Snapshot Wisconsin Data Exploration Toolkit

About the Toolkit

This Toolkit is designed to provide educators and students with an **opportunity to explore the real data** that is generated by Snapshot Wisconsin. The Toolkit consists of:

1) A dataset which provides information on over 2,000 images captured in the first year of the Snapshot Wisconsin project
2) This guiding document with recommended uses for the dataset
3) A YouTube video demonstrating sample analyses

Together, students and educators can ask their own scientific questions and explore data through graphing exercises or statistical analyses. The Toolkit can be used across grade levels and subject areas including mathematics and science.

About the Dataset

The dataset features information from Snapshot Wisconsin trail cameras deployed to help monitor elk reintroduction efforts in northern Wisconsin. Elk were extirpated from Wisconsin in the 1800s due to overhunting and habitat loss. Reintroduction efforts began in 1995 and continue today. The trail cameras help us to know how elk are doing.

The dataset includes information collected over the course of a year by 6 cameras in the reintroduction areas. Each line in the dataset represents a photo taken by one of the cameras.

Information about the photo includes the:

- Species and number of animals in the photo
- County where the camera was located
- Date and time the photo was taken
- Distance the camera was from the ground and trail
- Direction the camera was facing
- Temperature when the photo was taken

In addition to elk, these cameras capture a diversity of Wisconsin wildlife including deer, turkey, bear, fisher, coyote, wolf, porcupine, sandhill cranes, and more. The dataset also includes links to over 600 photos, so students can view the photos for themselves.

The dataset is available both as a Microsoft Excel file and as a Google Sheet, making it easy to use with Google Classroom!

Using the Dataset

The dataset allows students to practice skills such as graphing, calculating statistics, and even testing hypotheses using real-world data. Examples of how the dataset can be used are given below.

Graphing skills Students can practice creating scatter plots by plotting the number of photos against other variables, such as the temperature at which the photo was taken (Figure 1). After plotting, we see that photos are most often taken at more moderate temperatures. This might indicate that wildlife are more active at moderate temperatures compared to extreme high or low temperatures.

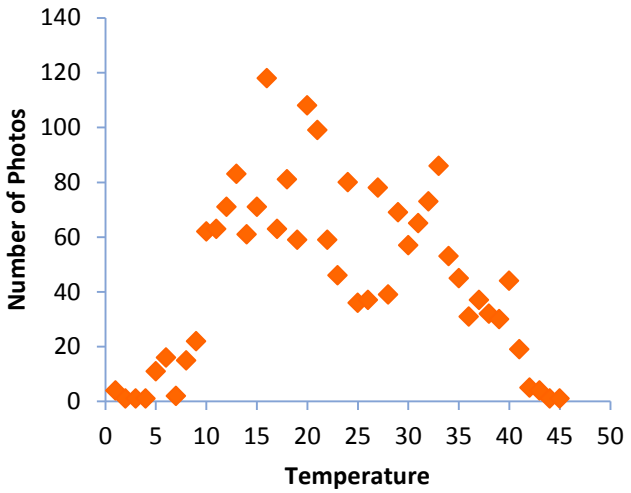

Figure 1. Number of animal photos by temperature in degrees Fahrenheit.

The dataset can also be used to create other types of figures, such as bar graphs or pie charts. Figure 2 shows a pie chart of different species captured at one camera site. The 6 most frequently photographed species at the site are shown. Of those species, deer are photographed most often.

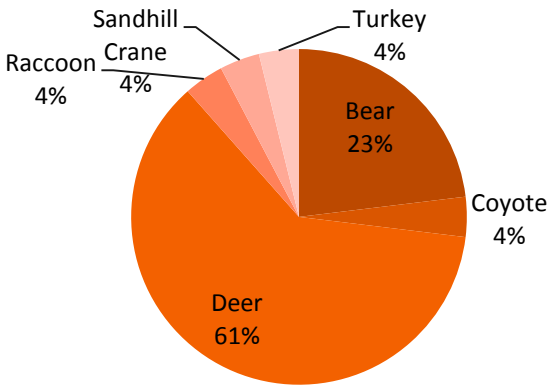

Figure 2. Subset of species captured at one Snapshot Wisconsin camera site.

Calculating statistics The dataset can easily be used to practice calculating percentages and ratios. Students can also use the data to calculate descriptive statistics such as mean, median, and mode (Table 1). Upper grade level students could conduct statistical tests using the dataset.

Table 1. Mean, median and mode temperature (degrees Fahrenheit) at which photographs were taken.

Statistic	Value
Mean	48
Median	46
Mode	35

Investigating hypotheses Many of the above skills can be combined to investigate various hypotheses. One potential hypothesis might be based on the biology of white-tailed deer. We might suspect that antlered deer would be more active (and therefore photographed more) during the fall because that is when the rut, or breeding season, occurs. We can look for evidence to support this hypothesis by graphing the number of antlered deer by month (Figure 3). Indeed, the bar graph shows that there are more photos of antlered deer captured in November than any other month. **Step-by-step instructions on how to carry out this activity are featured in the Toolkit YouTube video.**

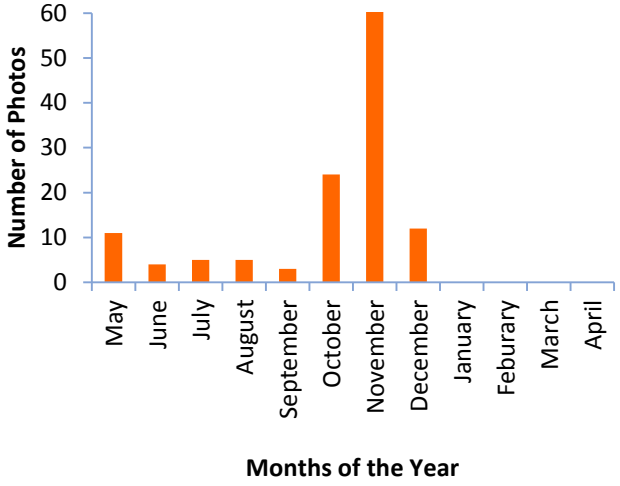

Figure 3. Number of antlered deer photos by months of the year.

If you have questions about the dataset or about Snapshot Wisconsin, you can contact us at DNRSnapshotWisconsin@Wisconsin.gov.

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