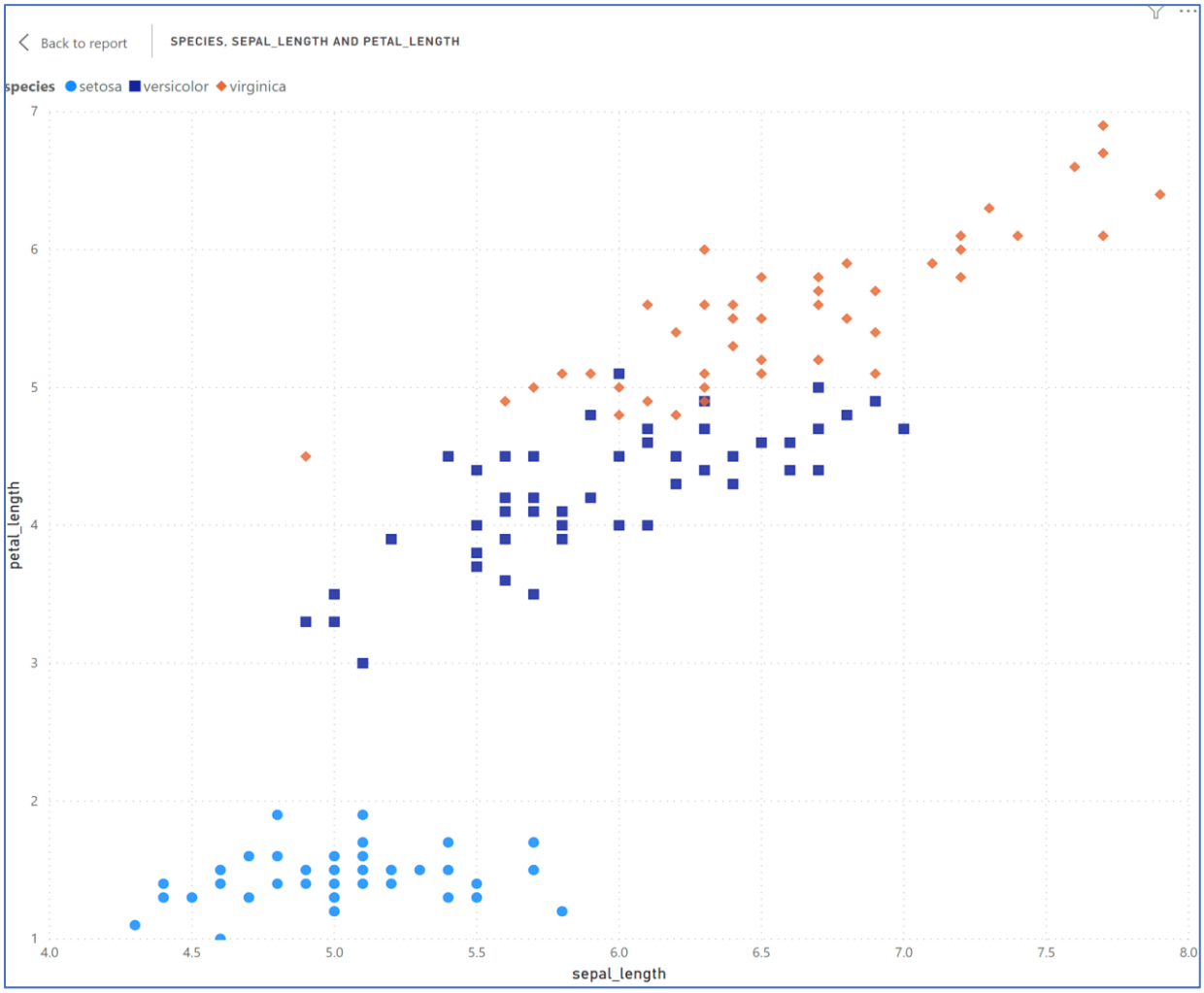
Quiz 3 – Confusion Matrix

17 November 2019

1. Using the Iris Data set, for each data pair, create the following:
    - **a.** Limiter Matrix
    - **b.** Species Matrix
    - **c.** **confusion matrix**
    - **d.** **accuracy matrix**

