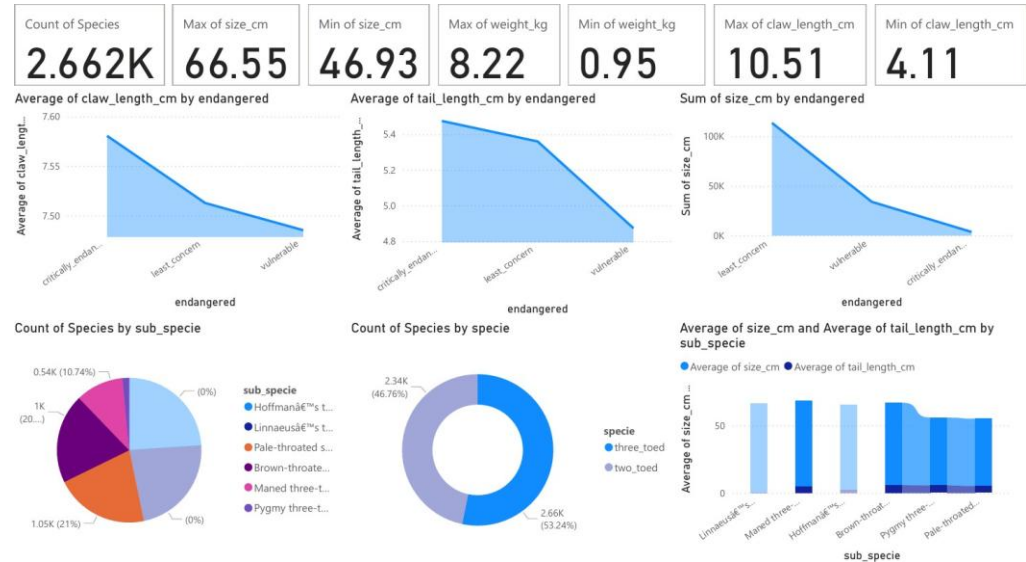| Name:	Sahil Shah
UID:	2021300115
Class and Batch:	BE Computer Engineering - Batch E

AIM:	Design Interactive Dashboards and Storytelling using Power BI or Tableau on the dataset- Animal / Wildlife / Marine Basic - Bar chart, Pie chart, Histogram, Timeline chart, Scatter plot, Bubble plot. Advanced - Word chart, Box and whisker plot, Violin plot, Regression plot (linear and nonlinear), 3D chart, Jitter. Use of DAX queries in Power BI. Write observations from each chart
Experiment 6	
PROBLEM STATEMENT:	- To create visually appealing and interactive dashboards that provide insights into the dataset. - To explore the distribution, trends, and relationships within the dataset using various types of visualizations. - To enable data-driven storytelling by highlighting key patterns, anomalies, and correlations.
DATASET AND DESCRIPTION:	**Population of India:** Dataset **Attributes of the Dataset:** 1. **Claw_Length_cm:** Length of the sloth's claw in centimeters. 2. **Endangered :** Conservation status indicating the level of endangerment. 3. **Size_cm:** Total size of the sloth in centimeters. 4. **Specie:** Species classification of the sloth (e.g., three-toed). 5. **Sub_Specie:** Subspecies classification, providing more specific taxonomy (e.g., Pygmy three-toed sloth). 6. **Tail_Length_cm:** Length of the sloth's tail in centimeters. 7. **Weight_kg:** Weight of the sloth in kilograms.

GRAPH AND INTERPRETATION:

Sloth Bear Endangered Specie Dashboard

Count of Species	Max of size_cm	Min of size_cm	Max of weight_kg	Min of weight_kg	Max of claw_length_cm	Min of claw_length_cm
5K	68.76	46.93	10.00	0.95	12.17	1.75

Average of claw_length_cm by endangered

Average of tail_length_cm by endangered

Sum of size_cm by endangered

Count of Species by sub_specie

- Hoffmanâ€™s t...
- Linnaeusâ€™s t...
- Pale-throated s...
- Brown-throate...
- Maned three-t...
- Pygmy three-t...

0.54K (10.74%)
1.2K (23.96%)
1K (20...)
1.05K (21%)
1.14K (22.8%)

Count of Species by specie

- three_toed
- two_toed

2.34K (46.76%)
2.66K (53.24%)

Average of size_cm and Average of tail_length_cm by sub_specie

- Average of size_cm
- Average of tail_length_cm

Interactivity on Three Toed Specie

| Count of Species	Max of size_cm	Min of size_cm	Max of weight_kg	Min of weight_kg	Max of claw_length_cm	Min of claw_length_cm
2.662K	66.55	46.93	8.22	0.95	10.51	4.11

Average of claw_length_cm by endangered

Average of tail_length_cm by endangered

Sum of size_cm by endangered

Count of Species by sub_specie

- Hoffmanâ€™s t...
- Linnaeusâ€™s t...
- Pale-throated s...
- Brown-throate...
- Maned three-t...
- Pygmy three-t...

