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## Introduction

Have you ever thought about why some areas of a park have an abundance of various plant species, while other regions are mostly dominated by the same few species? Or why there are differences between plants growing along busy streets as opposed to plants growing further away from foot traffic? We wondered the same thing while exploring Brooklyn Bridge Park. Does human activity, foot traffic, and streets influence what grows where, and if so, how much? Which is why we are asking the question: **How does the proximity to major street traffic influence the species richness and native vs. non-native composition of plant communities within Brooklyn Bridge Park?**

## Hypothesis

Based on our observation and background research, we predict that plant communities closer to major streets will show **lower native species richness and a higher presence of non-native species**. Areas further inside Brooklyn Bridge Park, with less foot traffic and reduced disturbance, are likely to **support a more balanced and diverse mix of native plants**.

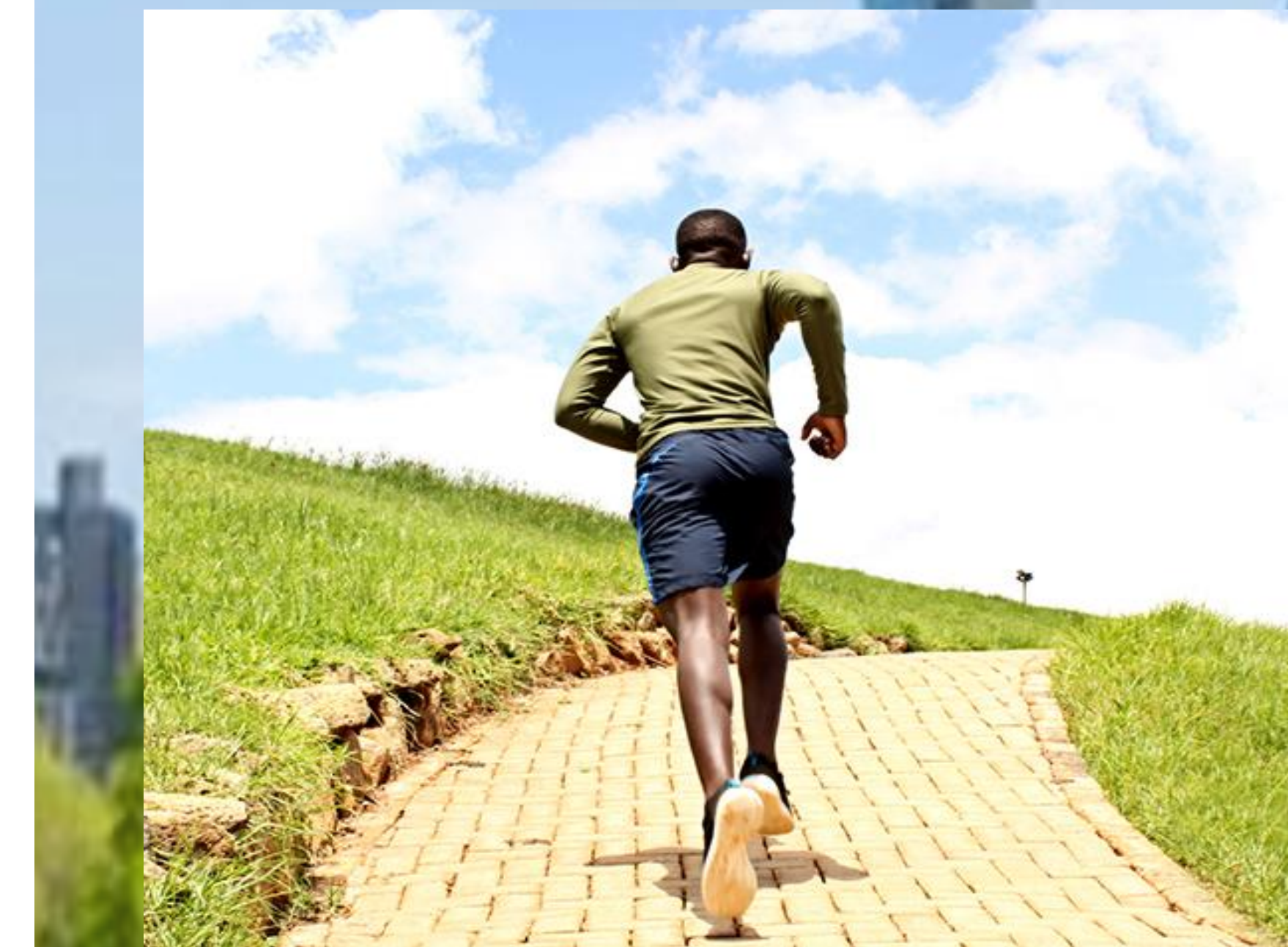
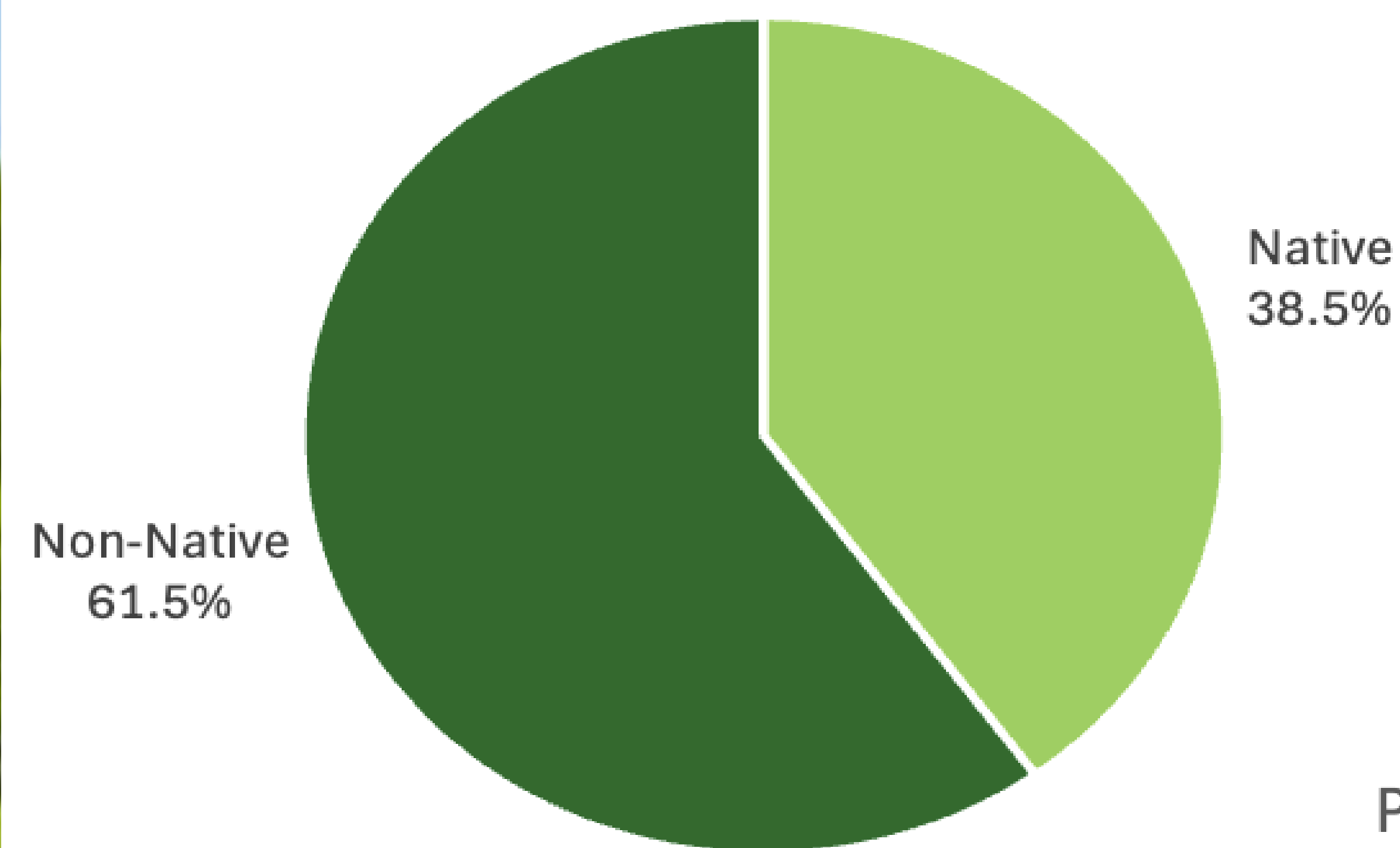
## Methods

To understand how being in proximity to street traffic impacts plant communities in Brooklyn Bridge park, we examined two main variables:

