In [7]:

```
# Group by Species and calculate summary statistics
summary_stats = df.groupby('Species')[['SepalLengthCm', 'SepalWidthCm', 'Peta
print("Summary Statistics by Species:\n", summary_stats)
```

```
Summary Statistics by Species:
                 SepalLengthCm                            SepalWidthCm
\
                          mean median  min  max       std         mean median
Species
Iris-setosa              5.006    5.0  4.3  5.8  0.352490        3.418    3.4
Iris-versicolor          5.936    5.9  4.9  7.0  0.516171        2.770    2.8
Iris-virginica           6.588    6.5  4.9  7.9  0.635880        2.974    3.0

                                    PetalLengthCm
\
                  min  max       std          mean median  min  max       std
Species
Iris-setosa       2.3  4.4  0.381024         1.464   1.50  1.0  1.9  0.173511
Iris-versicolor   2.0  3.4  0.313798         4.260   4.35  3.0  5.1  0.469911
Iris-virginica    2.2  3.8  0.322497         5.552   5.55  4.5  6.9  0.551895

                PetalWidthCm
                        mean median  min  max       std
Species
Iris-setosa            0.244    0.2  0.1  0.6  0.107210
Iris-versicolor        1.326    1.3  1.0  1.8  0.197753
Iris-virginica         2.026    2.0  1.4  2.5  0.274650
```

In [9]:

```
for sp in df['Species'].unique():
    petal = df[df['Species']==sp]['PetalLengthCm']
    print(f"\nSpecies: {sp}")
    print("Mean:", round(petal.mean(), 2))
    print("Std Dev:", round(petal.std(), 2))
    print("25th percentile:", np.percentile(petal, 25))
    print("Median (50th percentile):", np.percentile(petal, 50))
    print("75th percentile:", np.percentile(petal, 75))
```

```
Species: Iris-setosa
Mean: 1.46
Std Dev: 0.17
25th percentile: 1.4
Median (50th percentile): 1.5
75th percentile: 1.5750000000000002

Species: Iris-versicolor
Mean: 4.26
Std Dev: 0.47
25th percentile: 4.0
Median (50th percentile): 4.35
75th percentile: 4.6

Species: Iris-virginica
Mean: 5.55
Std Dev: 0.55
25th percentile: 5.1
Median (50th percentile): 5.55
75th percentile: 5.875
```

In [ ]: