

- Shin's Lab -

Python for Data Visualization

Python for Data Visualization

-Chapter.4 Bar Plot -

4-00. Intro to Bar Plot

4-01. Bar Plot Basics

4-02. Multiple Bar Plots

4-03. Rect Objects

4-04. Horizontal Bar Plots

4-05. Exercises

Python for Data Visualization

-Chapter.4 Bar Plot -

4-02. Multiple Bar Plots

1. width and align Arguments
2. Multiple Bar Plots(2 Bar Plots)

Lecture.4-02 Multiple Bar Plots

1. width and align Arguments

```
import matplotlib.pyplot as plt
import numpy as np
```

```
np.random.seed(0)
```

```
n_data = 10
```

```
data = np.random.uniform(10, 100, (n_data,))
```

```
data_idx = np.arange(n_data)
```

```
fig, ax = plt.subplots(figsize=(10, 7))
```

```
xticks = np.arange(-1, 10, 0.5)
```

```
ax.set_xticks(xticks)
```

```
ax.set_xticklabels(xticks,
                  rotation=30)
```

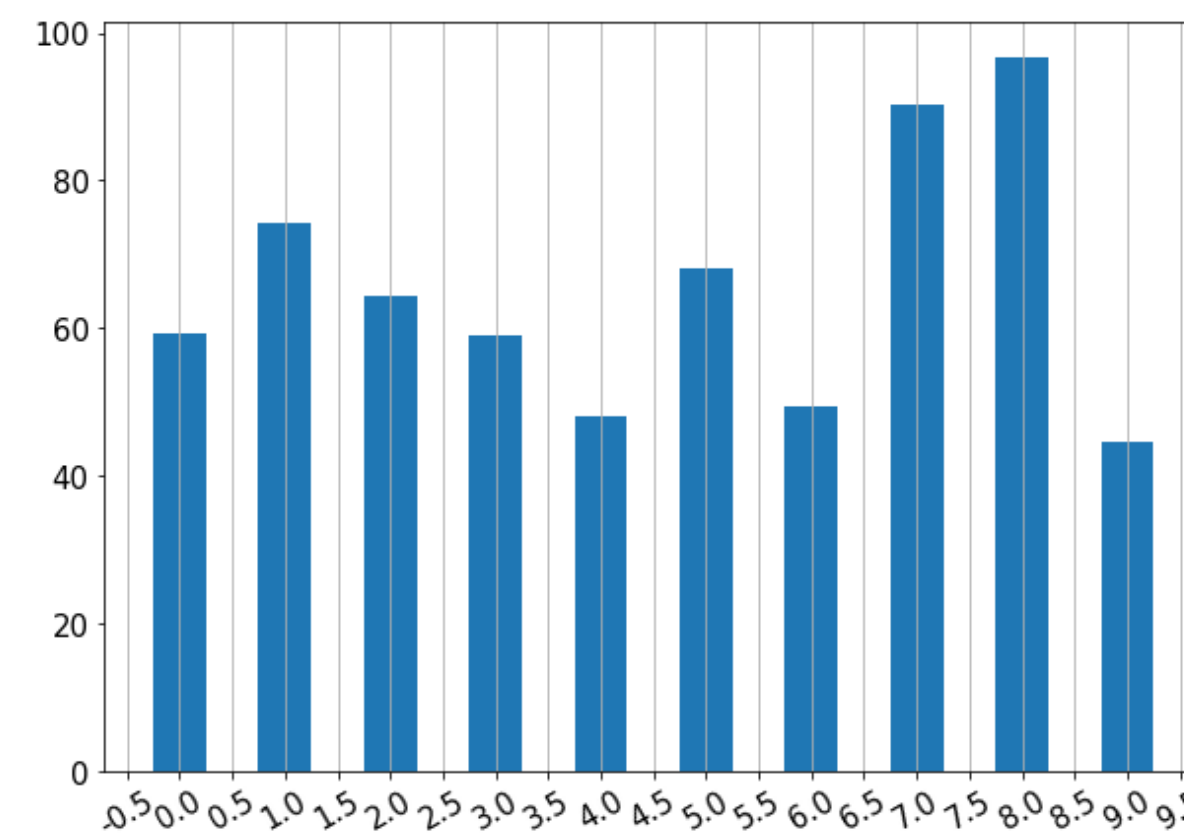
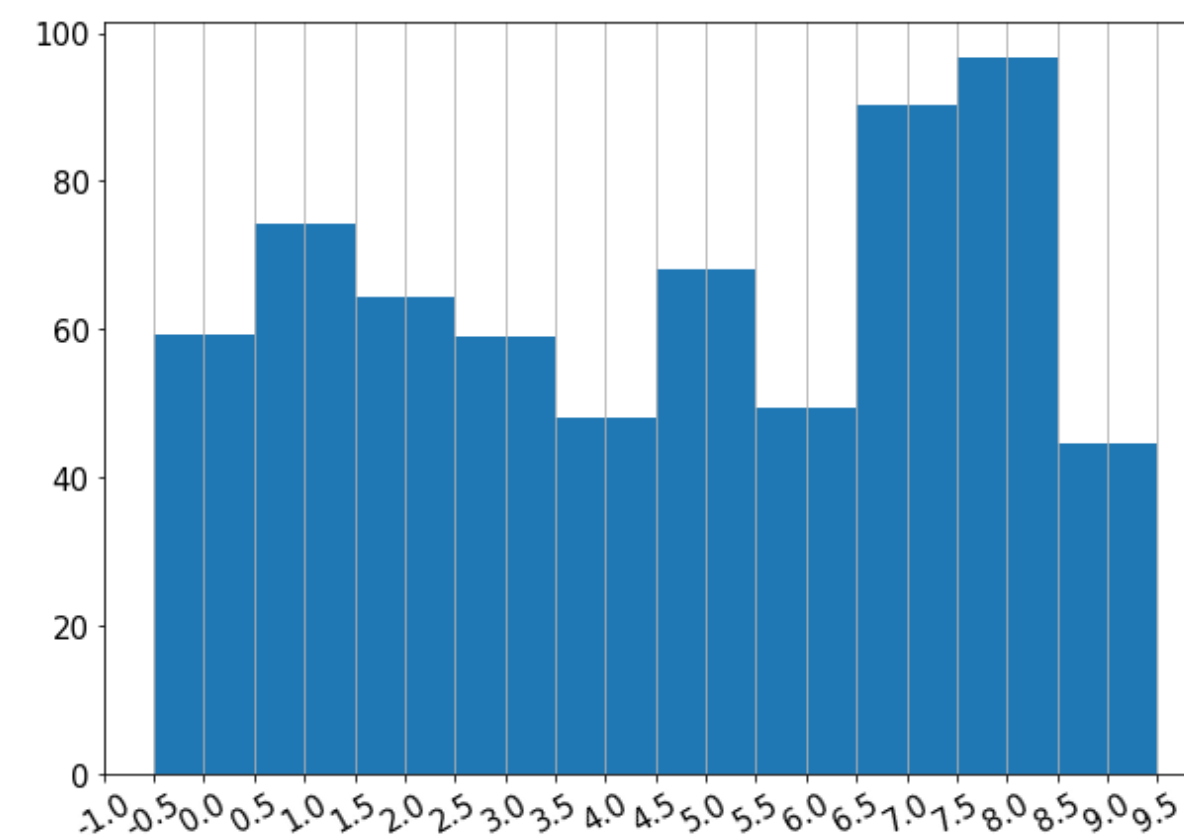
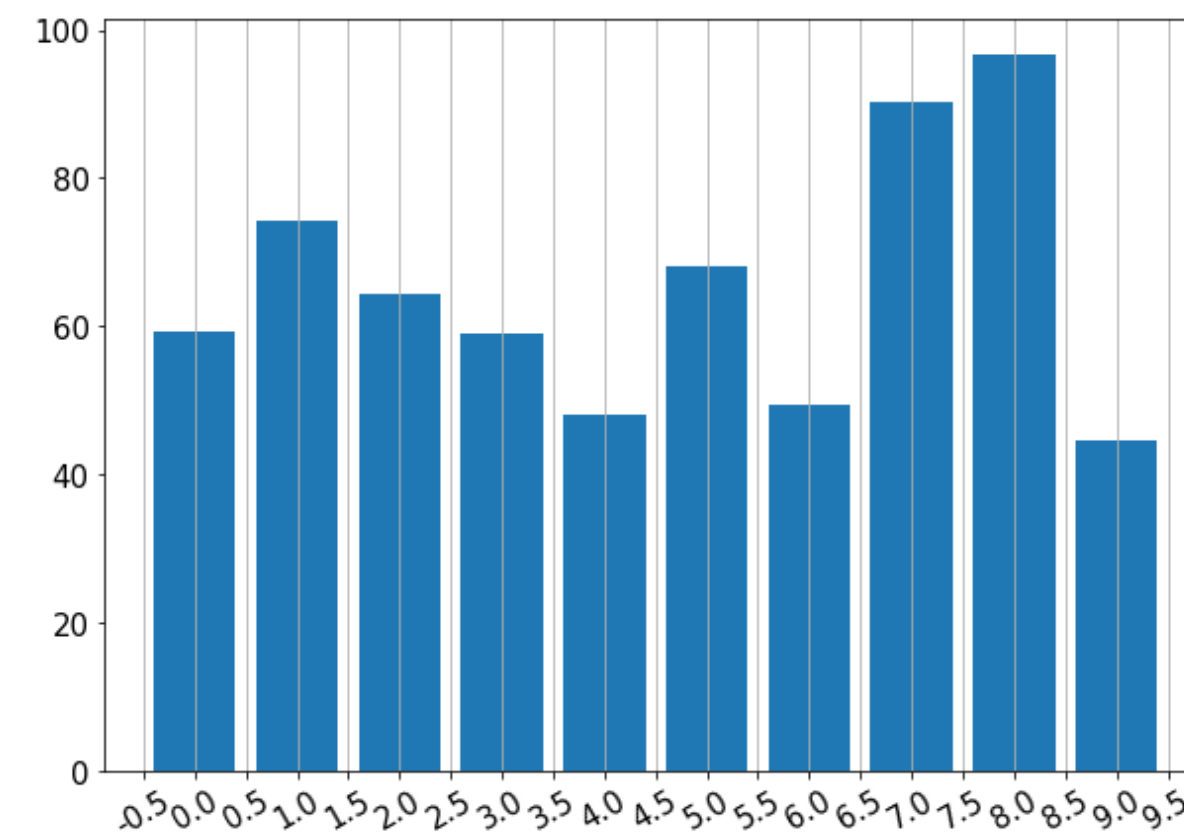
```
ax.grid(axis='x')
```

```
ax.tick_params(labelsize=15)
```

```
ax.bar(data_idx, data)
```

```
-----
ax.bar(data_idx, data,
      width=1)
```

```
-----
ax.bar(data_idx, data,
      width=0.5)
```