0.54K (10.74%)
(0%)
1K (20...)
1.05K (21%)
(0%)

Count of Species by specie

- three_toed
- two_toed

2.34K (46.76%)
2.66K (53.24%)

Average of size_cm and Average of tail_length_cm by sub_specie

- Average of size_cm
- Average of tail_length_cm

Dax Queries and Graph generated with Insights:

1. Max Size = MAXX(ALL(Sloth), Sloth[size_cm])

Count of Species	Max of size_cm	Min of size_cm	Max of weight_kg	Min of weight_kg	Max of claw_length_cm	Min of claw_length_cm
5K	68.76	46.93	10.00	0.95	12.17	1.75

- The Pygmy Three-Toed Sloths in this dataset exhibit a range of sizes, from approximately 47 cm to 69 cm.
- Their weight varies significantly, from a minimum of 0.95 kg to a maximum of 10 kg.
- Claw lengths also differ, with a range of 1.75 cm to 12.17 cm.

2. Average Claw Length by Endangered =
     AVERAGEX(
       VALUES(Sloth[endangered]),
       AVERAGEX(
         ALLEXCEPT(Sloth, Sloth[endangered]),
         Sloth[claw_length_cm]
)
)

Average of claw_length_cm by endangered
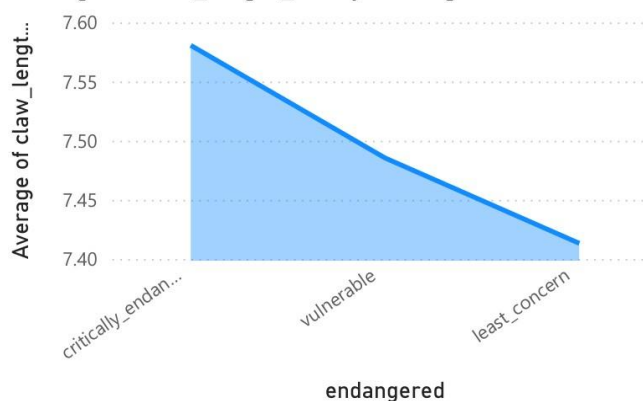
- The chart shows the average claw length (in centimeters) of sloths across different levels of endangerment.
- The average claw length of critically endangered species is the highest, around 7.57 cm.
- The average claw length of vulnerable species is slightly lower,
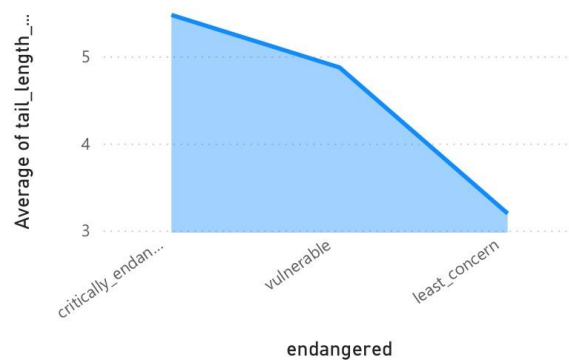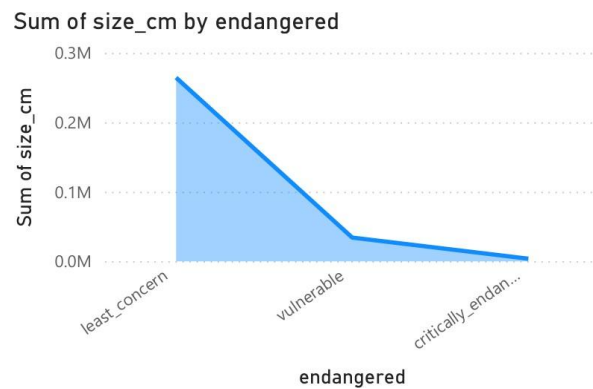
approximately 7.50 cm.
- The average claw length of the least concerned species is the lowest, around 7.41 cm.
- There seems to be a slight negative correlation between claw length and endangerment level. Sloths with longer claws tend to be more endangered.

3. Average Tail Length by Endangered =
   AVERAGEX(
     VALUES(Sloth[endangered]),
     AVERAGEX(
       ALLEXCEPT(Sloth, Sloth[endangered]),
       Sloth[tail_length_cm]
)
)

Average of tail_length_cm by endangered

- The chart shows the average tail length (in centimeters) of sloths across different levels of endangerment.
- The average tail length of critically endangered species is the highest, around 5.2 cm.
- The average tail length of the vulnerable species is slightly lower, approximately 5.0 cm.
- The average tail length of the least concerned species is the lowest, around 3.1 cm.
- There seems to be a negative correlation between tail length and endangerment level. Sloths with longer tails tend to be more endangered.

