KEY_Practice19_Scatterplots

May 28, 2020

1 Scatterplots

Let's start by importing `seaborn` and loading/previewing our iris data

[1]:
```
# import seaborn
import seaborn as sns
# set up for inline plotting
%matplotlib inline
```

[2]:
```
# load iris and preview the data
iris = sns.load_dataset("iris")
iris.head(10)
```

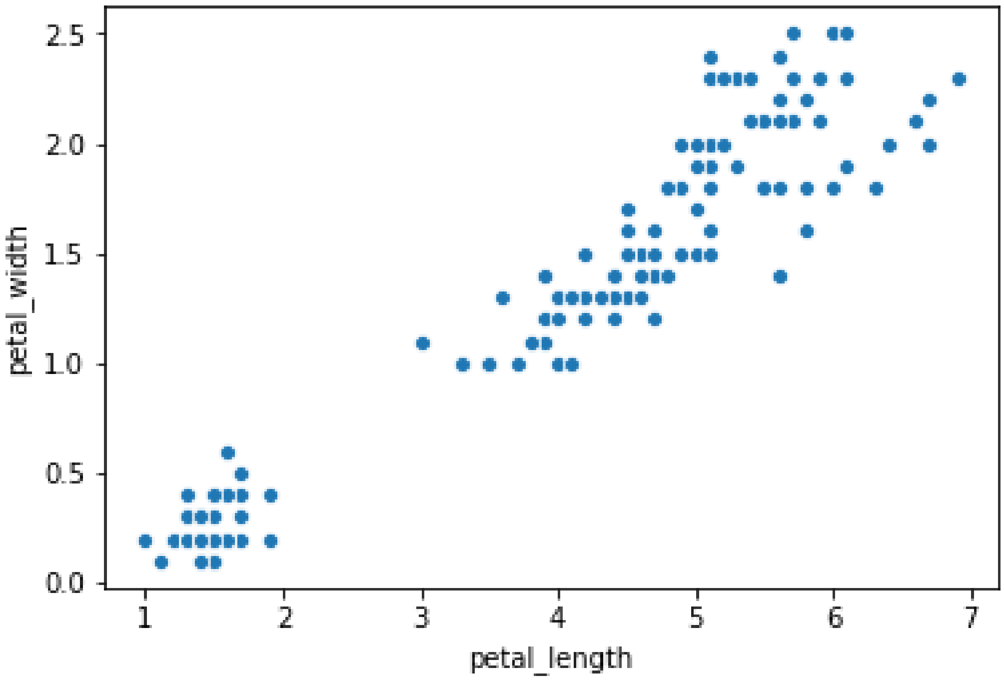
[2]:

	sepal_length	sepal_width	petal_length	petal_width	species
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
5	5.4	3.9	1.7	0.4	setosa
6	4.6	3.4	1.4	0.3	setosa
7	5.0	3.4	1.5	0.2	setosa
8	4.4	2.9	1.4	0.2	setosa
9	4.9	3.1	1.5	0.1	setosa

In the last lesson we examined the relationship between `sepal_length` and `sepal_width`. Now let's look at this relationship for `petal_length` and `petal_width` using a scatterplot.

[3]:
```
# plot petal_length vs petal_width
sns.scatterplot('petal_length', 'petal_width', data=iris)
```