1. width and align Arguments(width)

```
import matplotlib.pyplot as plt
import numpy as np

np.random.seed(0)

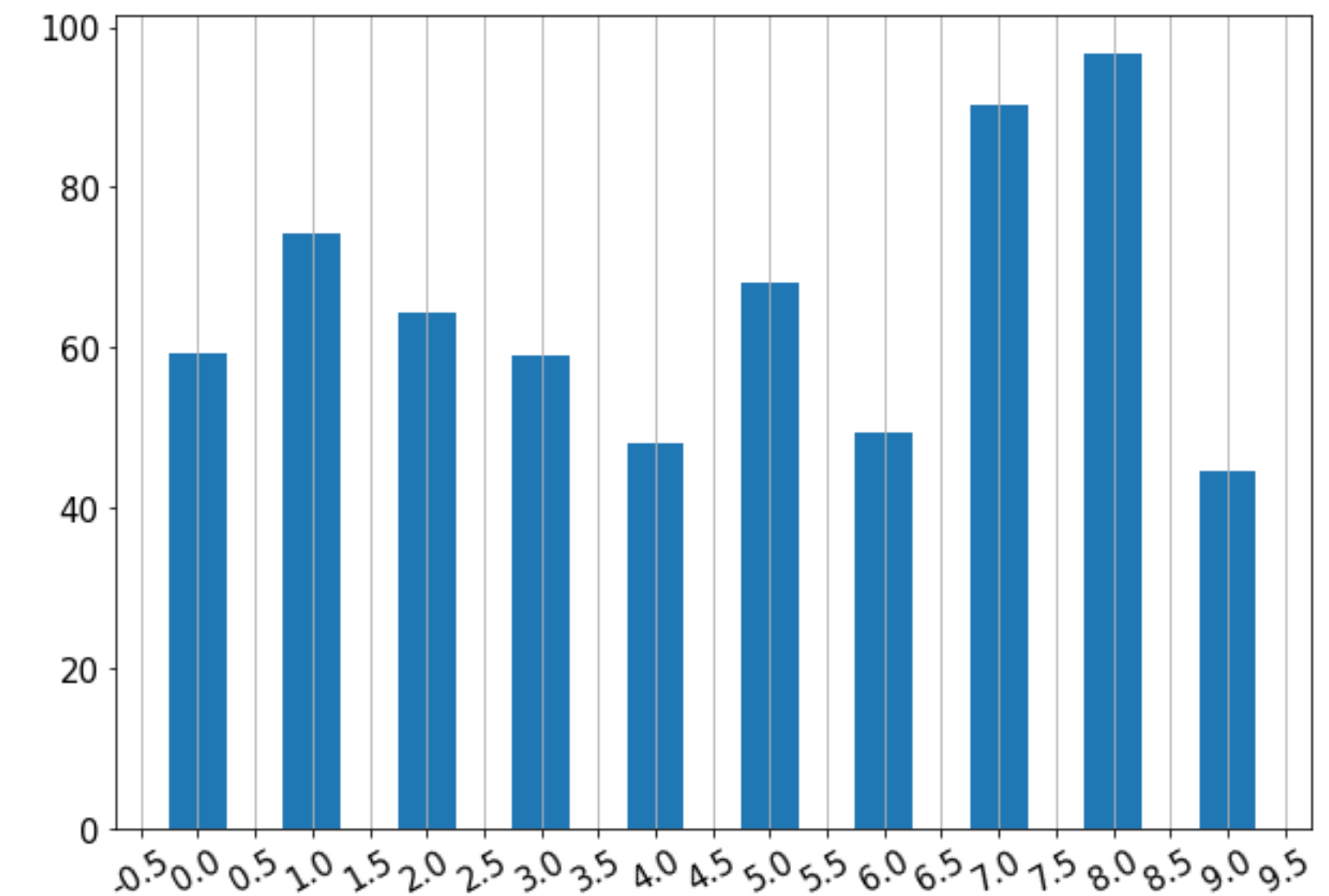
n_data = 10
data = np.random.uniform(10, 100, (n_data,))
data_idx = np.arange(n_data)

fig, ax = plt.subplots(figsize=(10, 7))

xticks = np.arange(-1, 10, 0.5)
ax.set_xticks(xticks)
ax.set_xticklabels(xticks,
                  rotation=30)
ax.grid(axis='x')
ax.tick_params(labelsize=15)

ax.bar(data_idx, data,
       width=0.5)

-----
ax.bar(data_idx, data,
       width=0.5,
       align='center')
```