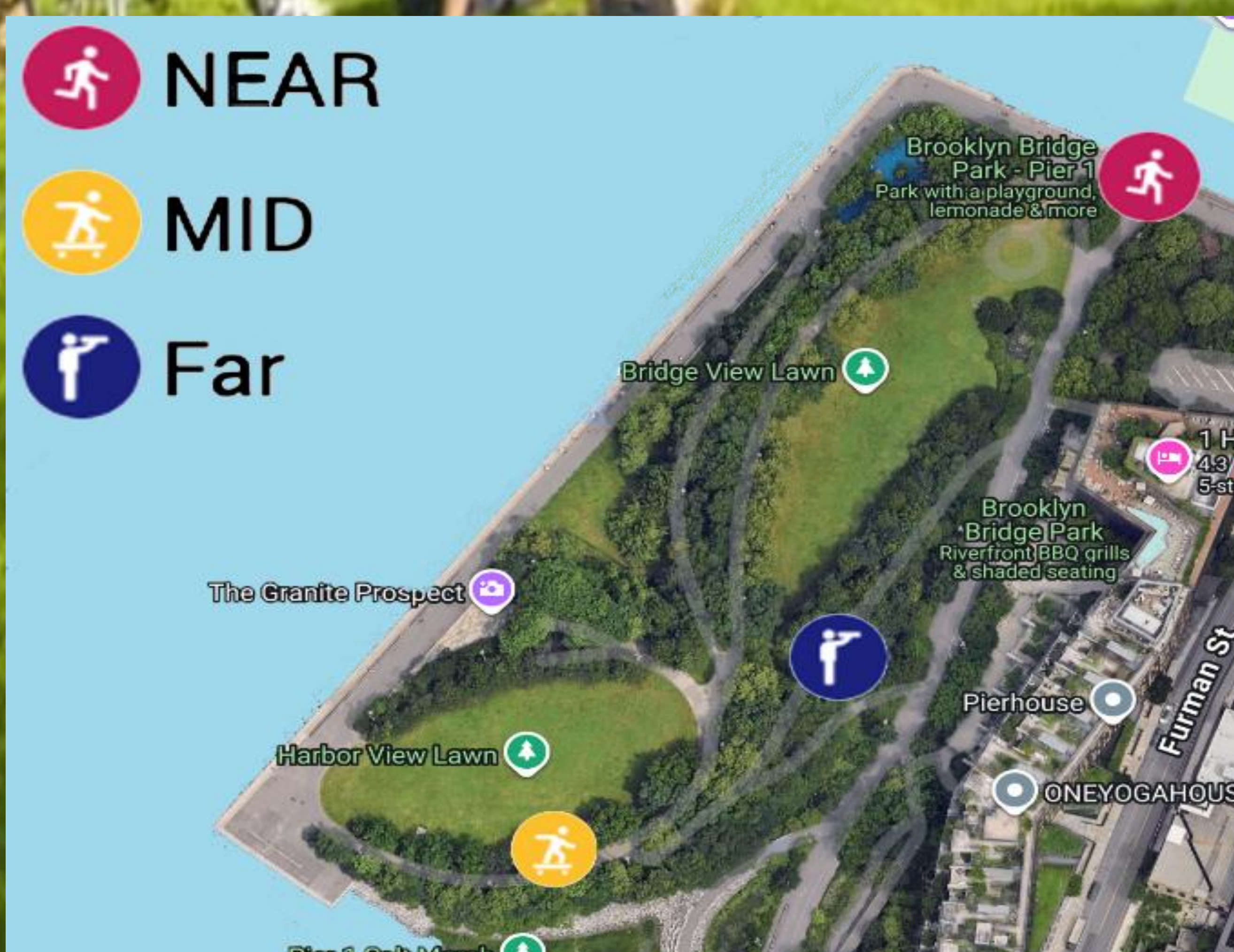
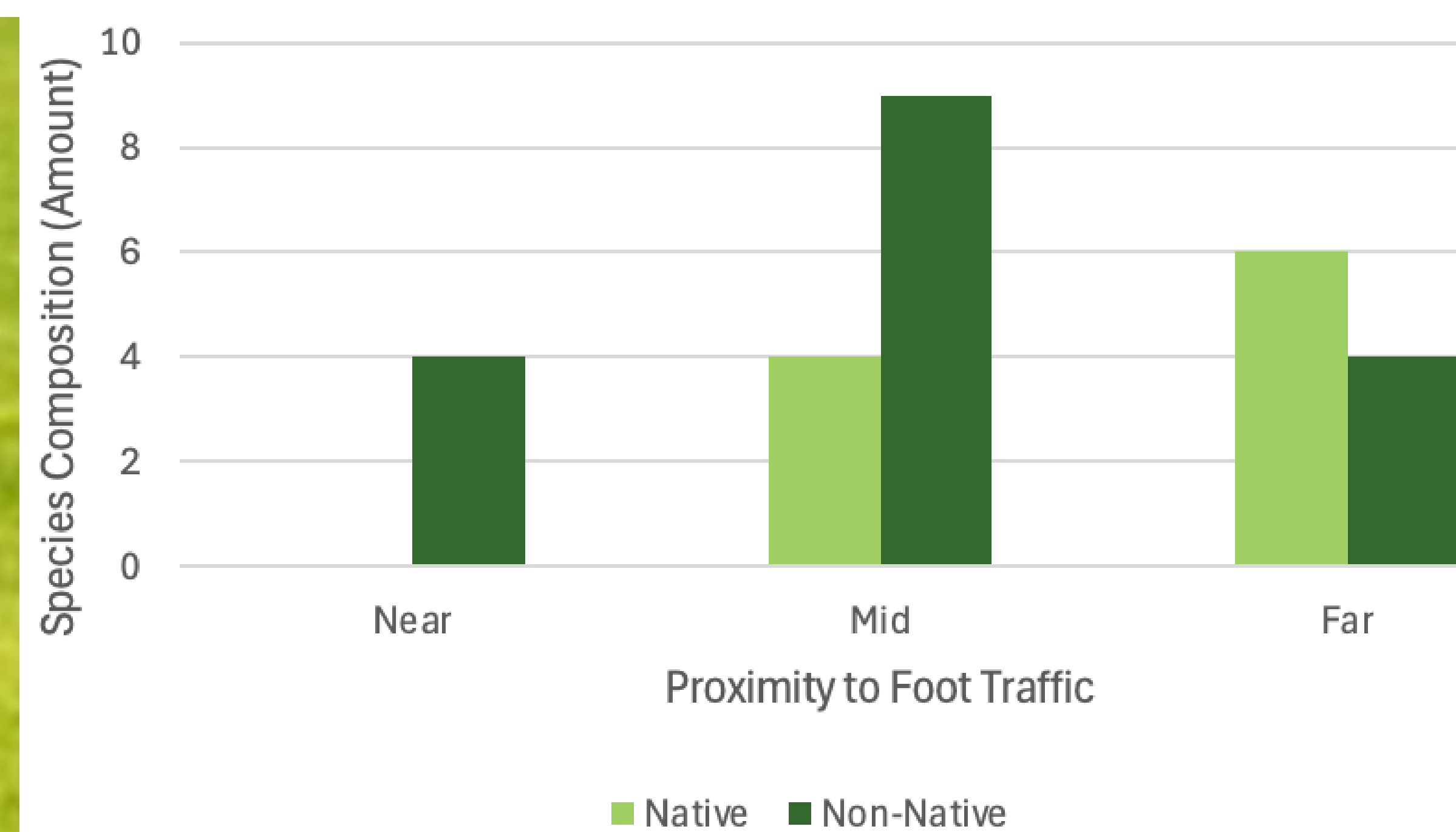
- 1) Plant species richness across three zones (Near, Mid, Far)
- 2) Native vs. non-native species composition within each zone

