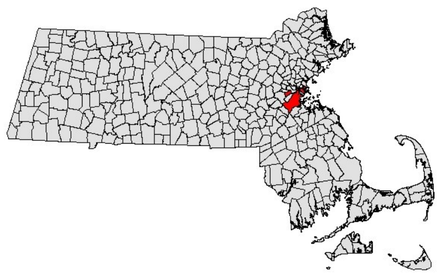
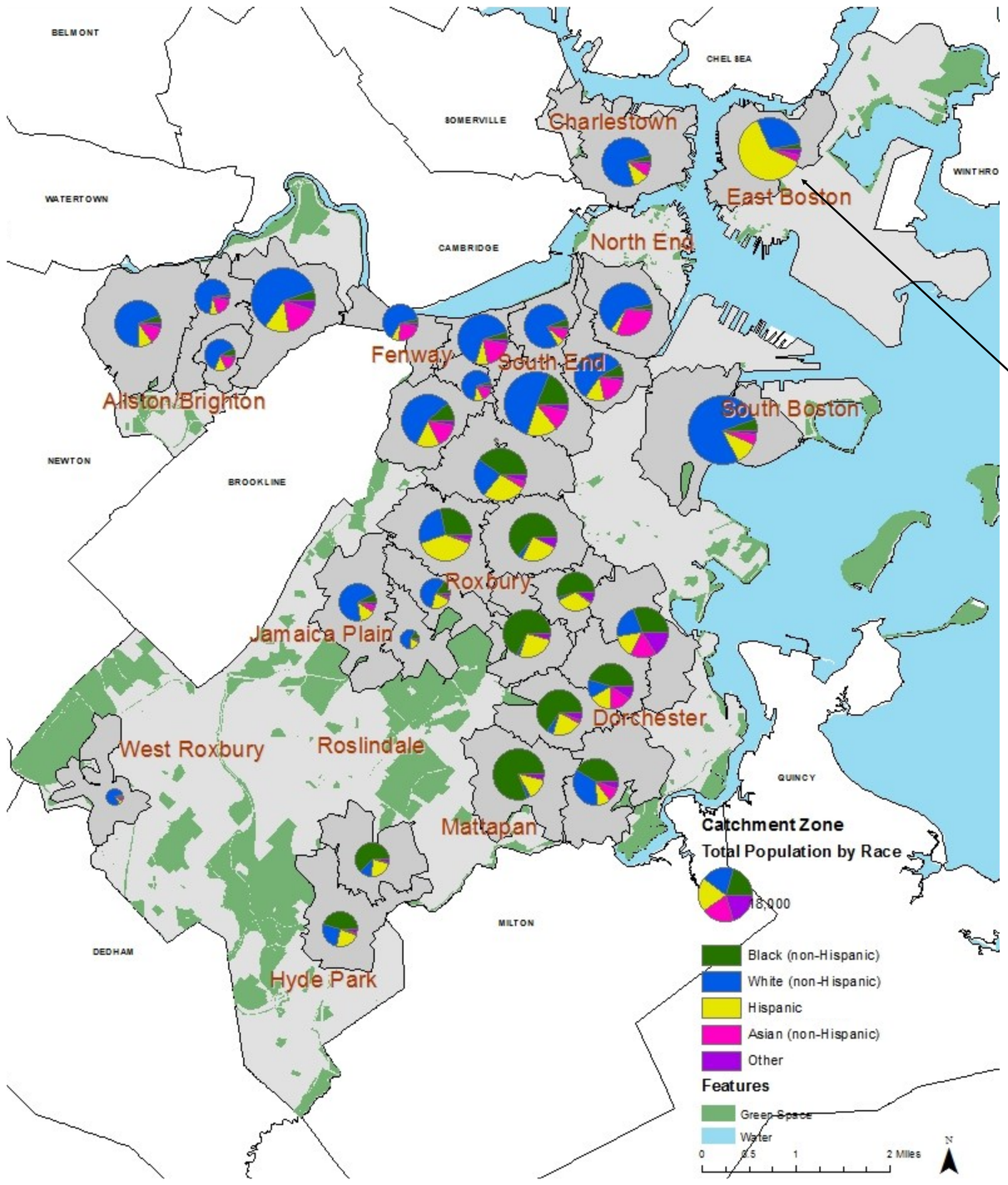
Boston Public High Schools without School Choice



