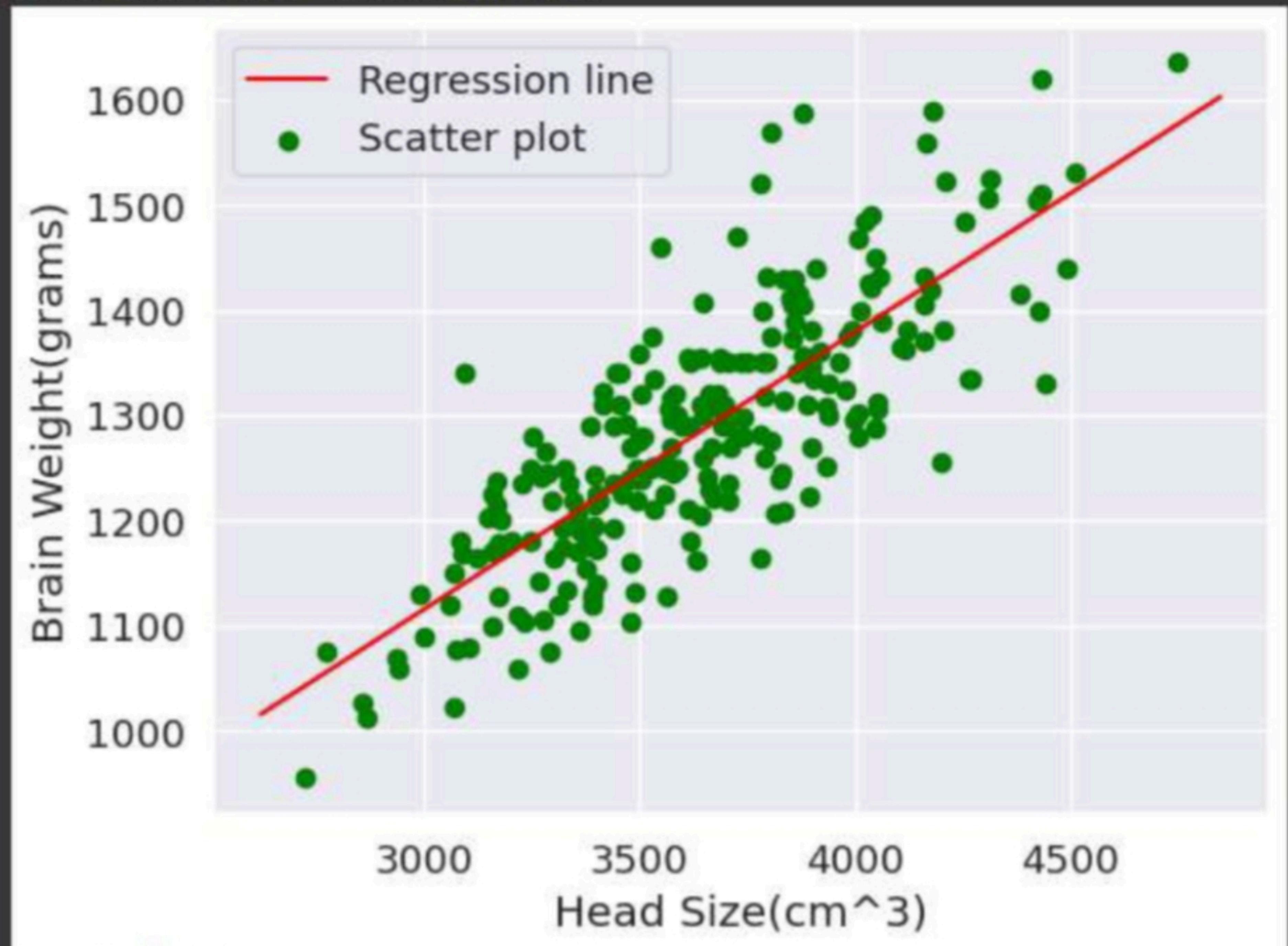


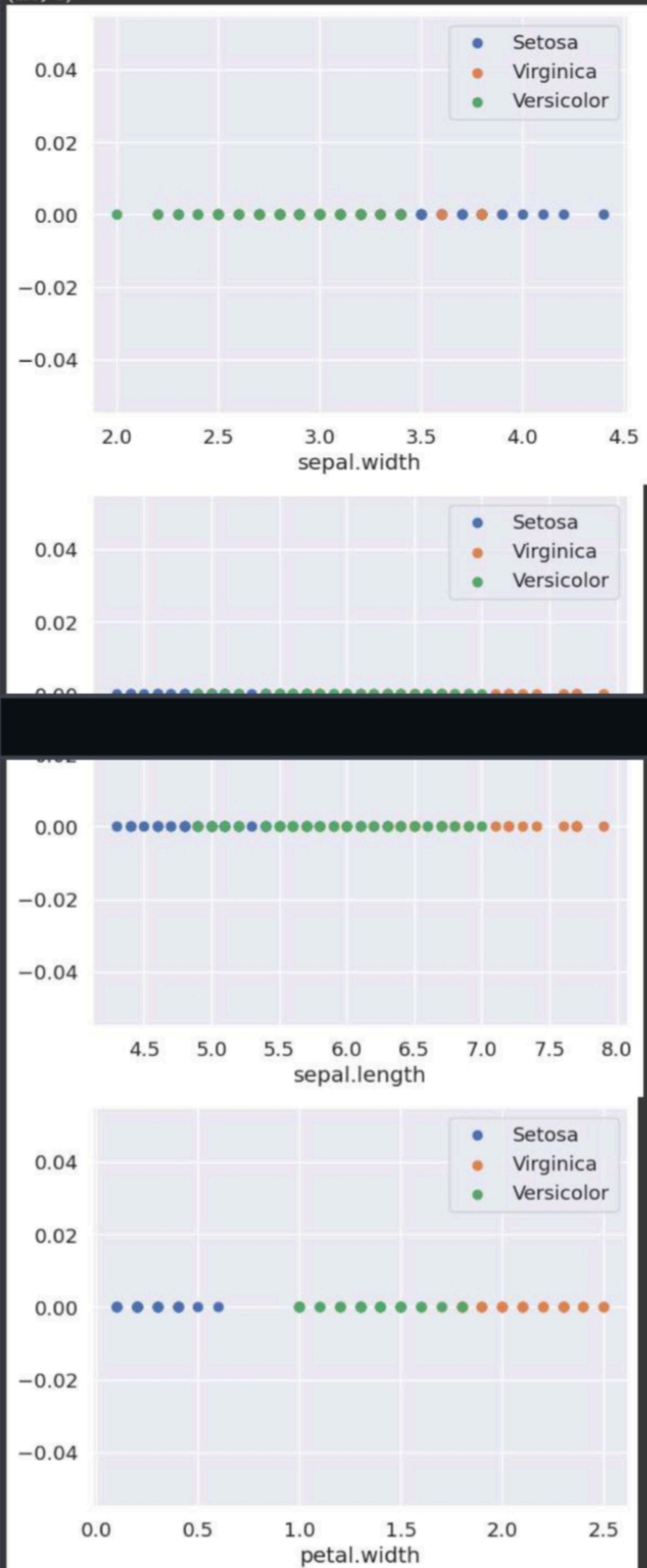
```
[4512 3738 4261 3777 4177] [1530 1297 1335 1282 1590]  
3633.9915611814345 1282.873417721519  
0.2634293394893993 325.5734210494428
```

