Correlation between Human Presence and Species Diversity at Brooklyn Bridge Park

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Research Question

Is there a relationship between public presence and species diversity?

Hypothesis

There is a negative correlation between public presence and the number of species observed, with higher public presence associated with fewer species sightings.

Introduction

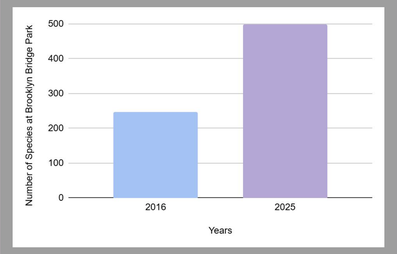
For decades, it has been extremely evident that urbanization as well as human presence have had an immense negative impact on biodiversity (Elmqvist, 2016). It can lead to habitat loss, fragmentation, and also alter the species' behaviors which can be very detrimental. Human activity affects all different kinds of species because we are seen as a threat to their habitat/environment. There are many variables that come into play when it comes to the relationship between human presence and species diversity. There are many direct and indirect impacts that influence the biodiversity in parks that can cause it to either increase or decrease (Liu and Wu, 2025). Brooklyn Bridge is a prime example that shows the relationship between the direct impact that foot traffic has in this area from 2016 and 2025.

Methods

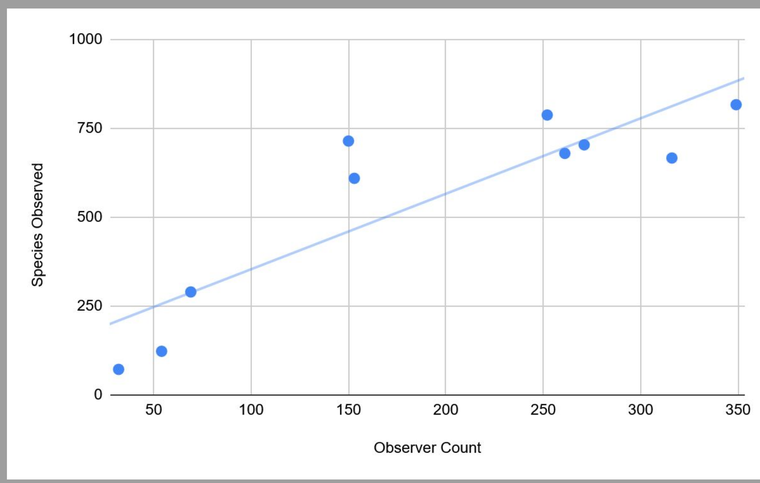
1. Choose a park to base research on and generate a research question
2. Generate a Hypothesis
3. Go to Bioblitz data
   a. Collect the data for the species count and observation count from Bioblitz data (Brooklyn Bridge Park) from 2016 and 2025
   b. Note that this method assumes that Bioblitz years have a recurring amount of observers throughout the years
4. Obtain foot traffic data
   a. Collect the foot traffic data from NYC Open Data (Brooklyn Bridge Automated Pedestrian Counts Demonstration Project)
   b. Type in Brooklyn Bridge Park in category search
5. Generate graph that compares the species count from 2016 and 2025
6. Generate graph that compares the foot traffic from 2016 and 2025
7. Make a comparative analysis between INaturalist observation/specie observation data and foot traffic findings
   a. Collect INaturalist data by searching in the filter bar Brooklyn Bridge Park
   b. Select each year between 2016 and 2025 individually
8. Analyze and draw conclusions

Results

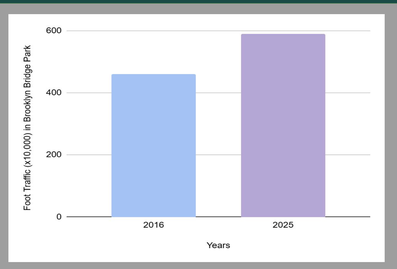
Species Observed Vs Observers Count



Findings indicate that the Foot Traffic in 2016 was approximately 4.6 million and in 2025 was approximately 5.9 million

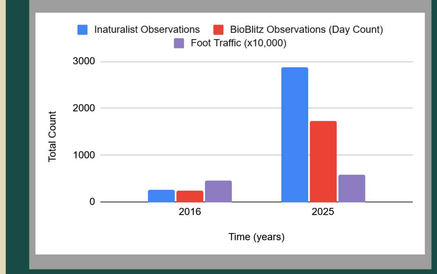


Using a trendline, the calculated correlation coefficient is at an increase of R= 0.876. This represents how the number of observers present to submit observations correlates to the amount of observations of species made.

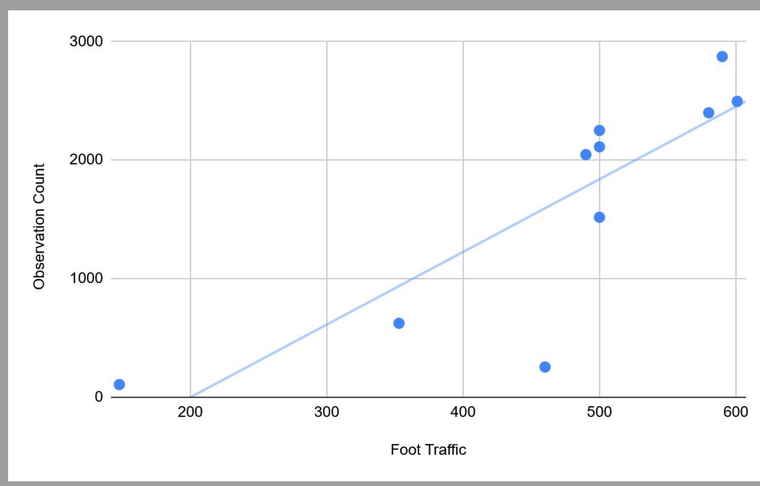


Findings indicate that the total Species count in 2016 and 2025 according to Bioblitz was 246 and 499 respectively

Observation Count Vs Foot Traffic Data



BioBlitz data and INaturalist data indicates growth in observations between the years 2016 to 2025. Foot traffic also increases throughout the years showing the comparison between observations within the two years. This indicates that as foot traffic grew, more observations were made however it is possible that the reason INaturalist has more Observations as the site grew in popularity making it difficult to make a claim about it's growth between the years.



Using a trendline, the calculated correlation coefficient is at an increase of R= 0.832. This represents that as more visitors enter the park there is an increase in observations made as species are seen more frequently.

Discussion

The hypothesis of this project was not supported by the findings that were collected. All of the data that was gathered was expected to result in higher foot traffic leading to lower species count. On the contrary, it showed that higher foot traffic actually resulted in higher species count. This furthers the conclusion that the observations (both generally and specifically on species) are highly dependent on those that are there to make the observations. With a larger group of observers, species are observed more frequently in comparison to years with a lower number of observers.

Future Work

A further look into this experiment would consist of collecting more data, especially throughout the span of a couple years specifically on BioBlitz as the data is considered more reliable. With more data, a reliable pattern of species count is possible to be created. Alongside this, foot traffic must be recorded as frequently allowing researchers to make a reliable comparison. Using all of this necessary information, it is then possible to make a reliable conclusion on the correlation between foot traffic and species and whether or not there is a positive or negative impact on the appearance of animals.

References

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