

A QUANTITATIVE ANALYSIS OF THE RELATIONSHIP BETWEEN SOCIO-ECONOMIC INDICATORS AND VULNERABILITY TO COASTAL FLOODING

Jawon Lee and Ellen Douglas

Environmental, Earth and Ocean Sciences, University of Massachusetts, Boston

Nearly 34% of the coastal population in the U.S. lives in the densely populated Northeast. Many coastal communities face increases in the extent and frequency of coastal flooding due to sea level rise. Boston and Atlantic City, for example, could experience a coastal flood equivalent to today's 100-year flood every two to four years on average by mid-century and almost annually by the end of the century. Though Boston has a long history of flood protection, accelerated sea-level rise and more extreme storm runoff could severely tax the infrastructure, threatening vulnerable neighborhoods and their local economies. There has been little research on the distributional impacts of climate change across socio-economic groups. It is a well known fact that poor communities often suffer disproportionately from the effects of environmental degradation. These are commonly known as environmental justice (EJ) communities. Our results for the Boston metropolitan area show that vulnerability to coastal flooding appears to be closely related to economic and social factors and suggests that EJ communities are more vulnerable to coastal flooding. We further clarify the links between socio-economic status and coastal flooding by comparing two coastal cities, Boston and Atlantic City. We quantify and compare key socio-economic indicators such as income, housing value, education, and industry for these two cities and quantify the statistical relationships between socio-economic indicators and vulnerability to coastal flooding. We include an evaluation of historical settlement patterns as well as changes in land use and employment sectors.