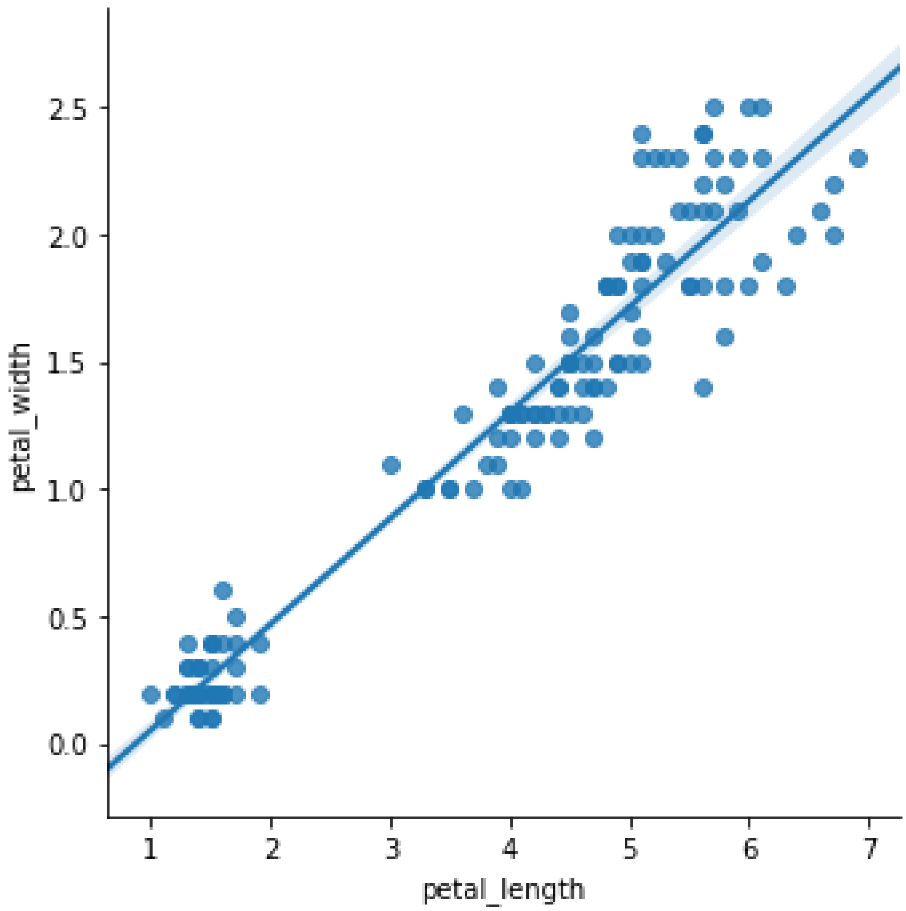
[3]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x10e16e0f0>
```



This relationship is definitely more clear without any stratification than our last example in the lesson. Let's create this plot with a **correlation trendline** to visualize the trend even better.

[4]:
```
# plot petal_length vs petal_width with trendline
sns.lmplot('petal_length', 'petal_width', data=iris)
```

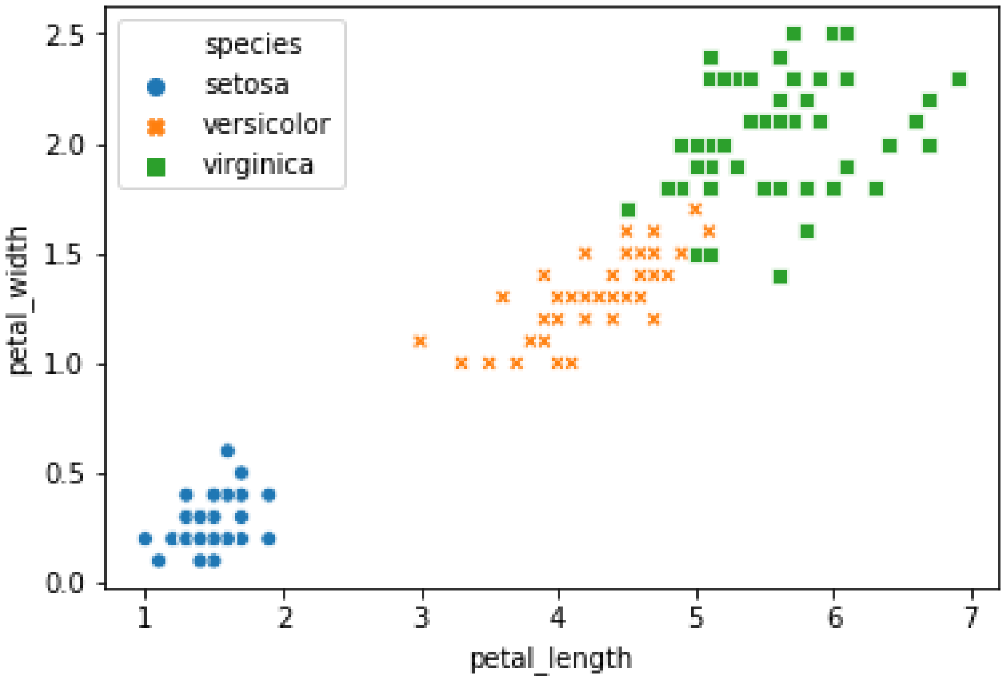
[4]: <seaborn.axisgrid.FacetGrid at 0x103598da0>



Now let's *stratify* the plot by the `species` variable, using **both** color and marker shape.

[5]:
```
# plot petal_length vs petal_width
sns.scatterplot('petal_length', 'petal_width', hue='species', style =␣
↪'species',data=iris)
```

[5]: `<matplotlib.axes._subplots.AxesSubplot at 0x111594cf8>`

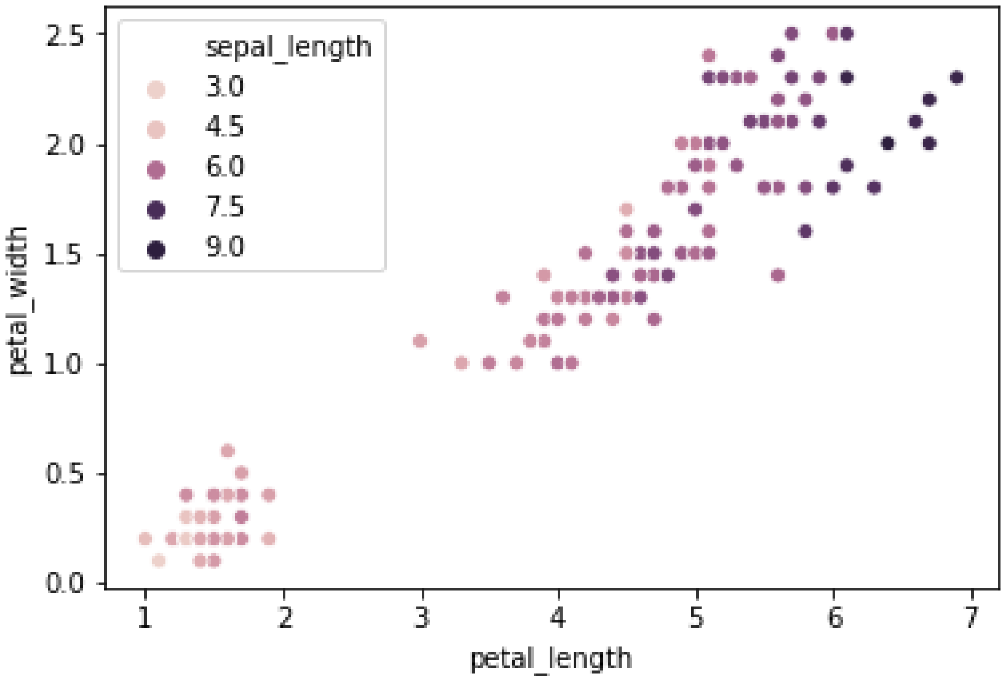


We can very clearly see the separation of our three species across these two variables.

Now, let's color our graph using the `sepal_length` variable (no marker shape). What do you notice about the way the graph is colored now?

[6]:
```
# plot petal_length vs petal_width
sns.scatterplot('petal_length', 'petal_width', hue='sepal_length', data=iris)
```

[6]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x11181b588>
```



