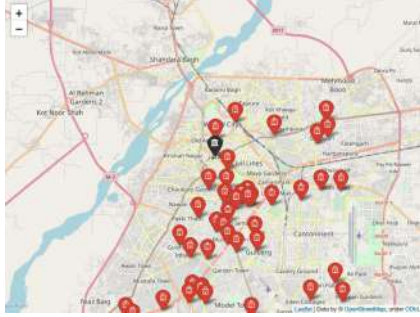
Biggest cities in the world



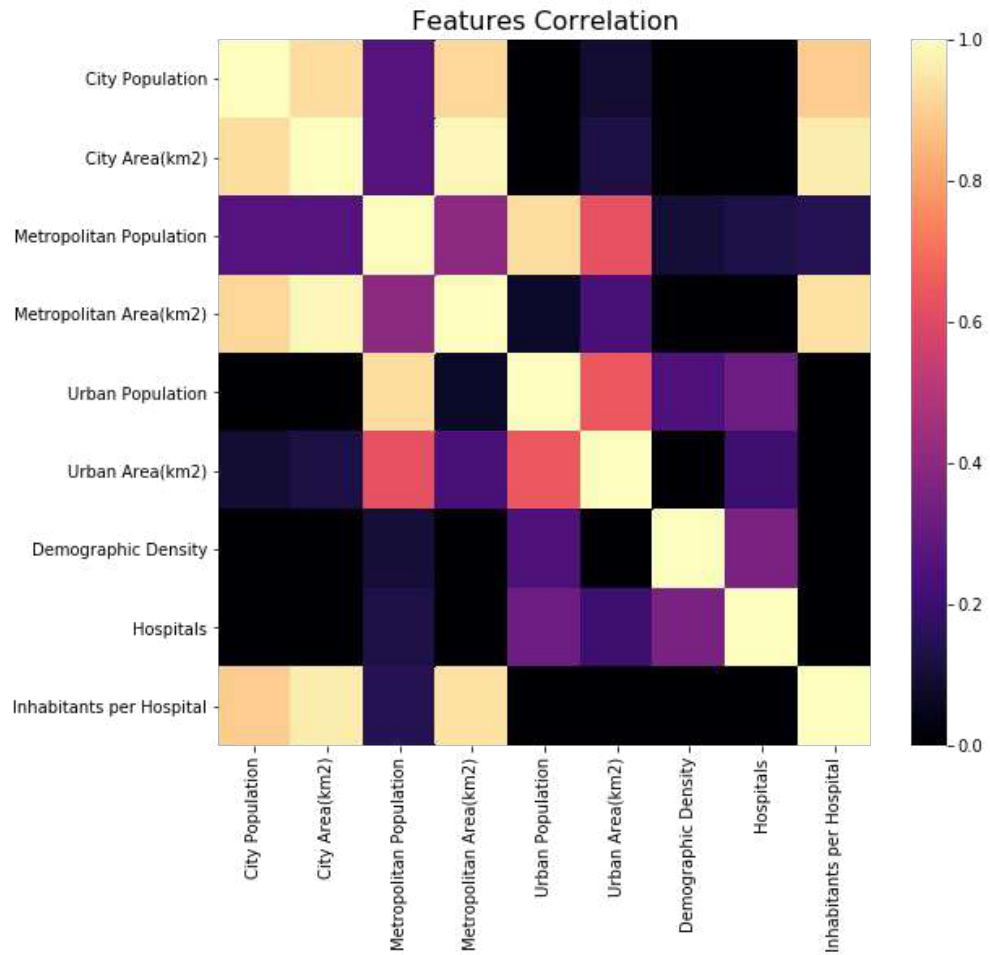
Biggest cities in the world



Hospitals in different cities



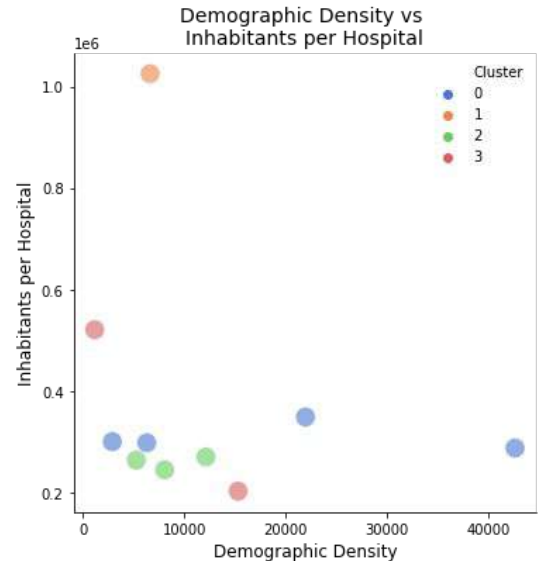
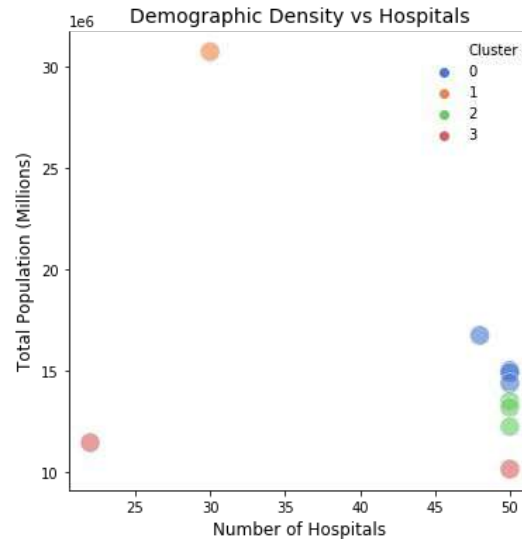
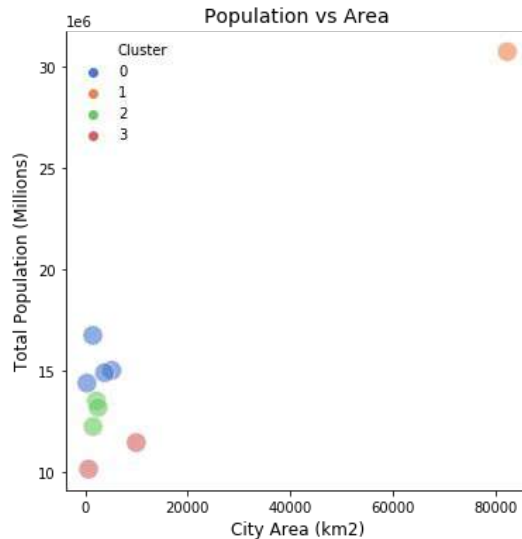
Correlation between features



We can notice a strong correlation between population size and area size. There is also an important correlation between the inhabitants per hospital rate and the population size.

Comparing the clusters

Four clusters were created, mainly defined by the population size and the city area.





Conclusions

- Cities with high demographic density and high citizen per hospital rate probably will face hard times during a massive pandemic.
- Zhengzhou in China is an extreme outlier, surpassing the other cities eight to ten times the population size and area size.
- There is a strong relationship between population size and area size; also an important relationship between population size and number of hospitals.



Final consideration

Due to the restricted number of features selected for this analysis, more research is necessary to evaluate precisely the correlation between different demographic, geographic, economic, environmental features and, the healthcare services capacity.



Thank you!

And wash your hands...