Project Proposal: Burlington Trees

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Throughout this project, we will explore the geographical distribution and various characteristics of trees planted and maintained by the City of Burlington. City arborists have maintained a comprehensive dataset containing various features of every tree planted by the city since 1982, including date planted, GPS coordinates, land use type, species, diameter, height, tree condition, and appraisal estimate. These data have important implications in environmental assessments and future sustainability efforts from the city. These insights have led us to the question, how does the relationship between tree species, condition, and geographic location inform future planting decisions?

Visualizations will include a heat map of geographic tree coordinates to see how the density of trees changes based on the type of land use. The heat map may also include the limits of city wards, which will show which regions of the city have higher tree densities. Another visualization may be a multiple bar chart by park to compare differences in species abundance. The mapping of tree to city map will also provide information regarding environmental facts and soil type, showing which trees thrive under different conditions.

For our machine learning portion, we will do an exploratory classification of tree features. It is likely that tree diameter and appraisal estimate are determinates of species, as well as exploring other meaningful relationships in the data. Next, we will use a linear regression to see if tree condition and year planted are a predictor of tree species. This will give us insight into whether certain species have widespread issues throughout the city or whether decreased condition rating is solely based on age of the tree. These data may be useful for environmental conservation efforts and in selecting tree species for future planting.