Introduction

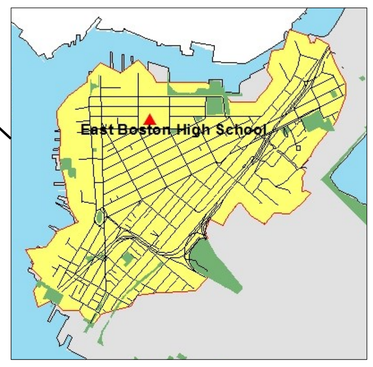
In 1974, federal judge W. Arthur Garrity ruled that the Boston school system was engaging in de facto segregation. Court-mandated desegregation efforts began with busing, the process of transporting students to schools outside their location-based assigned school. This caused civil unrest and racial tensions, and many parents removed their children from the public school system (Seelye, 2013). It was not until recently that the school committee decided to implement a lottery system to assign students to schools all around the district. The parents and student submit a list of six or more schools, ordered by preference, and are then assigned to a school through this computerized lottery system that tries to assign to the highest preference of the student. The model was created by an MIT doctoral student and takes into account distance from the family's home, school capacity, and MCAS performance (Seelye, 2013). Busing does still exist, but is now a voluntary program provided by a non-profit organization called METCO, or Metropolitan Council for Educational Opportunity, and is funded by the state (metcoinc.org). The lottery system, or School Choice, is the main way in which BPS combats segregation and works to provide all students the opportunity for a quality education in a diverse school environment.

This project will look at geographic segregation within the Boston School District area and see what the BPS high schools' demographic make-up would be if school assignment were based on location.



Methods

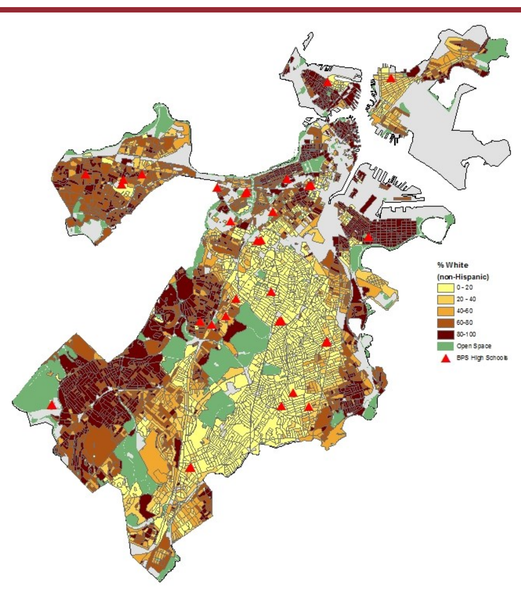
My main data sources were the US Census and MassGIS. From MassGIS Schools shapefile, I selected out all public high schools within Boston. To determine the demographic make-up of schools if a location-based school assignment was utilized, I ran a Network Analysis to create a catchment zone around each school. The zones capture a one-mile walking distance from each school, based on census block roads, which were non-overlapping. An example of the catchment zone can be seen below:

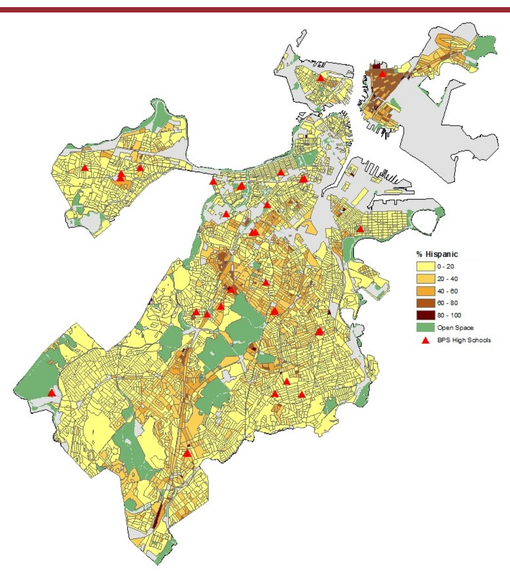


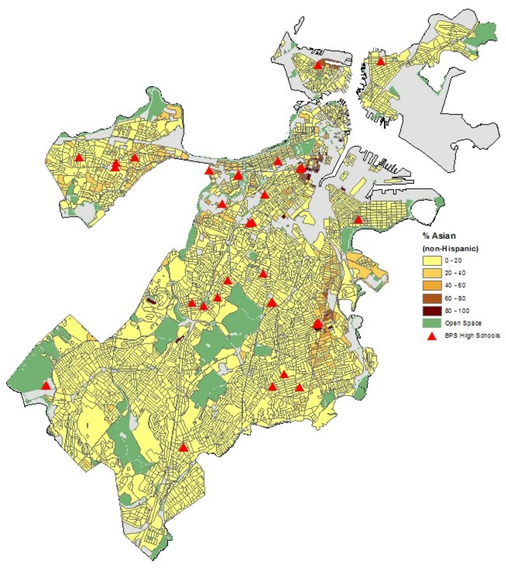
I then used a Spatial Join to join the 2010 US Census block "Population by Race" data to the catchment zones. The US Census has more categories for race than make sense to include on a map, so I consolidated Native American or Native Alaskan, Native Hawaiian or Pacific Islander, other, and two or more races into one category called "Other." Additionally, the Census data also allows the responder to choose a race and choose "Hispanic" or "non-Hispanic" so I used the race data classified as "non-Hispanic" and include "Hispanic" as its own category. This means that I am not distinguishing which race the people who identified as Hispanic also chose.