We used data recorded during the BioBlitz event. Plant species were identified and documented using the iNaturalist application, and to maintain consistency, only observation recorded at 1:00 p.m. were included in our analysis.

## Species Richness (Percent)



Plant Distribution in Brooklyn Bridge Park



## Conclusion

Initial observations showed distinct trends: the overall plant community was dominated by non-native species (61.5%), and the **far zone exhibited the most balance** with the highest number of native plants, while the **mid zone had the highest non-native concentration**. These trends align with supporting literature suggesting human activity and associated soil changes may favor non-native species. However, a Chi-square Test of Independence (**Chi-square value = 4.83, critical value = 7.81, p>0.05**) revealed no statistically significant association between plant type (native/non-native) and distance from foot traffic. Though statistical significance was not met, the observational data suggests that focused management of areas near pedestrian traffic may still be beneficial for supporting native plant communities.

## Limitations

Our sample size was small, the zones had uneven species counts, and the study relied on BioBlitz observations that vary depending on who recorded them. Because we failed to reject the null hypothesis despite a directional trend in the data, the study is at risk of a **Type II error**, meaning a real relationship may exist but went undetected due to limited statistical power. A single sampling period also prevents us from observing seasonal or long-term changes.

## Implications

For park managers, noticing that less-disturbed areas support stronger native plant communities can help guide decisions about restoration, planting, and traffic flow within the park.