4. Sum of Size by Endangered =
    SUMX(
        VALUES(Sloth[endangered]),
        CALCULATE(
            SUM(Sloth[size_cm]),
            ALLEXCEPT(Sloth, Sloth[endangered])
)
)

Sum of size_cm by endangered

- The chart shows the total size (in centimeters) of sloths across different levels of endangerment.
- The total size of the least concerned species is the highest, around 0.25 million centimeters.
- The total size of vulnerable species is significantly lower, approximately 0.05 million centimeters.
- The total size of critically endangered species is the lowest, around 0.01 million centimeters.
- There seems to be a strong negative correlation between total size and endangerment level. Sloth populations with a larger total size tend to be less endangered.

5. Count of Species by Subspecies =
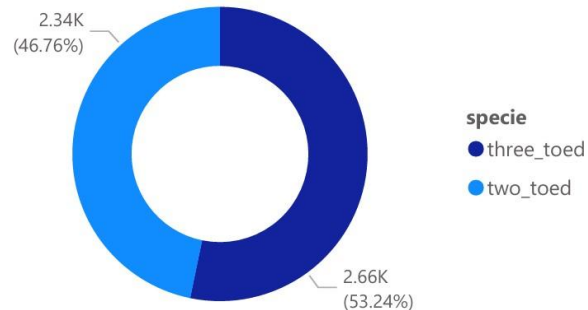   COUNTROWS(
     VALUES(Sloth[sub_specie])
)

Count of Species by sub_specie
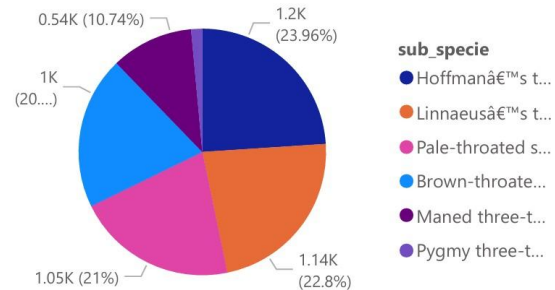
- The pie chart shows the distribution of sloth species across different subspecies.
- The chart shows that the Maned three-toed sloth and the Pygmy three-toed sloth are the most common subspecies, each accounting for approximately 22.8% of the total.
- The Hoffmann's two-toed sloth is the second most common subspecies, with a share of 23.96%.
- The Linnaeus's two-toed sloth, Pale-throated three-toed sloth, and Brown-throated three-toed sloth have similar proportions, ranging from 10.74% to 21%.

6. Count of Species by Species =
   COUNTROWS(
      VALUES(Sloth[specie])
)

Count of Species by specie

2.34K
(46.76%)

specie
● three_toed
● two_toed

2.66K
(53.24%)

- The pie chart shows the distribution of sloth species across different subspecies.
- The chart shows that the Maned three-toed sloth and the Pygmy three-toed sloth are the most common subspecies, each accounting for approximately 22.8% of the total.
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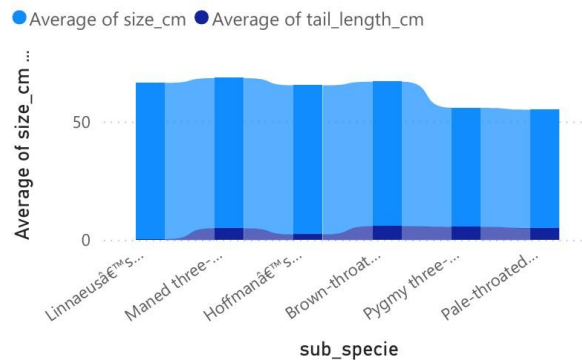
7. Average Size by Subspecies =
   AVERAGEX(
       VALUES(Sloth[sub_specie]),
       AVERAGEX(
           ALLEXCEPT(Sloth, Sloth[sub_specie]),
           Sloth[size_cm]
)
)

Average of size_cm and Average of tail_length_cm by sub_specie

● Average of size_cm ● Average of tail_length_cm

- The chart shows the average size (in cm) and average tail length (in cm) of sloths across different subspecies.
- The Hoffmann's two-toed sloth and the Maned three-toed sloth have the largest average size, around 56 cm.
- The Pygmy three-toed sloth has the smallest average size, around 50 cm.
- The other subspecies have similar average sizes, ranging from 52 cm to 54 cm.
- The Maned three-toed sloth has the longest average tail length, around 6 cm.
- The Pygmy three-toed sloth has the shortest average tail length, around 2 cm.
- The other subspecies have similar average tail lengths, ranging from 4 cm to 5 cm.
- There seems to be a positive correlation between average size and average tail length. Subspecies with larger average sizes tend to have longer average tail lengths.
- This relationship might be due to the fact that larger sloths need longer tails for balance and stability while climbing.

| CONCLUSION: | Hereby, the dataset highlights physical and ecological traits of sloths, with variations in size, weight, and claw length by subspecies. Critically endangered sloths generally have longer claws and tails, and larger population sizes correlate with lower endangerment levels. In this way, the DAX queries like MAXX, SUMX, and AVERAGEX effectively uncover these relationships, supporting clear and insightful Power BI visualizations. |