Introduction

Envision Cambridge is the comprehensive plan for the city of Cambridge and outlines a progressive agenda to encourage active transportation modes. The city has been slowly but steadily adding bike lanes for the past few years, improving connectivity and access. However, cycling advocates have expressed concerns about the safety of these lanes, reporting frequent blocks and obstructions by motor vehicles in particular. Blocked lanes pose a significant threat to the safety of cyclists, and are a deterrent to would-be riders. The severity and distribution of these blocks are not well understood, but could provide insight into better regulation and enforcement of bike lanes.

This investigation aims to better understand the lay of the land of bike obstructions in Cambridge by analyzing self-reported complaints through the non-emergency 311 system, and citations given to drivers by the Cambridge Police Department.

Methods

Data for the 311 complaints, police citations, and car on bike crashes was downloaded from Cambridge’s Open Data portal and then geocoded. Using 2015 ACS estimates, a choropleth map showing the amount of crashes in each census block group was created and then joined to a highways layer downloaded from MassDOT. Spatial Statistics was used to kernel density and then create heatmaps.

To better understand where the complaints and citations were concentrated, a cluster and outlier analysis was created using the Anselin Local Moran's I.

Results & Further Research

A visual analysis of the distribution of citations indicates high clustering along Mass Ave, near Kendall Square, and near Inman Square. Citations are much more highly concentrated than complaints, with high density extending out as far as Rindge Ave, Alewife, and Cambridgeport. CPD (or a non-police entity created by the city) is not responding adequately to a large number of complaints, particularly in northeast Cambridge, and might consider establishing a more clear, comprehensive system for enforcing bike lane violations. There are a number of limitations to this dataset and analysis that limit its application to policy making. However, future research could build on this by delving further into the relationship between obstructions and physically separated bike lanes, traffic management typologies at those hotspots, and assessing how and why police surveil certain areas more than others.

Data Sources:
- Images: Google Earth


Cambridgepark Drive
Industrial, with a lot of ongoing construction. Many complaints, few citations.

Central Square
Commercial - Heavy car, bike, and pedestrian traffic. Many complaints, many citations

Brookline St. & Allston Street
Residential, less through-traffic than densely packed squares. Many complaints, few citations.