Animal Sleep

Some animals, such as elephants, sleep only 3-4 hours a night, while others, like bats, can sleep up to 20 hours.

Is there a relationship between sleep duration and body mass?

The file `animal-sleep.csv` provides data on the average sleep duration of 77 animal species, along with their average body mass in kilograms.

In addition to the main question, I also added some data inquiries for future reference.

The general view of the dataframe:

```python
import pandas as pd

#dataframe display
csv_path = r"f:/Desktop Files/Data Analytics/Python Projects/animal-sleep-project/animal-sleep-project/animal-sleep.csv"
df = pd.read_csv(csv_path)
df
```

	animal	diet	sleep	mass
0	african elephant	herbivore	3.3	6654.000
1	african giant pouched rat	omnivore	8.3	1.000
2	african striped mouse	herbivore	8.7	0.044
3	arctic fox	carnivore	12.5	3.380
4	arctic ground squirrel	omnivore	16.6	0.920
...	...	...	...	...
72	tree hyrax	herbivore	5.3	2.950
73	tree shrew	omnivore	8.9	0.104
74	vesper mouse	omnivore	7.0	0.045
75	vole	herbivore	12.8	0.035
76	western american chipmunk	omnivore	14.9	0.071

77 rows × 4 columns

Practice Questions:

1. How many belong to each diet group?

```python
#How many belong to each diet group?
count_dietgroup = df.groupby(df['diet']).size()
count_dietgroup.reset_index()
```

	diet	0
0	carnivore	22
1	herbivore	25
2	omnivore	30

Note: Result was a series, so I used reset_index() to present as a dataframe to more presentable

2. How many animals are in the dataset?

```python
#How many animals are in the dataset?
count_animals = df['animal'].nunique()
count_animals
```
[45]

... 77

3. Which animals sleep the most and least?

```python
from IPython.display import display
#Which animals sleep the most and least?
most_sleep = df.query('sleep == sleep.max()')
least_sleep = df.query('sleep == sleep.min()')
display(most_sleep.reset_index())
display(least_sleep.reset_index())
```
[46]

...
	index	animal	diet	sleep	mass
0	39	little brown bat	carnivore	19.9	0.01

...
	index	animal	diet	sleep	mass
0	25	giraffe	herbivore	1.9	899.995

Note: Directly displaying the results is quite unreadable for non-technical users. So, I used another library (IPython.display) so that I can display them with much more readability.

4. What's the average mass per diet type?

```python
#What's the average mass per diet type?
avg_mass_diet = df.groupby('diet')['mass'].mean().round(2)
avg_mass_diet.reset_index()
```
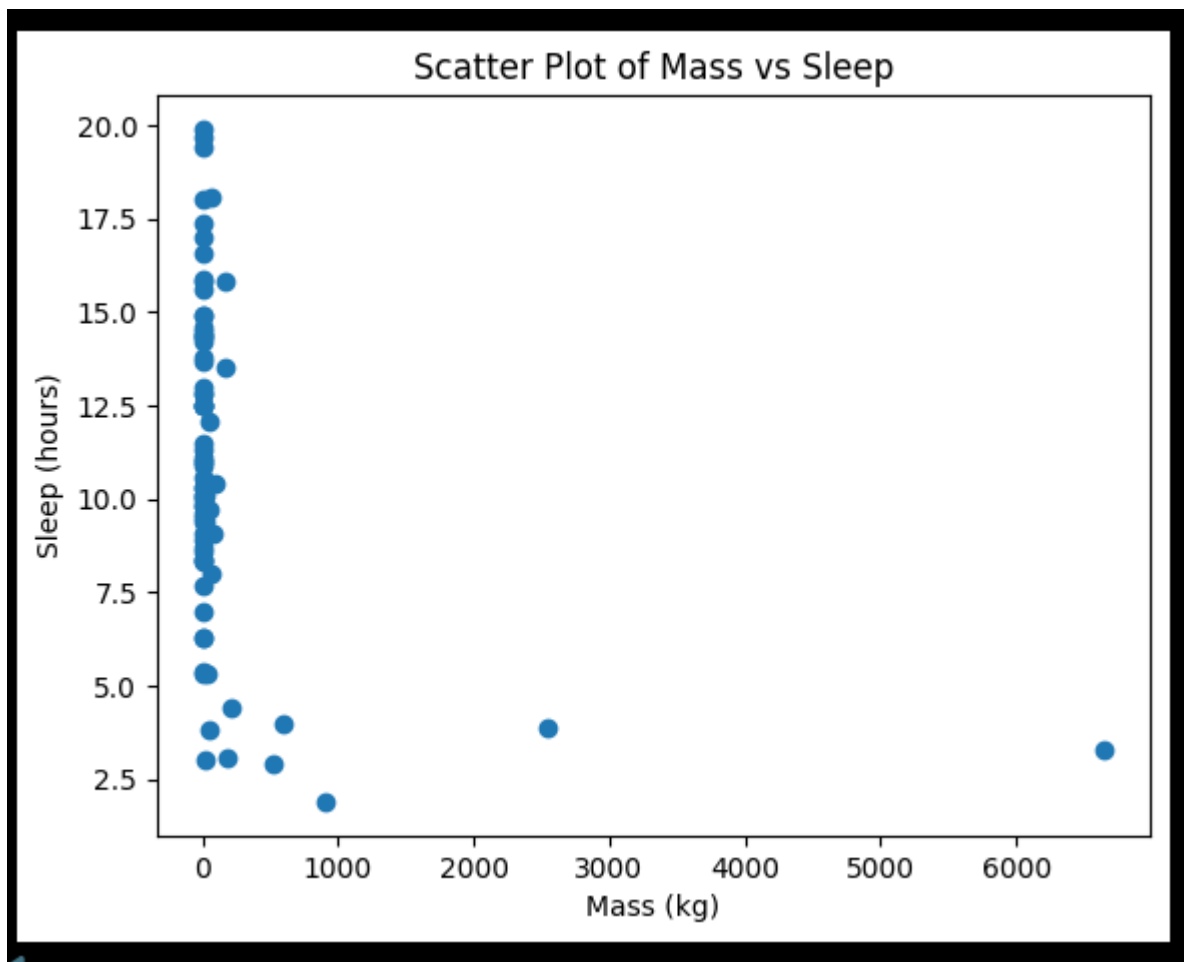[48]

...
	diet	mass
0	carnivore	25.96
1	herbivore	469.63
2	omnivore	8.65

Create a scatter plot of mass vs sleep

Code:

```python
#Create a scatter plot of mass vs sleep. Is there a visible trend?
import matplotlib.pyplot as plt
plt.scatter(df['mass'], df['sleep'])
plt.xlabel('Mass (kg)')
plt.ylabel('Sleep (hours)')
plt.title('Scatter Plot of Mass vs Sleep')
```

Output:

Inference:

There appears to be a negative correlation between mass and sleep, indicating that larger animals tend to sleep less. It means that the lower the mass of the animal, the more hours it sleeps.