MAPPING CONSTRUCTION, HEALTH AND ENVIRONMENTAL JUSTICE IN BOSTON

INTRODUCTION
Redevelopment is common to cities as they change to adapt and reflect the needs and values of local communities. The process may begin with community visioning, which looks to an aspired future and lays the groundwork for how to get to there. A subsequent and important part of the process is construction. In Dudley Square for example, realizing Dudley Vision has created significant redevelopment activity in the area. Heavy duty construction vehicles and equipment, fenced off lots and orange cones are inevitable sights on any visit. In this project, I look at Boston as a whole. Is there a broader case for drawing attention to construction practices, especially if more intense construction activities are occurring in environmental justice areas?

METHODS
Building permit data was geocoded and ranked according to construction intensity. Permits for foundation work and new construction were given a numerical ranking of 5 while maintenance and service permits were ranked 1. Then, Cluster and Outlier Analysis and Hot Spot Analysis were performed to determine significant construction intensity clustering in Boston.

DATA
Environmental Justice Populations (MassGIS)
Building Permits 2010-2014 (City of Boston)
Health Indicators (Boston Public Health Commission)

RESULTS
Compare the maps “Building Permit Data Visualization” and “Hot Spot Analysis”. Without using spatial statistics, it might be easy to make a visual analysis of the first map and determine that most construction occurs in downtown Boston/Back Bay. However, the hot spot analysis reveals that hot spots of highly ranked construction activity are concentrated in Roxbury and Dorchester areas. These are environmental justice areas with heightened rates of heart disease hospitalizations and asthma, as compared to Boston as a whole.

HOT SPOT ANALYSIS AND ENVIRONMENTAL JUSTICE AREAS
90-95% Confidence hot/cold
(Not significant spots removed)
Cold Spot (95-99% Confidence)
Hot Spot (95-99% Confidence)

CLUSTER AND OUTLIER ANALYSIS
High-high cluster
High-low cluster
Low-high cluster
Low-low cluster

HANAA ABDEL ROHMAN
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