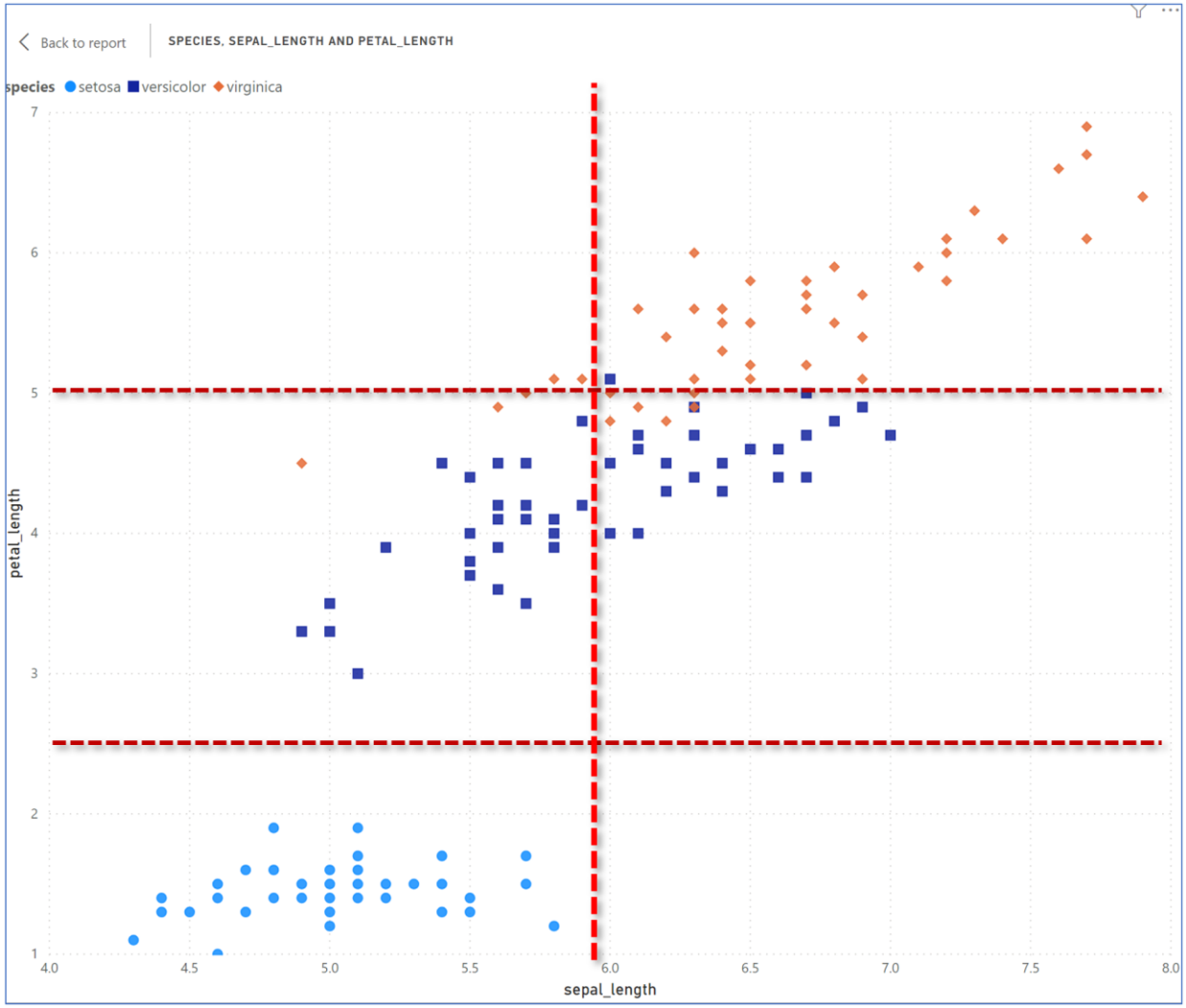
Sample:
Using the data pairs SEPAL_LENGTH and PETAL LENGTH:



Remember to always plot the following details:

SPECIES	**Count of species**
Setosa	50
Versicolor	50
Virginica	50
Grand Total	**150**

Plot the limiter lines that will determine the boundaries of prediction.

