End of the Lane
Assessing Inequities in Boston’s Bicycle Infrastructure

Introduction
An often overlooked aspect of transportation in the past, bicycle networks have undergone a renaissance in cities across the US as a way to fight climate change, improve health, and make the roads safer for bicycle commuters. Building better bicycle networks not only makes existing commuters safer, but actually encourages more people to commute by bicycle. Projects like Vision Zero have been undertaken in cities all over the world, including in Boston, to make roads safer for all. In the past decade, the mileage of bike networks in Boston has more than doubled, from 55 miles in 2008 to 195 last year. However, there are disparities in bicycle infrastructure construction that often deprive environmental justice communities of adequate bike networks, despite these communities being the most likely to benefit from them.

Analysis
Spatial analysis indicates that the areas from Roxbury to Dorchester with high environmental justice populations tend to have a concentration of underserved tracts. This area falls within the cluster of high local access score, but is still lacking in quality bicycle infrastructure. This area also has a much lower share of bike commuters compared to the areas around it. This makes sense considering the comparable lack of quality bike infrastructure. It is also notable that this area, along with Mattapan, has a higher density of bike accidents, particularly in areas where streets with good bike infrastructure transition to streets without any. This can be explained by both the inverse relationship between bike counts and accident rates that has been observed in many cities, as well as the safety hazard resulting from the sudden termination of a bike

Questions
1. In what areas do we see inequities in bike infrastructure?
2. How does this relate to Environmental Justice communities?
3. Do areas with less quality bike infrastructure have higher accident rates?

Bike Infrastructure
A shapefile of the existing bike network in Boston was obtained, and then trimmed to show only infrastructure that meets NAACMT’s All Ages and Abilities guidelines

Clustering
Local Access Score—showing the predicted utility of a stretch of road if it had good bike infrastructure—was obtained from MAPC and joined to a census tract layer. Then, Local Moran’s I was generated for this layer, showing clustering of Local Access

Accident Density
Boston’s Vision Zero bike accident data was joined to Boston Bike Count data, and a density raster was made from this to indicate where the most bike accidents occur relative to the number of cyclists

References
Cartographer: Jackson McGlinchey
Class: UEP 232 Intro to GIS
Coordinate System and Projection: Massachusetts State Plane; Lambert Conformal Conic
Data Sources:
1. U.S. Census Bureau, 2017 American Community Survey 1-Year Estimates
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