

Rising Tides: Our Climate Future

Flood Risk Analysis of Massachusetts

Introduction

Currently, in the face of a global pandemic, people and the government are acting fast and have come together in an incredibly short span of time to adapt in order to best survive the crisis. Behaviors and policies have changed at a big scale, something people said wasn't possible to do to combat climate change. Scientists have confirmed that the effects of climate change are, and will continue be, devastating, with consequences that will affect the economy, alter many people's quality of life, and even cause millions of deaths. So, why aren't people responding to climate change in a similar manner that people have responded to COVID-19?

I believe that this difference in response is because of the seemingly immediate effects of the virus, which don't compare to the more gradual effects caused by climate change causing them to remain unseen. I am proposing a project to show people what would happen to us now if one of the main consequences of climate change, sea level rise, were to happen now, just as sudden and unexpectedly as the coronavirus virus crisis came to be. I am basing my data on the IPCC's *Special Report on the Ocean and Cryosphere in a Changing Climate* which states that sea level "will rise between 0.43 m... and 0.84 m by 2100" (IPCC, 2019), in feet is between 1.4 ft and 2.8 ft, so I will be basing my analysis with an average sea level rise of 2 feet. I will be making a map of Massachusetts and demonstrate the risk if sea level were to rise 2 feet.

Methods

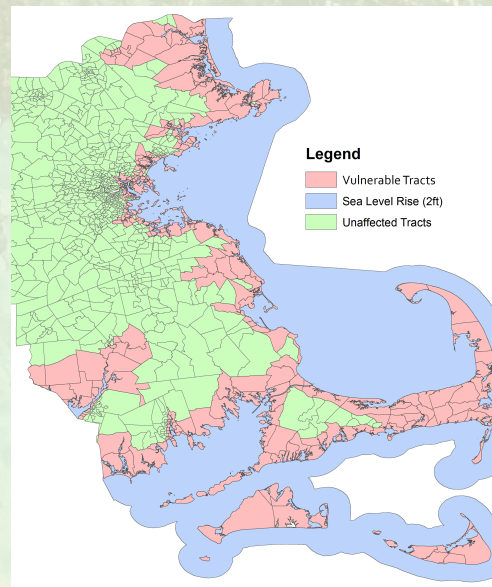
I used ArcMap 10.7.1 for my analysis.

I added a layer showing an estimate of the sea level after having risen by two feet. I then added a shapefile with all the tracts in Massachusetts. I then added a table with population and income data of all the tracts. I then performed a join with the table with the information of the tracts and the tract shapefile. I then did a selection by location in which I selected the tracts that intersected with the layer showing sea level rise. This indicated the tracts that would be affected.

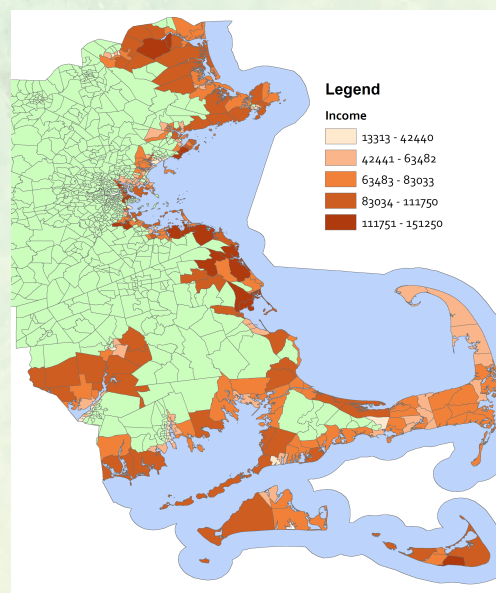
I then changed the symbolism of the selected tracts to Quantities, with five equal intervals to assess where the vulnerability was highest. I did this for the factors of population and income. I also used the statistics to find average income and total population.

Results

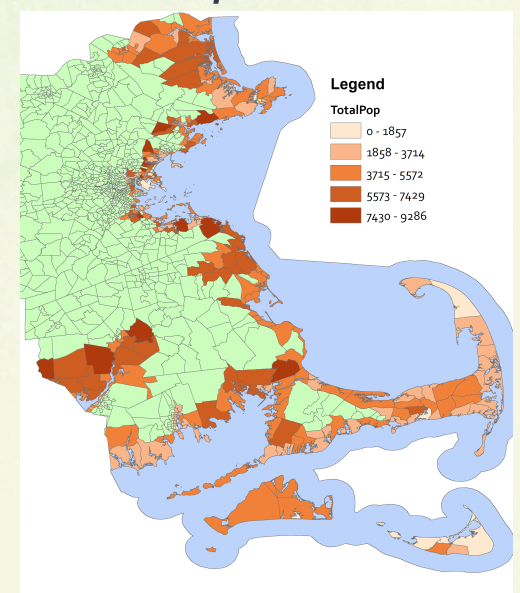
Vulnerable Tracts



Income



Population



The results showed that the total of number of people that will be affected will be 11,62,881, and the average income is 73,886.

Conclusion

When people think about the effects of climate change, some often think that money can buy them their way out of it. This is true to a certain extent; the most vulnerable people will bear the brunt of the consequences. This does not mean, however, that one is exempt from all consequences.

Similarly to the current pandemic, the effects of climate change aren't discriminatory. They will affect a lot of people, regardless of affluence. The average income of those affected was not one that demonstrated poverty, it's one that shows how many Americans live. If we chose to remain blind to these consequences, they will only come to hurt us *all* in the future.

Limitations

My biggest limitation is the fact that income and population are usually not things that remain the same over time. I am using recent data, but it most certainly will not be the same even ten years from now.

Another limitation is the unpredictability of the effects of climate change. The estimates on how much the sea level will rise, by when it will rise, and where it will be an impact are all just estimates and is not actual hard data.