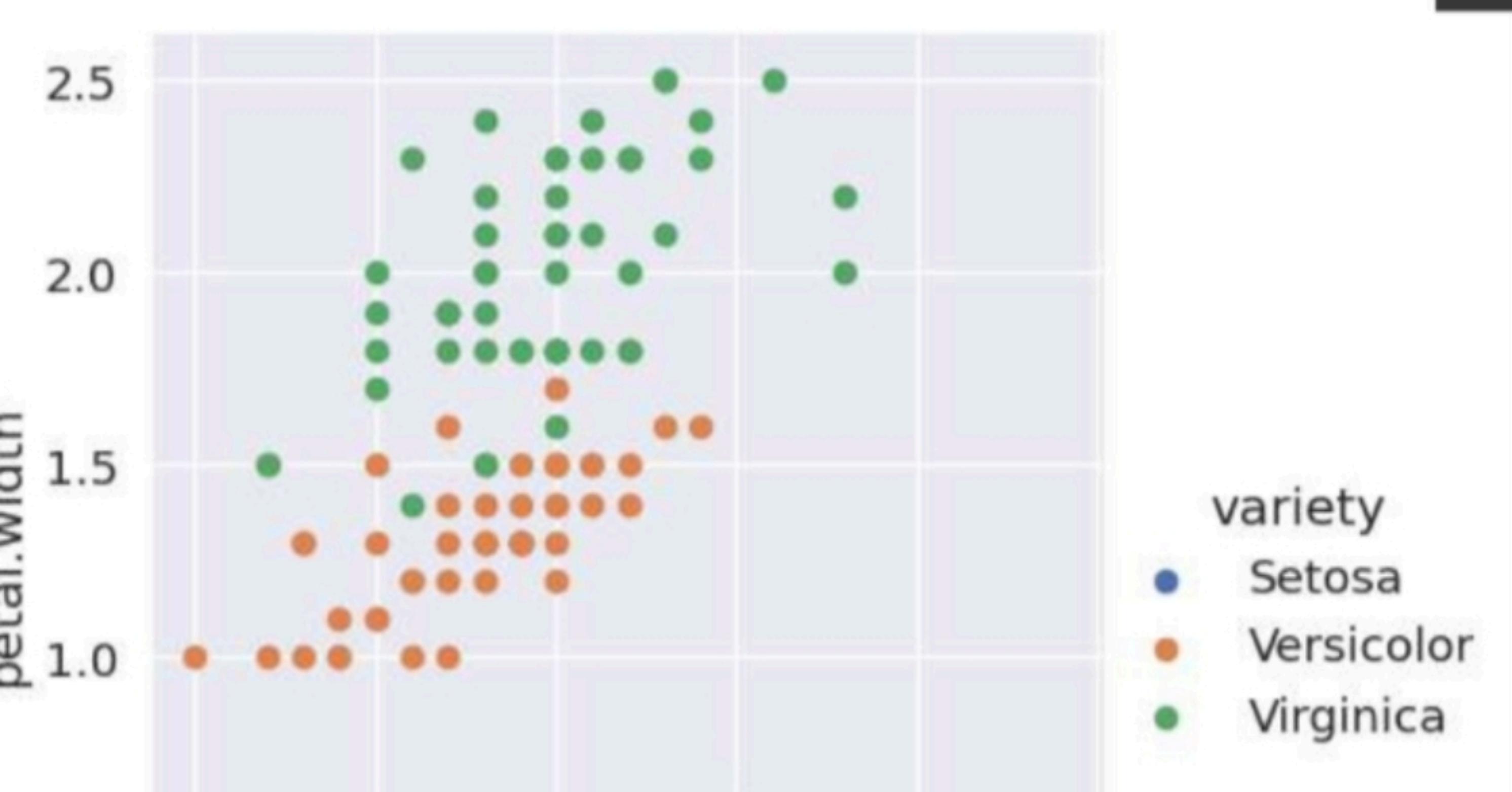
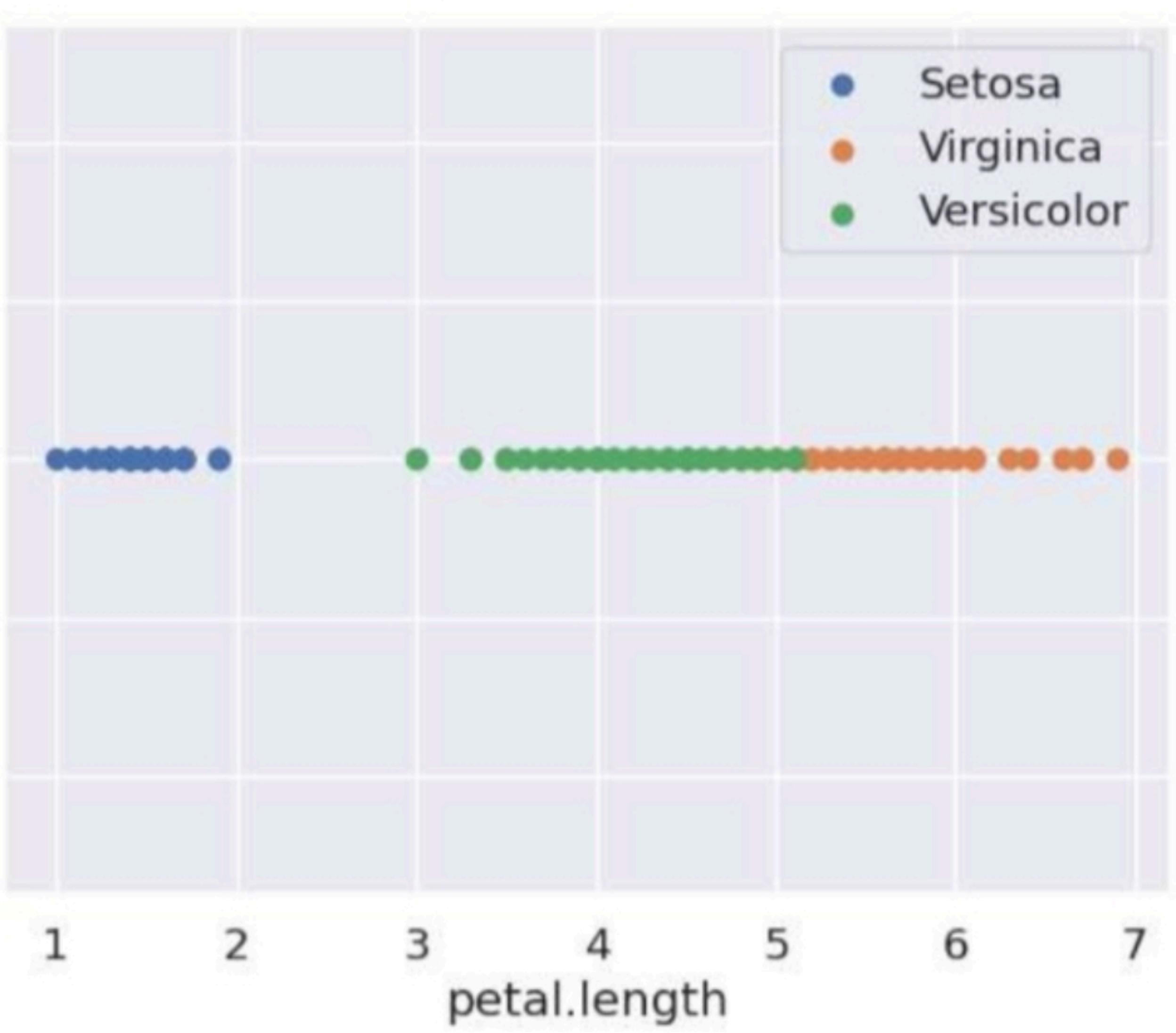


```
0.639311719957  
0.639311719957
```

	sepal.length	sepal.width	petal.length	petal.width	variety
0	5.1	3.5	1.4	0.2	Setosa
1	4.9	3.0	1.4	0.2	Setosa
2	4.7	3.2	1.3	0.2	Setosa
3	4.6	3.1	1.5	0.2	Setosa
4	5.0	3.6	1.4	0.2	Setosa

