

Crow Foraging Data Analysis

In this section, you will analyze your data to identify key results that answer your questions. Make sure you remember the key questions we asked:

1. **Is crow abundance higher in urban habitat than in natural habitat**
2. **Do crows gain higher foraging payoffs when in urban habitat than natural habitat**
3. **Do crows gain higher foraging payoffs in urban areas from invasive prey species and human food garbage than they do in natural habitat**
4. **Do crows gain higher foraging payoffs in urban areas from invasive prey species and human food garbage than from natural food.**

In order to address these questions we must examine our data, there are three main steps:

- I. Error check data
- II. Calculate variables of interest and create data tables
- III. Visualize data
- IV. Analyze data
- V. Plot figures of the results

Error check data

To error check your data, you first import to your spreadsheet program, typically excel. One approach is to then set up filters so that you can view each data column to ensure there are no data errors.

Set up a filter in excel on the top column and then identify errors in each column. Write down at least three common types of error in the data.

Calculate variables of interest

To analyze data you need to calculate your **response variables (dependent)** and match them to your **explanatory (independent) variables**. This typically requires quite a bit of data wrangling using statistical analysis programs. Our data sets are relatively small so can be analyzed quickly with your instructors assistance.

What is a response variable?

What is an explanatory variable?

What are the response variable and explanatory variables required to investigate whether:

- a. crow abundance is higher in urban habitat than in natural habitat.
- b. crows gain higher foraging payoffs when in urban habitat than natural habitat.
- c. crows gain higher foraging payoffs in urban areas from invasive prey species and human food garbage than they do in natural habitat.
- d. crows gain higher foraging payoffs in urban areas from invasive prey species and human food garbage than from natural food.

Visualize data

To visualize our **raw data** and determine what data we can reliably use and which statistical tests are appropriate, we initially:

1. Calculate averages for our different response variables.
2. Examine data to determine if we have adequate replicates of our explanatory variables of interest.
3. Plot histograms of our data to determine the distribution and therefore the appropriate statistical analysis.

What type of data did you collect (count, continuous)?

What distribution does your data have?

Analyze data

Data analysis is typically undertaken in specialized analysis software such as 'R statistics'. These require some training which we will not do in this lab. Instead, your instructor will provide analysis results for you and show you the process. The main goal is to determine if your explanatory variables explain **statistically significant** patterns within the response variable.

Plot Figures of the Results

Once results have been obtained from analyses, you will display these in simple figures which clearly illustrate key findings. You will be given an opportunity to plot key figures for your project in a subsequent exercise. These will then be included in your final project.

For this lab, you will be provided with the analysis results and the figures and you will then be asked to interpret these to identify and complete (i) major results, and (ii) major conclusions. You will incorporate these into your final project write-up.