Airborne particulates and the health problems they cause are of particular concern in dense urban areas. This thesis focuses on the relationships between airborne particulate levels, hospitalizations for health problems known to be associated with particulates, and demographic variables. Using data collected during bike transects and GIS/spatial analysis, I found a significant correlation between large particulates and respiratory hospitalizations, between small particulates and heart disease/cancer hospitalizations, and between particulates and areas of high poverty. Although further research is needed, these findings indicate that environmental justice issues exist and that particulate mitigation must be undertaken in order to protect the health of Harlem's residents.