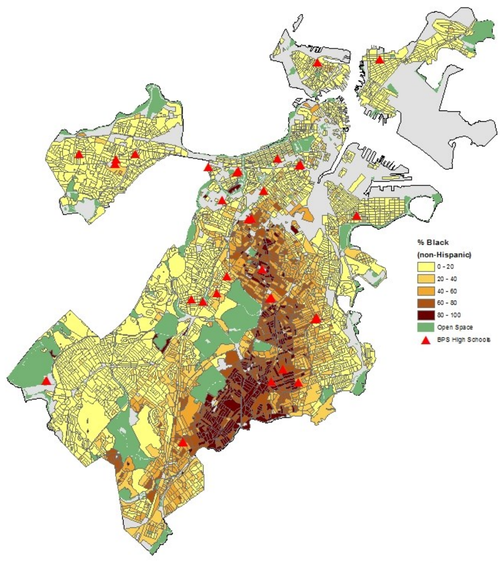
Next, using the Symbology, I created pie charts for each school to demonstrate the racial make up of residents within the catchment zones. This is meant to represent the school population if school assignment was based on location. The pie charts are sized relative to the number of residents within the catchment zones.

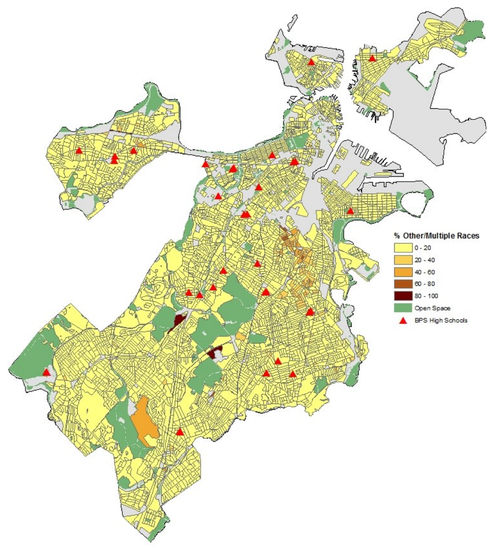
Geographic Segregation











Limitations

I came across some challenges and limitations in creating the catchment zones. Many of the schools are very closely bunched together and there are some areas with no schools at all. As a result, some areas within the district do not fall into any school's catchment zone. Of course, in actuality the students in those areas would be assigned to a high school, but they are not included in this analysis. Since I set the zones to be non-overlapping, this resulted in some variation in the size of the zones as well.

There are limitations to using the US Census data as well. The Census Block data is by household, which does not provide any data on the number of school-age children. Furthermore, many of these families may choose to send their children to charter, private, or parochial schools. There is no way to account for this in my analysis.

Another limitation of this project is related to the use of race and the difficulties that surround the use of race in any type of research and analysis. Race is a social construct that people interpret and identify with in different ways. Because of this, it can be a very difficult variable to work with as there can be a lot of variation in how people are grouped depending on the survey methods. This became very clear as I tried to compare the US Census data with the data collected by the Boston School District. The BPS data shows a much higher percentage of Hispanic students than my analysis shows. This may be because in the US Census, a resident can choose a race and choose "Hispanic" or "non-Hispanic" and BPS data does not make this distinction. Furthermore, BPS uses the measure "African American" while the US Census uses "Black" which may cause discrepancies as well.

Comparing Location-Based Catchment Zones to Actual BPS Demographics

Boston School District 2010-2011	% African American	% White	% Hispanic	% Asian	% Other
% of total students	35.5%	12.9%	40.9%	8.4%	2.3%

School Name (sample from 32 total schools in analysis)	% Black (non-Hispanic)	% White (non-Hispanic)	% Hispanic (alone)	% Asian (non-Hispanic)	% Other
Boston Adult Academy	2.9%	62.0%	4.2%	28.9%	1.9%
Boston International High School	79.6%	2.6%	12.9%	0.9%	3.9%
Community Academy	30.9%	21.2%	15.2%	16.6%	16.1%
Dearborn School	54.4%	2.5%	32.4%	1.2%	9.4%
Urban Science Academy	3.6%	81.3%	6.1%	7.4%	1.5%

Conclusion

Overall, despite the limitations, it is very clear there is racial segregation in the Boston school district area and the public schools within the district would be very segregated without interventions such as busing and School Choice. I think it would be interesting and more accurate if I was able to find the original school catchment zones that were actually used prior to School Choice and use those for my analysis instead of the one-mile zone I created. This would solve the problem of the areas that were left out of the analysis and it would better show the concentrations or crowding of students in schools as well.

This project also brings up questions related to the geographical segregation that is evident in Boston. School Choice may help to solve the issue of segregation in schools, but housing segregation within the city remains very apparent. Is School Choice then a band-aid fix to the deeper issue of segregation within the city?

Map Created By: Stephanie Savir
UEP 232 GIS for Urban and Environmental Analysis
May 10, 2016
Data Sources: Boston Public Schools (bostonpublicschools.org), MassGIS (www.mass.gov), US Census (www.census.gov)
Projection/Coordinate System: NAD_1983_StatePlane_Massachusetts_Mainland_FIPS_2001 Meter