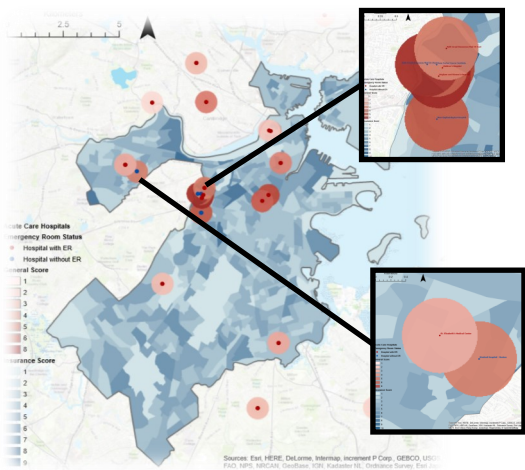




Location Modification of Acute Care Hospitals in Boston, MA

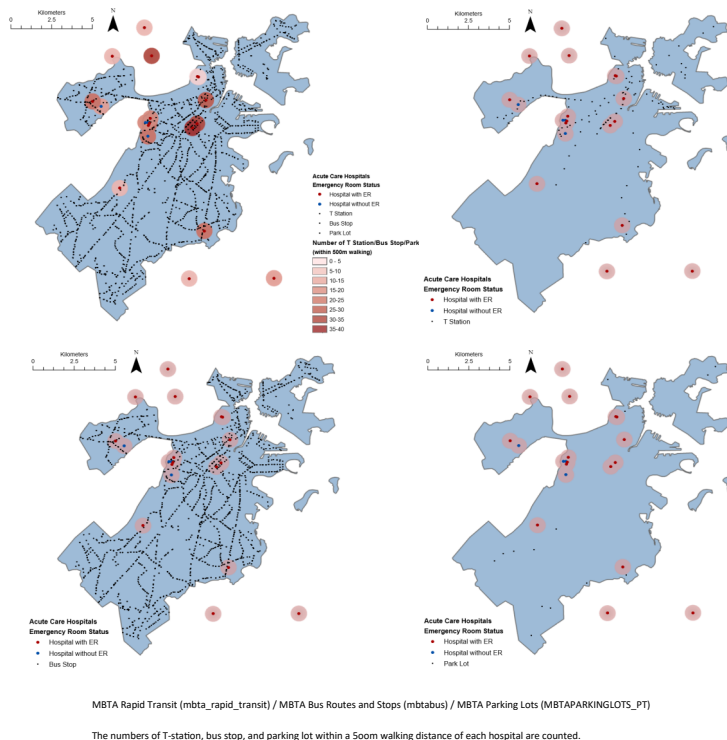


Introduction

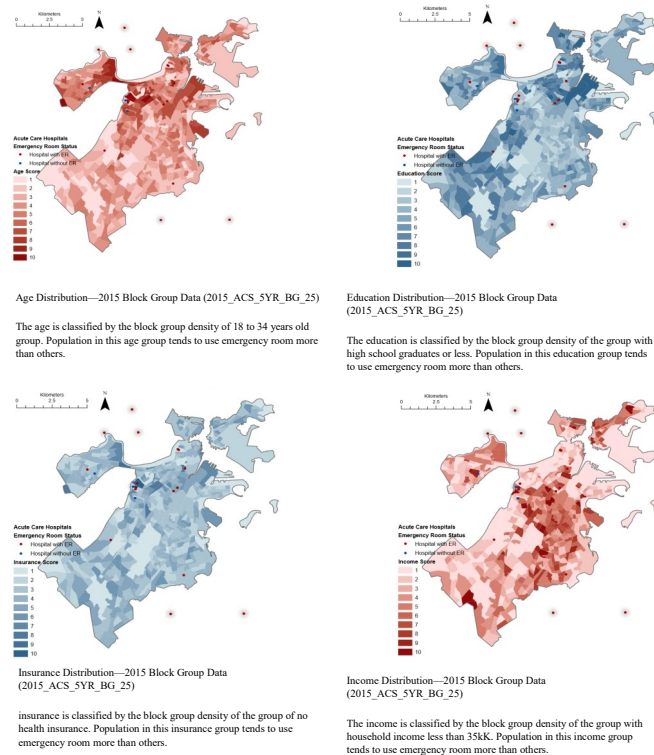
According to the previous researches, emergency room use varies by age, income, education level, and health insurance status. The acute care hospitals in Boston can be categorized into two groups: with emergency room or without emergency room. By evaluating the neighborhood and accessibility of each acute care hospital, we want to score each hospital and then propose adding or modifying the location of current emergency rooms.

Methodology

To evaluate the population composition within a 500m walking distance of each acute care hospital, we plan to map the population based on surrounding residents' age, education level, household income, and health insurance status. By creating a series of hospital buffers, we can sum up the number of potential patients within each buffer and get a score for each hospital. To evaluate the accessibility of each acute care hospital, we plan to count the number of T stations, bus stops, and park lots covered by a 500m walking circle of each acute care hospital.



MBTA Rapid Transit (mbta_rapid_transit) / MBTA Bus Routes and Stops (mbtabus) / MBTA Parking Lots (MBTAPARKING_LOTS_PT)
The numbers of T-station, bus stop, and parking lot within a 500m walking distance of each hospital are counted.



The age is classified by the block group density of 18 to 34 years old group. Population in this age group tends to use emergency room more than others.
The education is classified by the block group density of the group with high school graduates or less. Population in this education group tends to use emergency room more than others.
The insurance is classified by the block group density of the group with no health insurance. Population in this insurance group tends to use emergency room more than others.
The income is classified by the block group density of the group with household income less than 35k. Population in this income group tends to use emergency room more than others.

Results and Discussion

The results indicated that the neighborhood of Kindred Hospital contains more potential patients than St. Elizabeth's Medical Center, so it would be a propose to modify the location of emergency room in St. Elizabeth's Medical Center to Kindred Hospital. According to the maps, Beth Israel Deaconess Medical Center may also cover more potential patients than the other hospitals nearby. However, as the density of hospitals in this area has been high, we don't consider to modify the location of any emergency room.

As the conversion between feature and raster layers may lead to data disorder, the population distribution may be not accurate.

Key Datasets

- Branch, G. (2017). TIGER/Line® with Selected Demographic and Economic Data - Geography - U.S. Census Bureau. [online] Census.gov. Available at: <https://www.census.gov/geo/maps-data/data/tiger-data.html> [Accessed 16 Nov. 2017].
- Administration and Finance. (2017). MassGIS Data - MBTA Rapid Transit. [online] Available at: <http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/mbta.html> [Accessed 17 Nov. 2017].
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References

- 1.SHRM. (2017). Emergency Room Use Varies by Income, Education and Race. [online] Available at: <https://www.shrm.org/resourcesandtools/hr-topics/benefits/pages/emergency-room-use.aspx> [Accessed 17 Nov. 2017].