THE DISCOVERY CENTER
Discover yourself in nature

# Data in Action:

BRYN MAWR COLLEGE

# Discovery Center - Bird Data

Zoe Beer ('26), Ferida Mohammed ('26), Kripa Lamichhane ('26)
Faculty Advisor: Jennifer Spohrer
Field Supervisor: Bria Wimberly

Discovery Center Website

eBird Website

## HISTORY/BACKGROUND:

Since its opening in 2018, the Discovery Center provides a public space for neighbors, Philadelphia Outward Bound School, and Audubon Mid-Atlantic to come together and co-create opportunities for Philadelphians to discover themselves in nature, practice leadership, and work toward a greener city for birds and people.

Audubon Mid-Atlantic uses the Discovery Center as a facility for research and science-based conservation projects and educational programs throughout the Philadelphia region. The Discovery Center also allows visitors to connect to the Audubon Society's national and international conservation initiatives, serving as a premier destination for bird watching.

## PROJECT PURPOSE STATEMENT:

The purpose of this project is to render bird data at the Discovery Center site more accessible and understandable to the local neighborhood and visitors. Our goal is to make the data more interactive and engaging for everyone.

## TECHNICAL REQUIREMENTS

- eBird.com
- RStudio
- Excel
- Google Drive
- Python and Google Colab

## KEY TAKEAWAYS:

**What we did:**

1. Google Form linked to Google Sheet
2. Shared Google Drive Folder
3. Draft Data Visualization Models
4. Final Visualization Graph
   a. Filtered eBird data to include only observations from the Discovery Center (2018–2025), excluding other Philadelphia localities, while retaining all 174 bird species.
   b. Coded a bubble chart to visualize monthly bird observations per year by species family, highlighting trends in bird presence over time.

**What we learned:**

- Zoe: Developed new RStudio coding skills by using new packages; strengthened data visualization abilities; learned the importance of flexibility and testing/building on ideas.
- Ferida: Cleaning and filtering large datasets using Python, creating clear and insightful visualizations in R, and making design decisions to prioritize key trends when working with complex ecological data.
- Kripa: Types of visualization (Matplotlib versus Plotly express) and what visualization works best for what kind of data; hover effects, interactive features, cleaning tables, dividing data and working with information in Plotly Express.

## AGGREGATE OBSERVATION FOR DIFFERENT BIRDS

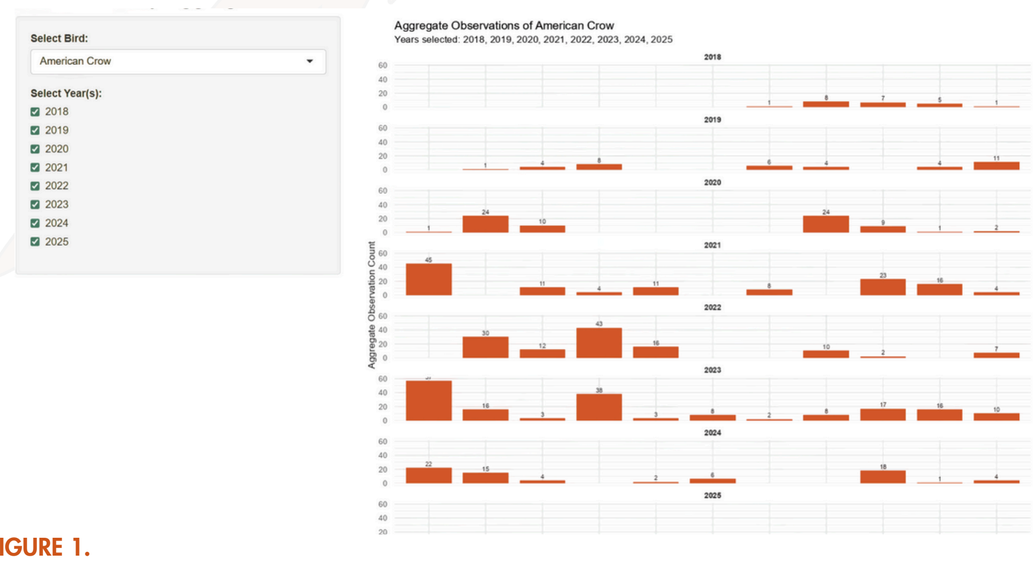


**FIGURE 1.**

Our initial idea was an interactive graph showing yearly observation counts for each bird. We aimed to filter by time and species to analyze trends, later improving this by grouping birds into species families.