(150, 5)





```
User ID Gender Age EstimatedSalary Purchased
0 15624510 Male 19 19000 0
1 15810944 Male 35 20000 0
2 15668575 Female 26 43000 0
3 15603246 Female 27 57000 0
4 15804002 Male 19 76000 0
[[ -1.05714987  0.53420426]
 [ 0.2798728  -0.51764734]
 [-1.05714987  0.41733186]
 [-0.29313691 -1.45262654]
 [ 0.47087604  1.23543867]
 [-1.05714987 -0.34233874]
 [-0.10213368  0.30045946]
 [ 1.33039061  0.59264046]
 [-1.15265148 -1.16044554]
 [ 1.04388575  0.47576806]]
[0 0 0 0 0 0 0 1 0 1 0 0 0 0 0 0 0 1 0 0 1 0 1 0 1 0 0 0 0 0 0 1 0 0 0 0
 0 0 1]
Confusion Matrix :
[[31  1]
 [ 1  7]]
Accuracy : 0.95
0.7583333333333334
0.823529411764706
Accuracy is : 0.925
```

```
[[6.62916366]
 [6.62916441]]
[-10.23197316]
[0.02652435]
[0.95375065]
[3.59993686e-05]
[0.02652437]
```

```
First 10 rows of dataset:  
    variance  skewness  curtosis  entropy  class  
0    3.62160    8.6661   -2.80730  -0.44699     0  
1    4.54590    8.1674   -2.45860  -1.46210     0  
2    3.86600   -2.6383    1.92420   0.10645     0  
3    3.45660    9.5228   -4.01120  -3.59440     0  
4    0.32924   -4.4552    4.57180  -0.98880     0  
5    4.36840    9.6718   -3.96060  -3.16250     0  
6    3.59120    3.9129    0.72888   0.56421     0  
7    2.09220   -6.8100    8.46360  -0.60216     0  
8    3.28320    5.7588   -0.75345  -0.61251     0  
9    1.53560    9.1772   -2.27180  -0.73535     0
```

```
Feature sample:  
    variance  skewness  curtosis  entropy  
0    3.6216    8.6661   -2.8073  -0.44699  
1    4.5459    8.1674   -2.4586  -1.46210
```

```
Target sample:  
0    0  
1    0  
Name: class, dtype: int64
```

```
--- Activation: relu, Test size: 0.2 ---
```

```
Confusion Matrix:
```

```
[[148  0]  
 [ 0 127]]
```

```
Classification Report:
```

	precision	recall	f1-score	support
0	1.00	1.00	1.00	148
1	1.00	1.00	1.00	127
accuracy			1.00	275
macro avg	1.00	1.00	1.00	275
weighted avg	1.00	1.00	1.00	275

```
--- Activation: logistic, Test size: 0.2 ---
```

```
Confusion Matrix:
```

```
[[148  0]  
 [ 1 126]]
```

```
Classification Report:
```

	precision	recall	f1-score	support
0	0.99	1.00	1.00	148
1	1.00	0.99	1.00	127
accuracy			1.00	275
macro avg	1.00	1.00	1.00	275
weighted avg	1.00	1.00	1.00	275

```
--- Activation: tanh, Test size: 0.2 ---
```

```
Confusion Matrix:
```

```
[[148  0]  
 [ 0 127]]
```

Classification Report:					
	precision	recall	f1-score	support	
0	1.00	1.00	1.00	148	
1	1.00	1.00	1.00	127	
accuracy			1.00	275	
macro avg	1.00	1.00	1.00	275	
weighted avg	1.00	1.00	1.00	275	

--- Activation: identity, Test size: 0.2 ---

Confusion Matrix:

```
[[146  2]
 [ 2 125]]
```

Classification Report:

	precision	recall	f1-score	support	
0	0.99	0.99	0.99	148	
1	0.98	0.98	0.98	127	
accuracy			0.99	275	
macro avg	0.99	0.99	0.99	275	
weighted avg	0.99	0.99	0.99	275	

--- Activation: relu, Test size: 0.3 ---

Confusion Matrix:

```
[[229  0]
 [ 0 183]]
```

Classification Report:

	precision	recall	f1-score	support	
0	1.00	1.00	1.00	229	
1	1.00	1.00	1.00	183	
accuracy			1.00	412	
macro avg	1.00	1.00	1.00	412	
weighted avg	1.00	1.00	1.00	412	

--- Activation: logistic, Test size: 0.3 ---

Confusion Matrix:

```
[[229  0]
 [ 1 182]]
```

Classification Report:

