Green stormwater infrastructure (GSI) is an ecologically friendly and effective alternative to grey stormwater infrastructure. It uses soil, plants, and other elements to restore the natural absorption processes typically absent in urban environments. Like many cities, Philadelphia experiences combined sewer overflows (CSOs). During rain events, these CSOs discharge untreated sewage into waterways to prevent overloading of wastewater treatment plants, leading to potential negative public health implications. By absorbing stormwater runoff, GSI may decrease the frequency of CSOs, and reduce individuals' exposure to bacteria, pathogens, and toxins in CSO-impacted waters. Additionally, because GSI often means more greenspaces in the city, it can provide added health benefits. Philadelphia's recent Green City, Clean Waters (GCCW) initiative is a 25-year plan to use GSI to manage stormwater. GCCW includes upgrades to existing water treatment plants and investments in new GSI infrastructure.

The objective of this research is to evaluate the city's distribution of green stormwater infrastructure in relation to the socioeconomic and racial makeup of surrounding neighborhoods. The research will include a literature review to understand the potential environmental, social, economic, and health benefits of GSI. Next, I will use geographic information systems (GIS) techniques to study the distribution of GSI projects throughout the city and their locations relative to different communities. Data sources will include The Philadelphia Water Department's online database of GSI project locations and U.S. Census data. Environmental justice movements focus on distributing environmental burdens evenly across people of different backgrounds. Previous research shows that urban green spaces are inequitably distributed. This project will look at the distribution of green stormwater infrastructure in Philadelphia using GIS mapping techniques to evaluate the GCCW initiative through an environmental justice lens.

Timeline
October 31: Finish literature review about GSI
Week of November 4: Meet with mentor to go over literature review
November 30: Finish literature review about mapping techniques
Week of December 2: Meet with mentor to go over literature review
January 18: Finish collecting and analyzing data
Week of January 20: Meet with mentor to go over data collection
January 31: Finish first draft of paper
Week of February 3: Meet with mentor to go over first draft
February 21: Finish final draft of paper
February 28: Final abstract due
March 13: Finish first draft of presentation
Week of March 16: Meet with mentor to go over presentation
March 27: Finish final presentation
Mid-April: Presentation/defense