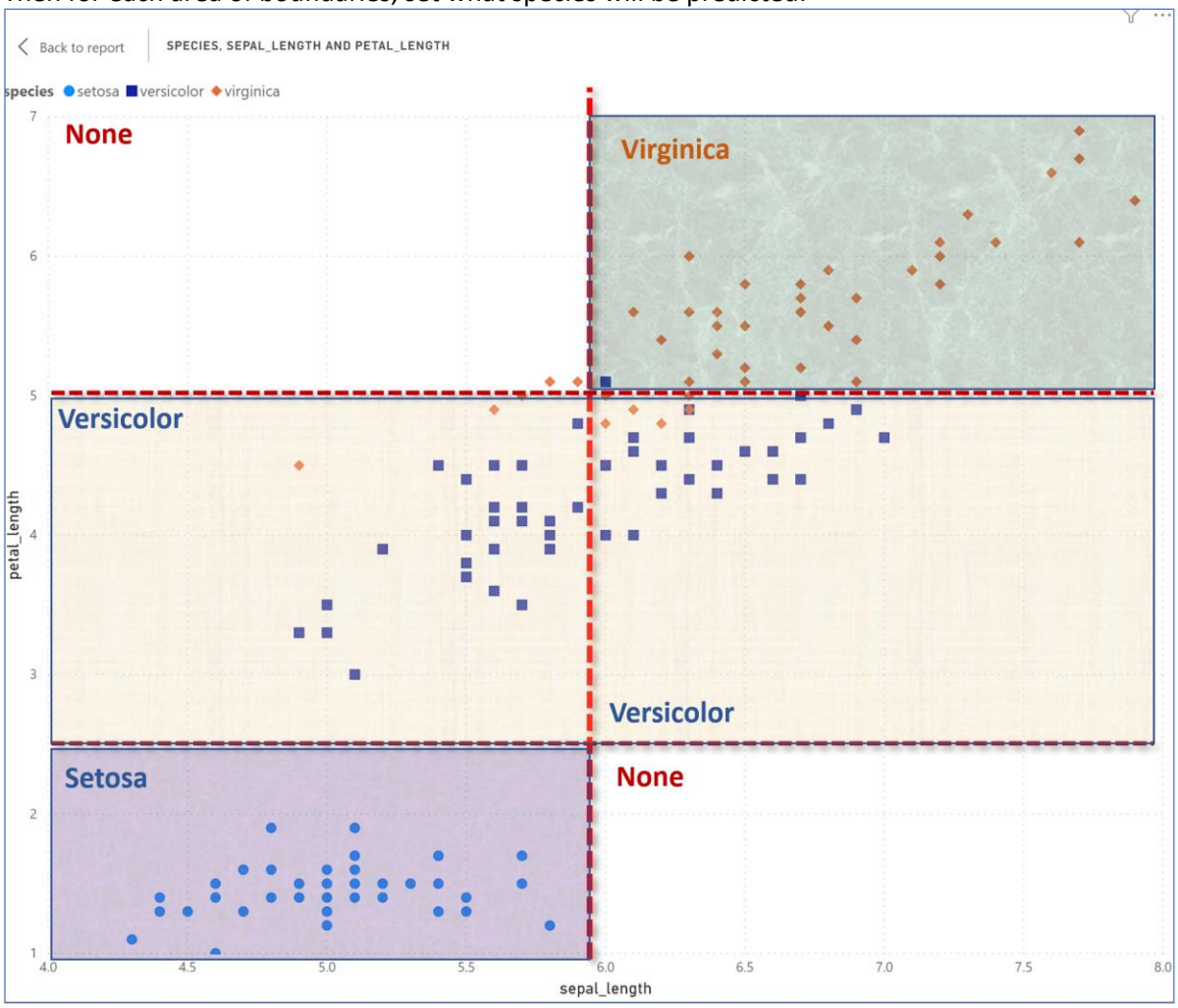


The following limiters (Limiter Matrix) were set:

META DATA	LIMIT		
SEPAL LENGTH	X > 6.0	X ≤ 6.0	
PETAL LENGTH	Y ≤ 2.5	2.5 < Y ≤ 5.0	Y > 5.0

- Note: *This is just an example. Determine the limiter that will give the highest accuracy.*

Then for each area of boundaries, set what species will be predicted:



Then create a **Species Matrix** based on the limits that you have set

Meta Data	**Sepal Length**	
Petal Length	**X ≤ 6.0**	**X > 6.0**
Y ≤ 2.5	SETOSA	NONE
2.5 < Y ≤ 5.0	VERSICOLOR	VERSICOLOR
Y > 5.0	NONE	VIRGINICA

Then for each parameter, count the correct and wrong prediction:

Petal Length	Sepal Length X ≤ 6.0	X >6	Grand Total
Y ≤ 2.5	**50**		50
Correct	50		50
2.5 < Y ≤ 5.0	**34**	**24**	58
Wrong	5	4	9
Correct	29	20	49
Y>5.0	**5**	**37**	42
Wrong	5		5
Correct		37	37
Grand Total	**89**	**61**	**150**

Now with this, you can now create the **Confusion Matrix**

Prediction	Correct	Wrong	Grand Total
NONE		5	5
SETOSA	50		50
VERSICOLOR	49	9	58
VIRGINICA	37		37
Grand Total	**136**	**14**	**150**

Then create the **Accuracy Matrix**.

Prediction	Count	
Wrong	14	9%
Correct	136	91%
Grand Total	**150**	