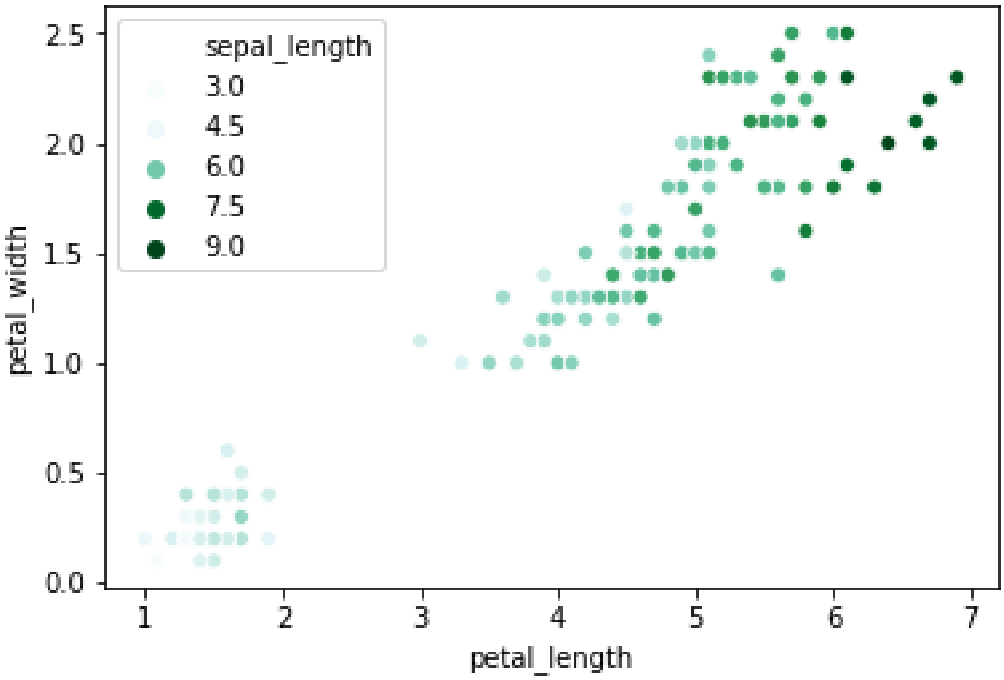
Notice that `sepal_length` is a *continuous* variable, compared to the *categorical* variable `species` we originally used to color our plot. Seaborn can tell the difference by examining the `type` of the stratifying variable - `int` and `float` variables are *continuous* and `string` and `boolean` variables are seen as *categorical*.

It is important to consider variable type when choosing the color palette to use in our plots. *Continuous* variables require *sequential* color palettes (that go from light to dark shades, for example) and *categorical* variables require *qualitative* color palettes. You can find built-in seaborn color palettes here: https://seaborn.pydata.org/tutorial/color_palettes.html

After looking through the link above, choose a new **appropriate** color palette for the plot above.

[7]:
```
# plot petal_length vs petal_width
sns.scatterplot('petal_length', 'petal_width', hue='sepal_length',␣
↪palette="BuGn" ,data=iris)
```

[7]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x111860b70>
```



Based on this plot, what can you tell about the relationship of `sepal_length` compared to `petal_length`, `petal_width`?