	precision	recall	f1-score	support	
0	1.00	1.00	1.00	229	
1	1.00	0.99	1.00	183	
accuracy			1.00	412	
macro avg	1.00	1.00	1.00	412	
weighted avg	1.00	1.00	1.00	412	

```
[ 0 183]]]

Classification Report:
precision    recall   f1-score   support
          0       1.00      1.00      1.00      229
          1       1.00      1.00      1.00      183

accuracy                           1.00      412
macro avg       1.00      1.00      1.00      412
weighted avg    1.00      1.00      1.00      412

--- Activation: logistic, Test size: 0.3 ---

Confusion Matrix:
[[229  0]
 [ 1 182]]

Classification Report:
precision    recall   f1-score   support
          0       1.00      1.00      1.00      229
          1       1.00      0.99      1.00      183

accuracy                           1.00      412
macro avg       1.00      1.00      1.00      412
weighted avg    1.00      1.00      1.00      412

--- Activation: tanh, Test size: 0.3 ---

Confusion Matrix:
[[229  0]
 [ 0 183]]

Classification Report:
precision    recall   f1-score   support
          0       1.00      1.00      1.00      229
          1       1.00      1.00      1.00      183

accuracy                           1.00      412
macro avg       1.00      1.00      1.00      412
weighted avg    1.00      1.00      1.00      412

--- Activation: identity, Test size: 0.3 ---

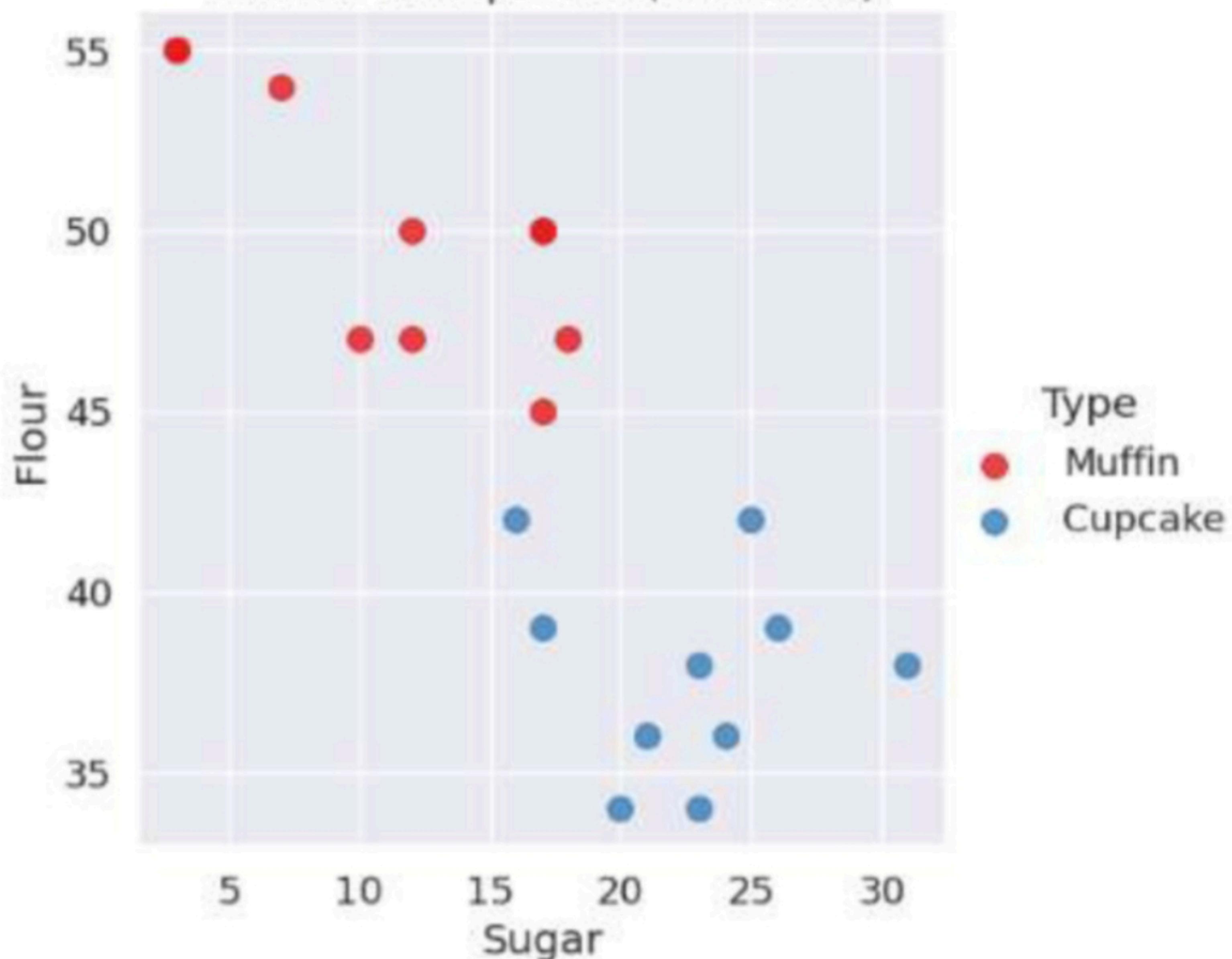
Confusion Matrix:
[[226  3]
 [ 2 181]]

Classification Report:
precision    recall   f1-score   support
          0       0.99      0.99      0.99      229
          1       0.98      0.99      0.99      183

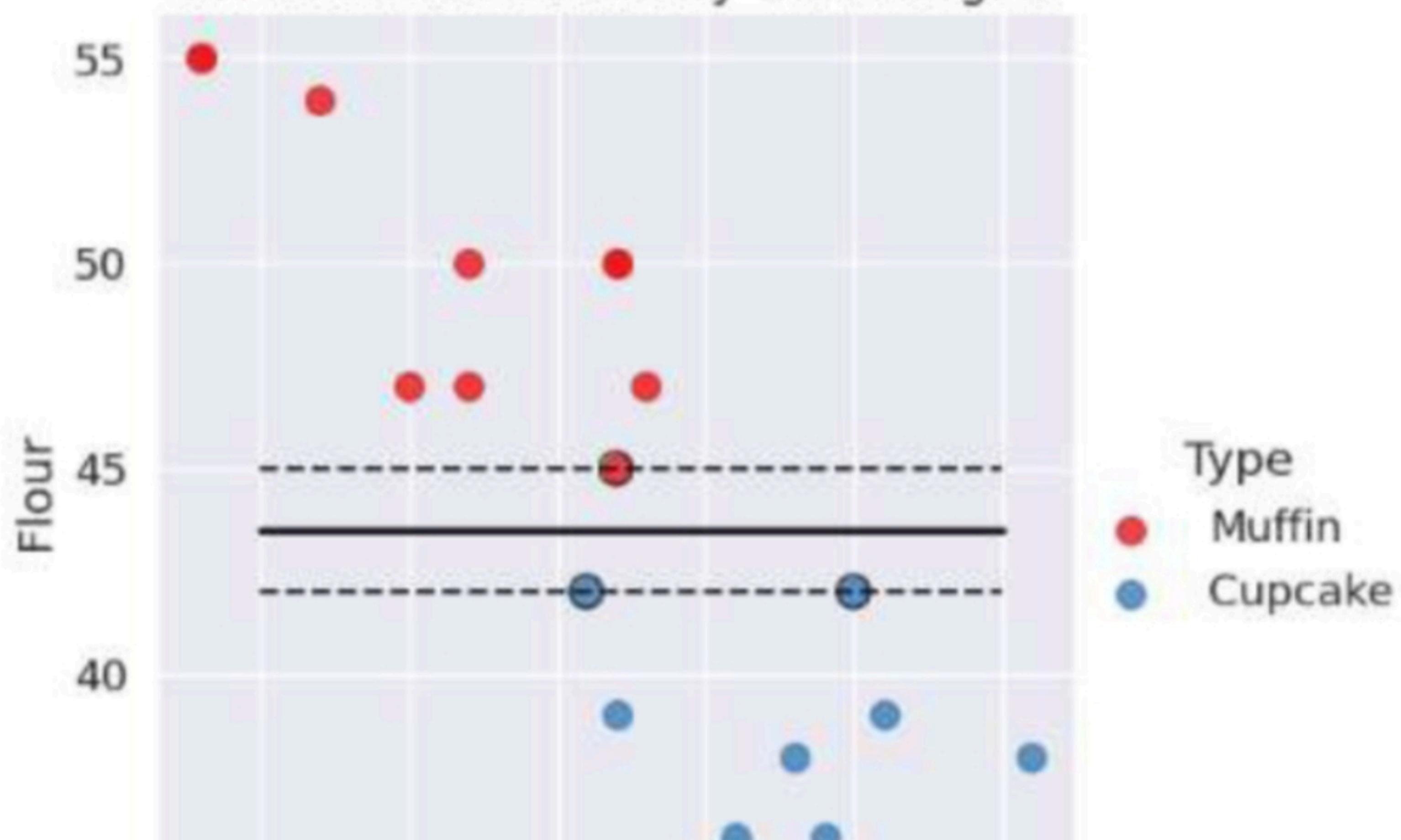
accuracy                           0.99      412
macro avg       0.99      0.99      0.99      412
weighted avg    0.99      0.99      0.99      412
```

