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Statistical Learning Group Proposal

Classifying Breast Cancer Mortality on Greenness and Polluting Site Exposures

# Introduction:

The philosophy surrounding cancer treatment has evolved to emphasize preventative measures. Multiple preventative factors contributing to the genesis of cancers are common knowledge, such as smoking or asbestos exposure. Given that exposure to these factors is often avoidable, research pertaining to the discovery of more such factors has been important. Currently, there’s limited research pertaining to exposure to the amount of vegetation or ‘greenness’, and its association with cancer development and mortality (O’Callaghan-Gordo et. al, 2018). Certain studies additionally demonstrate linkages between greenness and mortality, particularly relating to cancer (James, Hart et. al, 2016). With this in mind, we wish to use discovery techniques to study the association of greenness and breast cancer mortality. Breast Cancer is one of the most prevalent diseases in the United States, being the second most prevalent cancer in women nationally (NIH, 2019).

We will utilize county breast cancer mortality data from GHDx’s data base for our analysis. This data will be paired with greenspace data and pollution site data collected from the University of Michigan’s National Neighborhood Data Archives (NaNDA). Consolidation will occur by county FIPS codes, as well as census tracts. Our analysis will consist of clustering/classification techniques for discovery purposes. Classes will be constructed with the intent of relating breast cancer mortality on different types of greenness listed within the NaNDA datasets. Polluting sites will be included for the sake of being an environmental control. This analysis will be performed cross-sectionally for the year 2014, and thus cannot account for shifts in vegetation density over time. Given the discovery-driven nature of this study, inference will *not* be performed. Yet, we hypothesize that that we will see meaningful classifications/clusters that support the greenspace-mortality studies mentioned.

# References

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