**River Otter Data Analysis**

Cami Hauver Project 1 Data Analytics Course

Questions:

1. How do animal sightings differ between survey locations?
2. Which individual surveys within each location had the most/least animal sightings?
3. Where were river otters sighted, and how often were they sighted compared to other animals?
4. Compare probabilities of other animal sightings to river otter sightings. Are there any possible patterns?

Overall Summary of Animal Sightings across all Survey Locations

See Figure 1.

Across all Survey Locations (Lower Provo River, Middle Provo River, Strawberry River, and Weber River

Total animal sightings = 309

Total number of species sighted = 61

Figure 1.

A graph with blue and black text

Description automatically generated

Summary for Survey Location: Lower Provo River (Figures 2-4)

Figure 2.

A graph with blue squares

Description automatically generated

Top animals sighted at Lower Provo River Surveys:

1. Beaver
2. Killdeer
3. Raccoon
4. Swallow
5. Magpie

Figure 3.

A graph of a survey

Description automatically generated

Summary statistics of animal sightings per Survey at the Lower Provo River:

Figure 4.

A screenshot of a graph

Description automatically generated

Lower Provo River Survey #3 resulted in the most animal sightings (18), while Survey #6 resulted in the least animal sightings (2)

Summary for Survey Location: Middle Provo River (Figures 5-7)

Figure 5.

A graph

Description automatically generated

Top animals sighted at Middle Provo River Surveys:

1. Beaver
2. Yellow headed Blackbird
3. Sandhill Crane
4. Killdeer
5. Unidentified Bird

Figure 6.

A graph of numbers and lines

Description automatically generated with medium confidence

Summary statistics of animal sightings per Survey at the Middle Provo River:

Figure 7.

A screenshot of a cell phone

Description automatically generated

Middle Provo River Survey #11 and #32 resulted in the most animal sightings (17 each), while Survey #28 resulted in the least animal sightings (1)

Summary for Survey Location: Strawberry River (Figures 8-10)

Figure 8.

A graph of a number of animals

Description automatically generated

Top animals sighted at Strawberry River Surveys:

1. Yellow Headed Blackbird
2. Canada Goose
3. Beaver
4. Magpie
5. Muskrat

Figure 9.

A graph of a survey

Description automatically generated

Summary statistics of animal sightings per Survey at the Strawberry River:

Figure 10.

A screenshot of a cell phone

Description automatically generated

Strawberry River Survey #1 resulted in the most animal sightings (9), while Survey #2 resulted in the least animal sightings (3)

Summary for Survey Location: Weber River (Figures 11-13)

Figure 11.

A graph with red bars

Description automatically generated

Top animals sighted at Weber River Surveys:

1. Killdeer
2. Eagle
3. Yellow Headed Blackbird
4. Magpie

Figure 12.

A graph of a number of people

Description automatically generated

Summary statistics of animal sightings per Survey at the Strawberry River:

Figure 13.

A screenshot of a number

Description automatically generated

Weber River Survey #2 resulted in the most animal sightings (8), while Survey #7 resulted in the least animal sightings (1)

Total Animal Sightings per Species Sighted at All Locations, Separated by Survey Location:

Figure 14.

A screenshot of a graph

Description automatically generated

1. How do animal sightings differ between survey locations?
   * Lower Provo River
     + 68 animal sightings
     + 24 different species
     + 8 surveys performed
   * Middle Provo River
     + Most animal sightings
       - 187
     + Most diversity
       - 44 different species
     + Most number of surveys performed
       - 21 surveys
   * Strawberry River
     + 32 animal sightings
     + 19 different species
     + Least number of surveys performed
       - 5 surveys performed
   * Weber River
     + Least animal sightings
       - 22 animal sightings
     + Least diversity
       - 9 different species
     + 7 surveys performed
2. Which individual surveys within each location had the most/least animal sightings?
   * Lower Provo River
     + Most animal sightings
       - Survey #3 (18)
     + Least animal sightings
       - Survey #6 (2)
   * Middle Provo River
     + Most animal sightings
       - Survey #11 and #32 (17)
     + Least animal sightings
       - Survey #28 (1)
   * Strawberry River
     + Most animal sightings
       - Survey #1 (9)
     + Least animal sightings
       - Survey #2 (3)
   * Weber River
     + Most animal sightings
       - Survey #2 (8)
     + Least animal sightings
       - Survey #7 (1)
3. Where were river otters sighted, and how often were they sighted compared to other animals?

Otter Sightings

* 7 sightings out of 187 total = 0.0374 sighting probability on MPR
* 9th most sighted animal on MPR out of 44 different species
* Middle Provo River only
  + Survey #s
    - #5
    - #13
    - #15
    - #17
    - #18
    - #32

Figure 15.

A graph with blue and white text

Description automatically generated

Top animals sighted at Otter Sites:

1. Osprey
2. Sandhill Crane
3. Unidentified Bird

Figure 16.

A graph of animals with orange bars

Description automatically generated with medium confidence

Top animals sighted at Non-Otter Sites at the Middle Provo River:

1. Beaver
2. Yellow Headed Blackbird
3. Sandhill crane

Figure 17.

A graph with blue and orange bars

Description automatically generated

1. Compare probabilities of other animal sightings to river otter sightings. Are there any possible patterns?

Figure 18.

A graph of different colors

Description automatically generated with medium confidence

* Otter Sites show much higher probability of sighting an Osprey, and secondly Sandhill crane
* Non-Otter Sites at the Middle Provo River show a much higher probability of sighting a Beaver, and secondly raccoon

Possible explanation:

* + Perhaps there’s habitat overlap between otters and osprey due to possible shared prey
  + Perhaps there’s habitat separation between otters and beavers due to negative interactions or different environment preferences

Suggestions for further data analysis, data collection:

* Run statistical tests on how animal sighting probabilities at otter sites compare to non-otter sites
  + Create a contingency table
  + Run chi-squared to test for goodness of fit or independence
* Collect data on other environmental factors to identify habitat preferences of river otters
  + Vegetation
  + River characteristics (flow, depth)