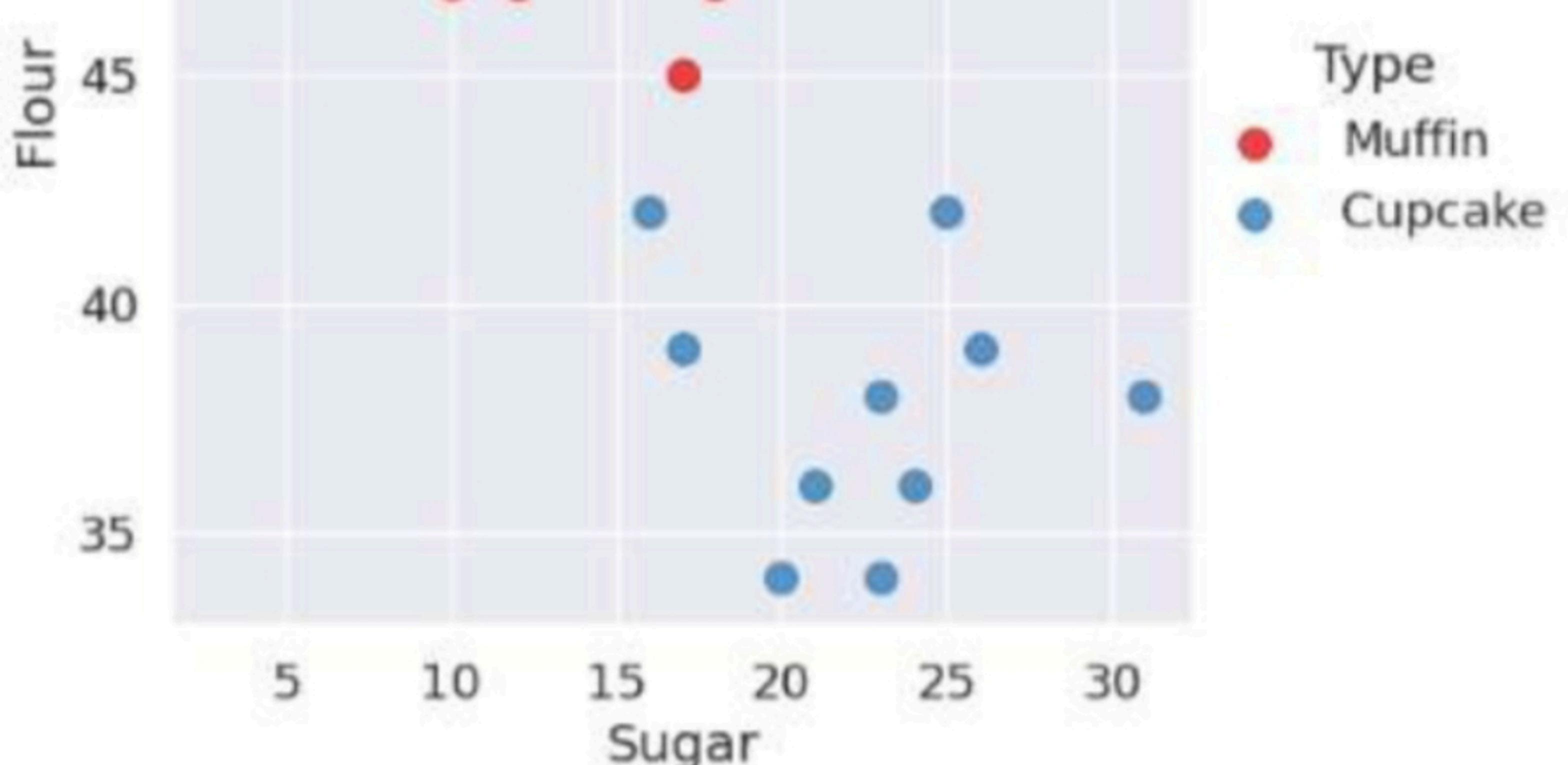
	Type	Flour	Milk	Sugar	Butter	Egg	Baking Powder	Vanilla	Salt
0	Muffin	55	28	3	7	5		0	0
1	Muffin	47	24	12	6	9		0	0
2	Muffin	47	23	18	6	4		0	0
3	Muffin	45	11	17	17	8		0	0
4	Muffin	50	25	12	6	5		1	0
(20, 9)									