## UNIQUE BIRD SPOTTED THROUGHOUT DIFFERENT MONTHS

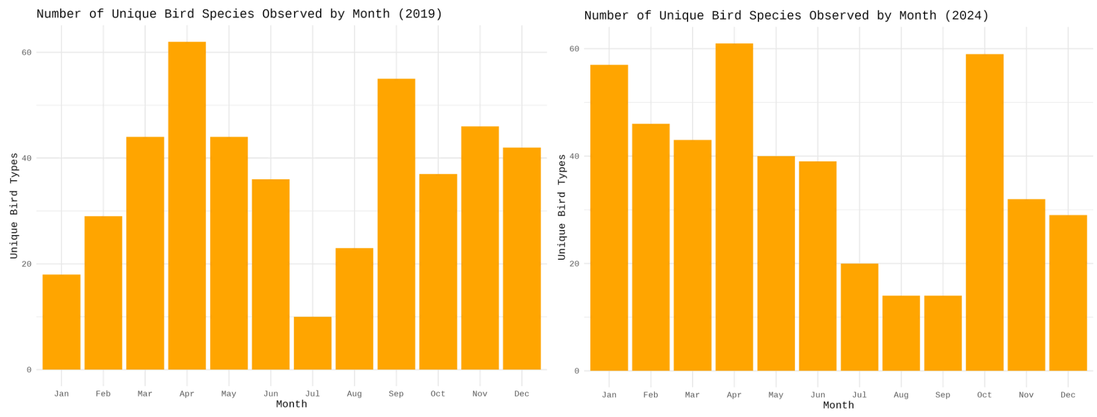


**FIGURE 2.**

We aimed to track how unique bird visits to the Discovery Center changed over time. Due to the large number of species, we began with line graphs, later switching to a bubble chart to show all species in one view.

## BIRD OBSERVATION SUMMARY (BIRD CATEGORIES BY MONTHS) FOR 2024

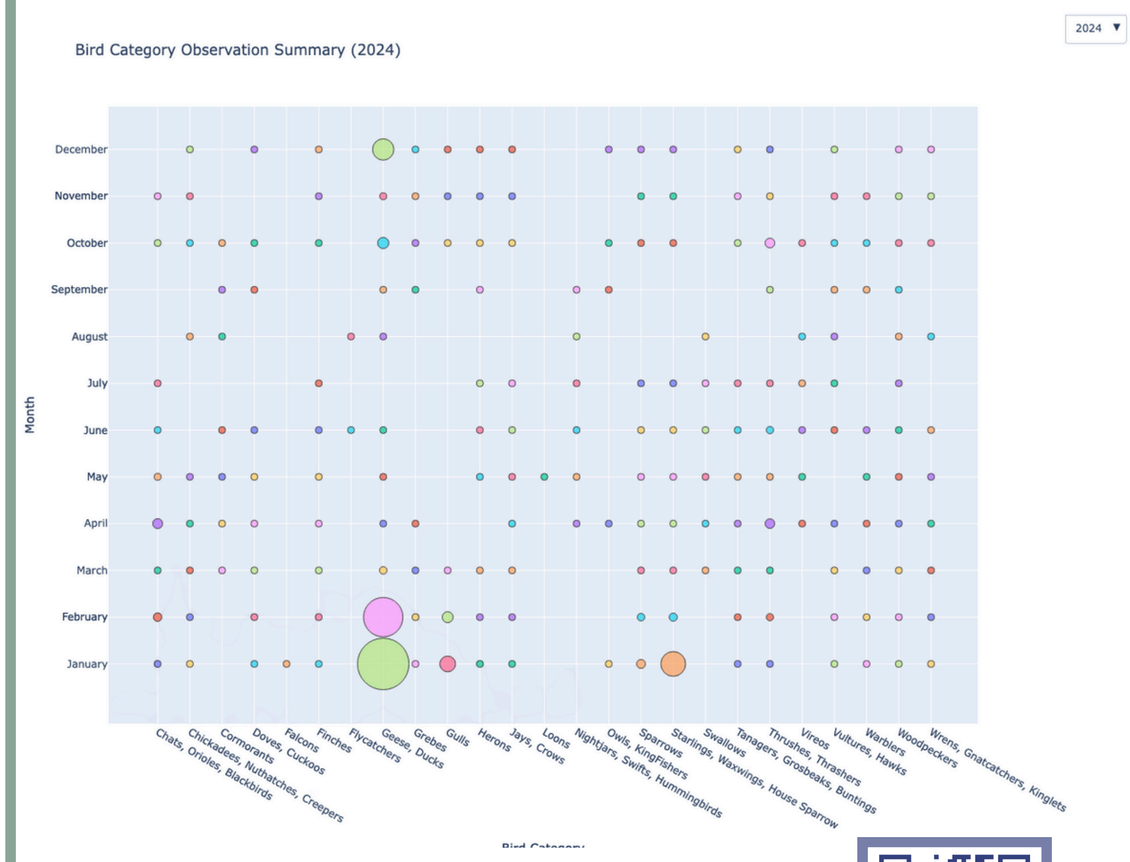


**FIGURE 3.**

At the end, we chose to use plotly express as it allows us to use interactive clean graph. It allowed us to hover around to different data points to unlock more information about birds observation.

INTERACTIVE VISUALIZATION WEBSITE

WARNING : DESIGNED FOR COMPUTER VISUALS ONLY

## NEXT STEPS FOR THE DISCOVERY CENTER:

1. Automate graphs to update periodically using API.
2. Improve the location site's environment to be more suitable for visiting birds during their respective seasons of the year.
3. Digitally track and archive their monthly observation data.
4. Share data graphs with the public online (Discovery Center website) and receive feedback for areas of improvement.

## INSIGHTS FROM THE GRAPHS:

- Canada Goose was the most observed bird each year, with over 5,000 sightings annually and The *Geese, Ducks* category was the most observed bird group.
- July had the fewest bird observations, possibly due to the summer break, when fewer people visit.
- Canada Goose sightings peaked from November to March, indicating higher presence during early winter to mid-spring.