

tu_10_multiAxisFigs_2_HW

March 29, 2023

1 Tutorial 10 homework

In this homework, you'll make a figure containing a scatter plot with marginal histograms similar to what we made earlier. Now, however, we have a few more tools at our disposal so we can probably make a better figure.

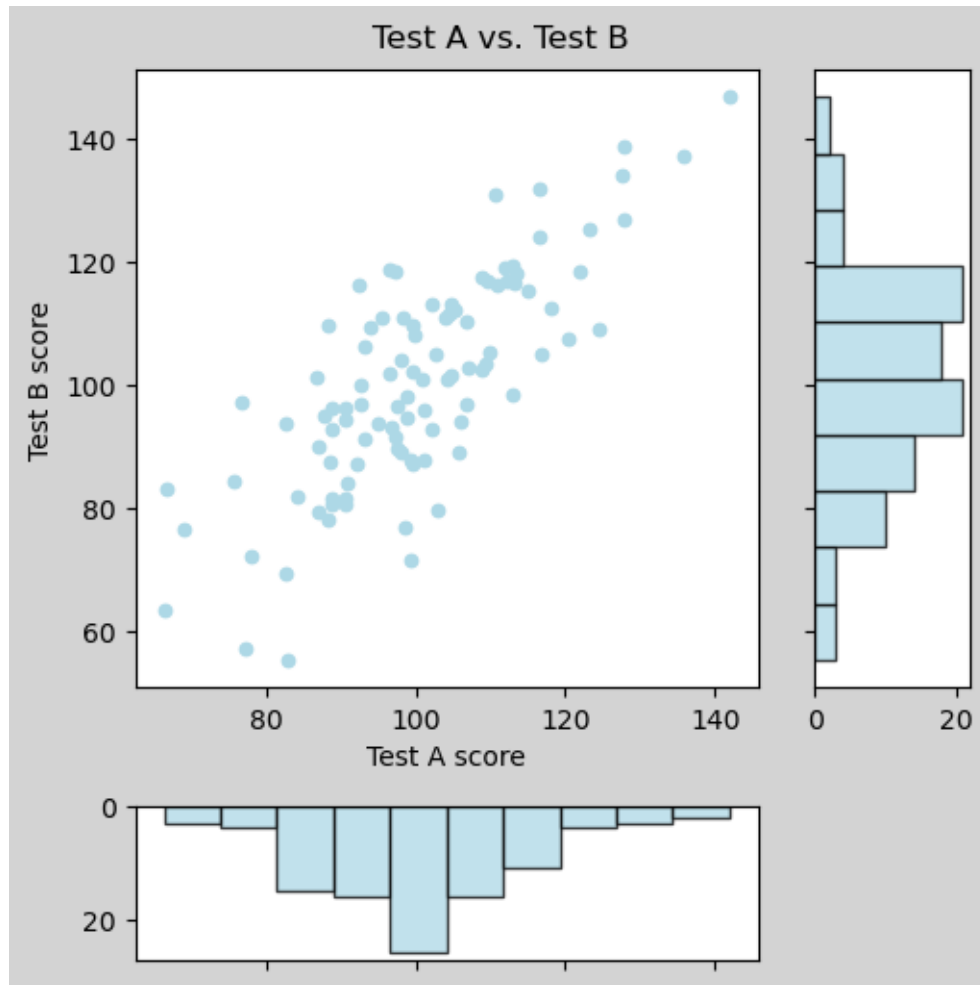
Here is some code to make a simulated data consisting of the scores on two tests (A and B) taken by 100 people.

```
[3]: import numpy as np

my_rng = np.random.default_rng(seed = 42)
test_a = my_rng.normal(100, 15, (100,1))
test_b = test_a + my_rng.normal(0, 10, test_a.shape)
a_b = (test_a, test_b)
```

Let's make a figure featuring a scatter plot of the scores against one another, along with two supporting panels showing the histograms of the two test scores.

An example figure would look something like this:



But your goal isn't to make a figure that looks exactly like this; your goal is to make a figure that looks better than this!

```
[2]: import matplotlib.pyplot as plt
```

```
[100]: #data = {'Test A vs. Test B': (test_a, test_b), 'Test B Score': test_b, 'Test A Score': test_a}

gs_kw = dict(width_ratios=[4, 1],
              height_ratios=[4, 1],
              wspace=0.1, hspace=0.1)

fig, axd = plt.subplot_mosaic([[ 'Test A vs. Test B', 'Test B Score'],
                              [ 'Test A Score', 'n/a']],
                              gridspec_kw = gs_kw,
                              figsize=(7,6),
                              layout="constrained")

fig.set_facecolor('lavender')
```

```

fig.suptitle('Test A vs. Test B')

#scatter plot
axd['Test A vs. Test B'].scatter(test_a, test_b, color = '#c83d95')
axd['Test A vs. Test B'].set_ylabel('Test B')
axd['Test A vs. Test B'].set_xlabel('Test A')

#test a hist
axd['Test A Score'].hist(test_a, bins = 11, edgecolor = 'white', color = '#73b761', orientation = "vertical")
axd['Test A Score'].invert_yaxis()
axd['Test A Score'].set_xticks(ticks = [])

#test b hist
axd['Test B Score'].hist(test_b, orientation = "horizontal", bins = 11, edgecolor = 'white', color = '#73b761')
axd['Test B Score'].set_yticks(ticks = [])

#fourth panel
axd['n/a'].axis('off');

```