Muffins vs Cupcakes (Raw Data)

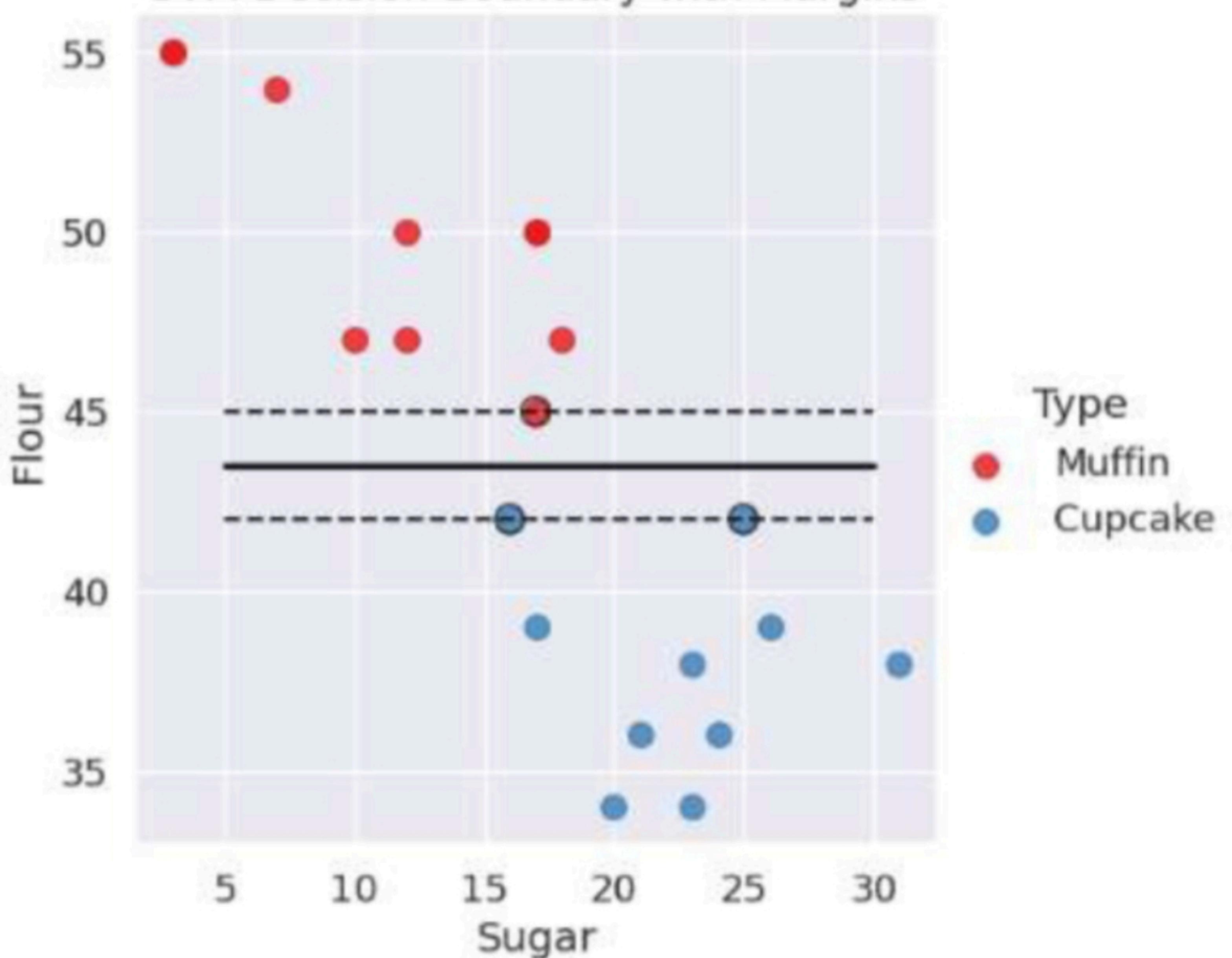


SVM Decision Boundary with Margins





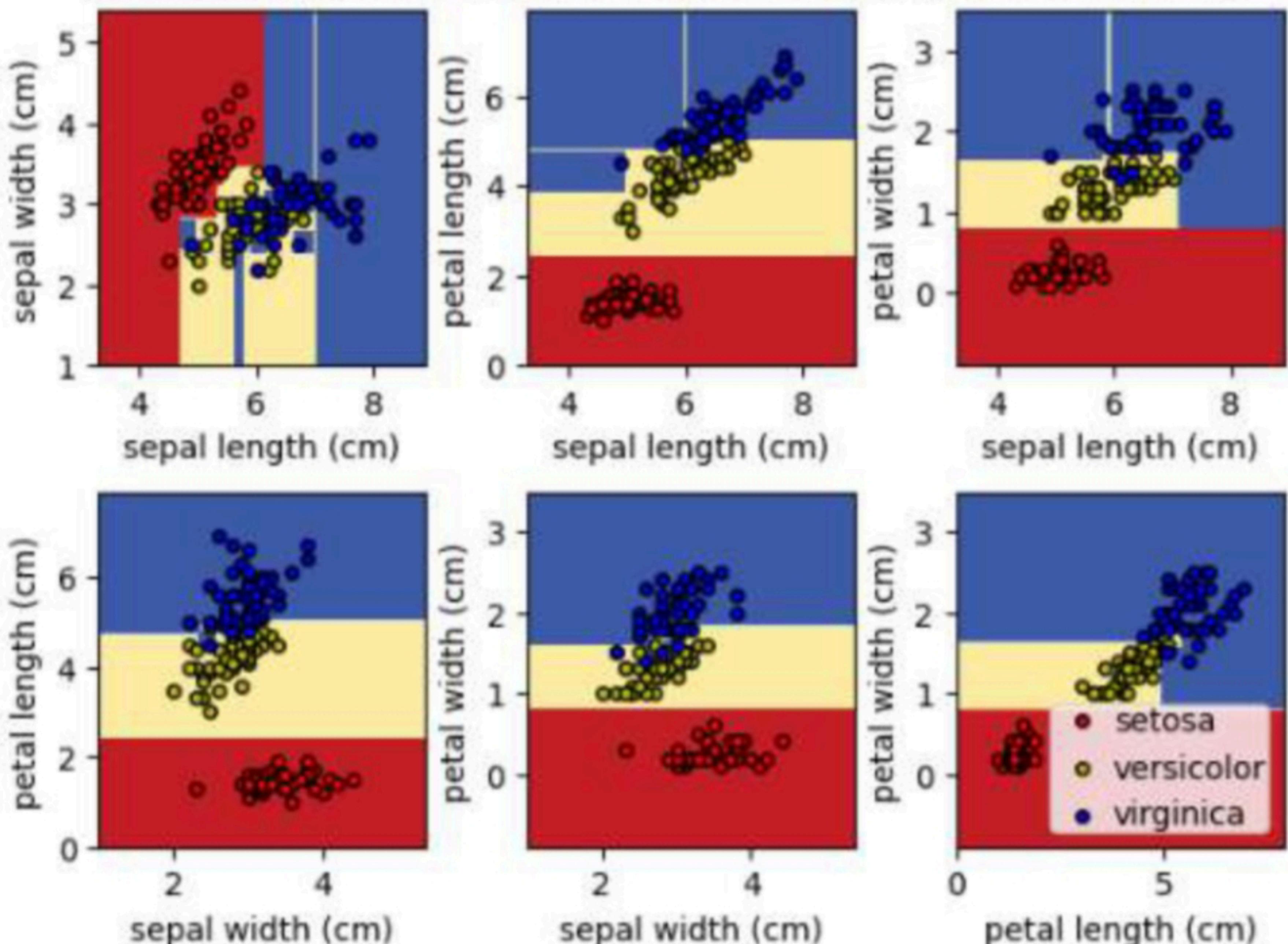
SVM Decision Boundary with Margins



```
[0 1 0 0]
[[2 0]
 [1 1]]
```

	precision	recall	f1-score	support
0	0.67	1.00	0.80	2
1	1.00	0.50	0.67	2
accuracy			0.75	4
macro avg	0.83	0.75	0.73	4
weighted avg	0.83	0.75	0.73	4

## Decision surface of decision trees trained on pairs of features



## Decision tree trained on all the Iris features

