FLOODING IN BOSTON

HOW INCREASED FLOODING IN BOSTON WILL AFFECT OUR CITY

QUANTIFYING IMPACT OF FLOODING

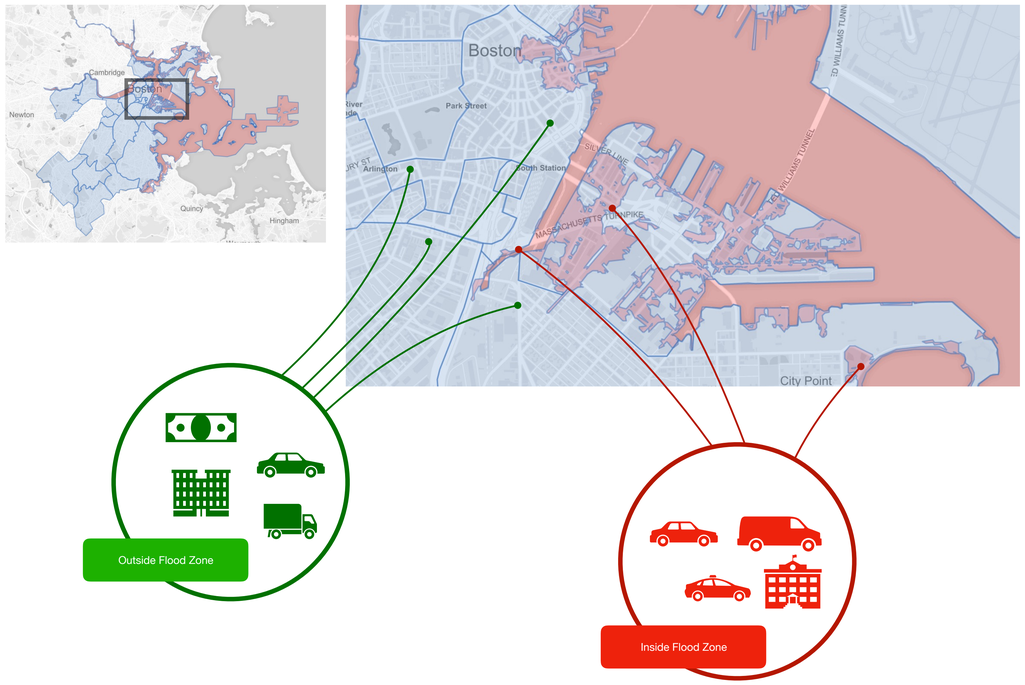
As climate change continues to affect our geography, the City of Boston faces several noticeable threats. For the purposes of our project we looked specifically at flooding. Flooding in the past few years has already grabbed the attention of our local media, as storm surges flooded our coasts, covering our streets in ocean water. As of now, the flooding only lasts a few days, and direct damage is only realized close to the shore. However, forecasts show that as the earth warms we can expect these surges and regular flooding to spread deeper into the city.

To measure the impact of flooding we chose to use data sets describing the real estate value of affected areas (Zillow), and how busy the area was (MassDOT). We applied this information to geographical shape data we obtained from the City of Boston that described various types and levels of flooding, and how the city was divided into districts and subdistricts.

9 INCH SEA LEVEL RISE

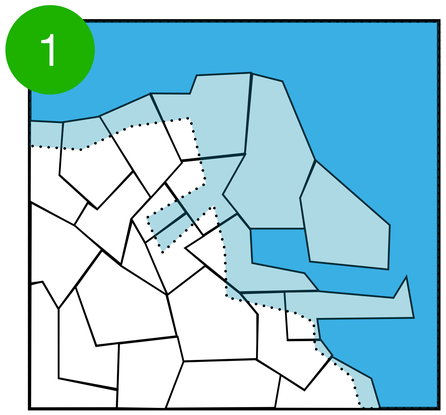
21 INCH SEA LEVEL RISE

36 INCH SEA LEVEL RISE

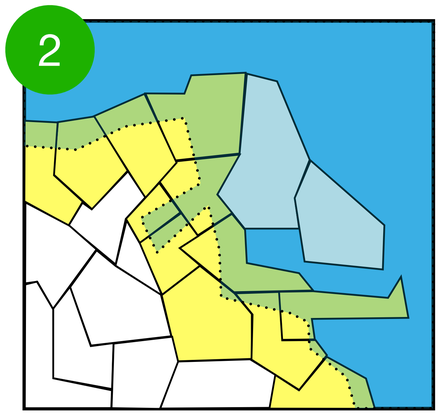


DETERMINING WHERE TO APPLY LIMITED RESOURCES

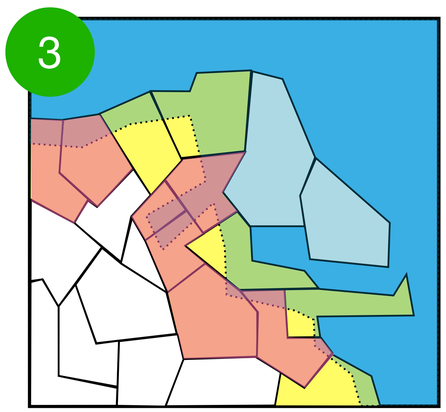
In our analysis we wanted to determine how the city could deploy limited resources to have the greatest impact during flooding. For our purposes we used traffic and real estate data to determine the value of the areas being preserved through creation of a barrier. However, since there are many other factors that should be considered, such as population, we developed a generalizable algorithm that can be adjusted based on whatever value metric is desired. The value metric is in relation to area.



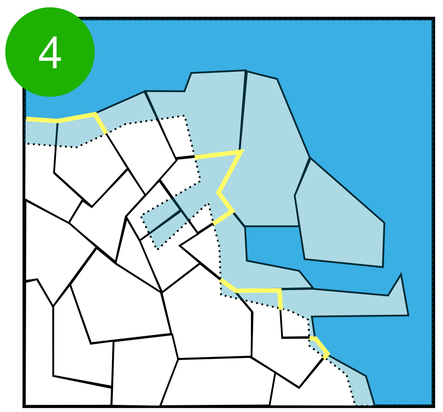
BUILD MAP WITH SUBDISTRICTS AND FLOODING



FIND SUBDISTRICTS ON LAND/FLOOD BORDER



DETERMINE COMBINATIONS OF POLYGONS THAT CREATE MOST VALUE FOR AREA WITH SMALLEST PERIMETER THAT ENTERS FLOOD AREA



GENERATE BORDER THAT FITS RESOURCE REQUIREMENTS AND HAS OPTIMIZED THE VALUE CREATED IN SAVED AREA

DATA SOURCES

massDOT Massachusetts Department of Transportation

Zillow®

ANALYZE BOSTON

GABRIEL HONIGSBERG
DEZHOU WANG
BOSTON UNIVERSITY, SPRING 2019