1. width and align Arguments(align)

```
import matplotlib.pyplot as plt
import numpy as np

np.random.seed(0)

n_data = 10
data = np.random.uniform(10, 100, (n_data,))
data_idx = np.arange(n_data)

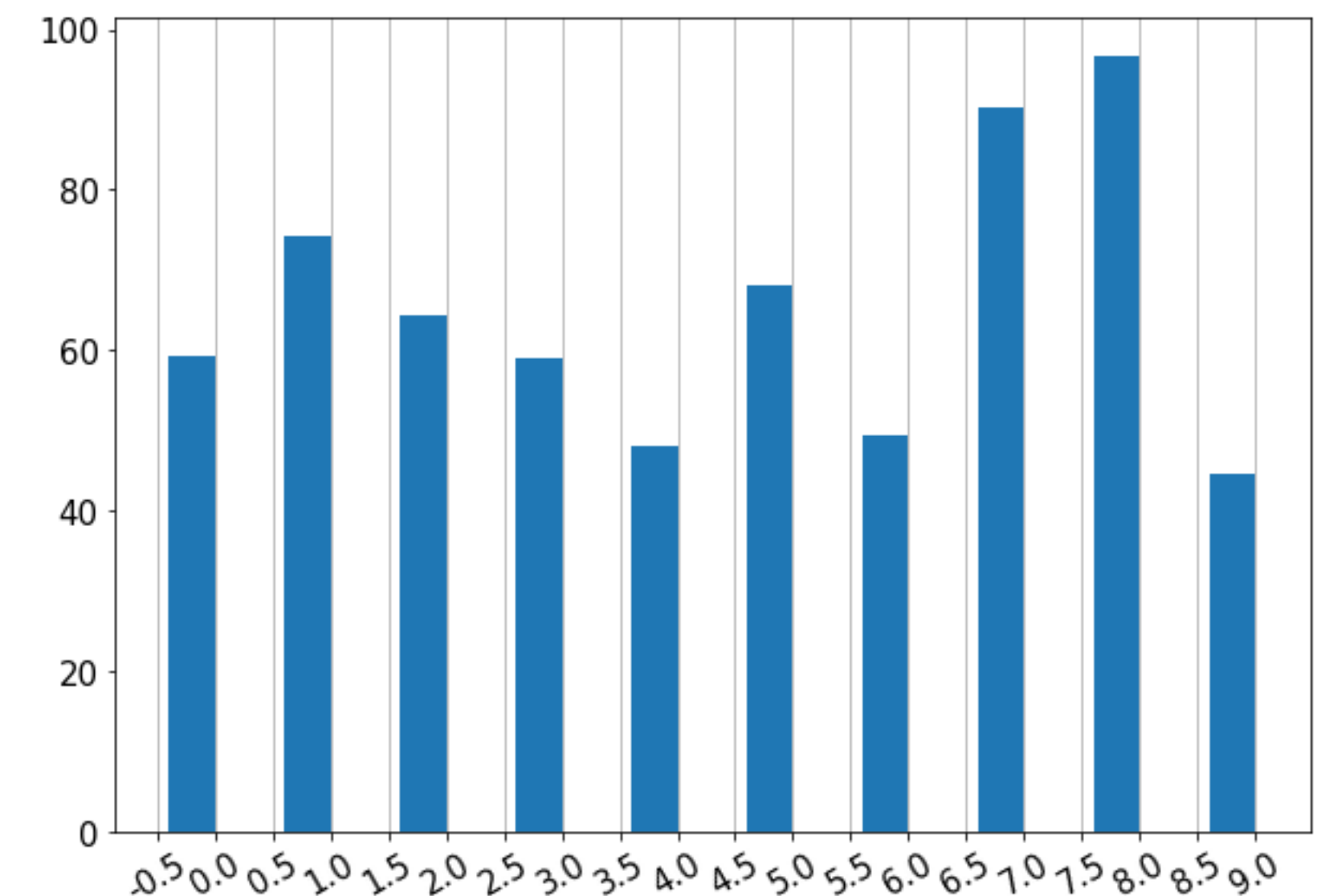
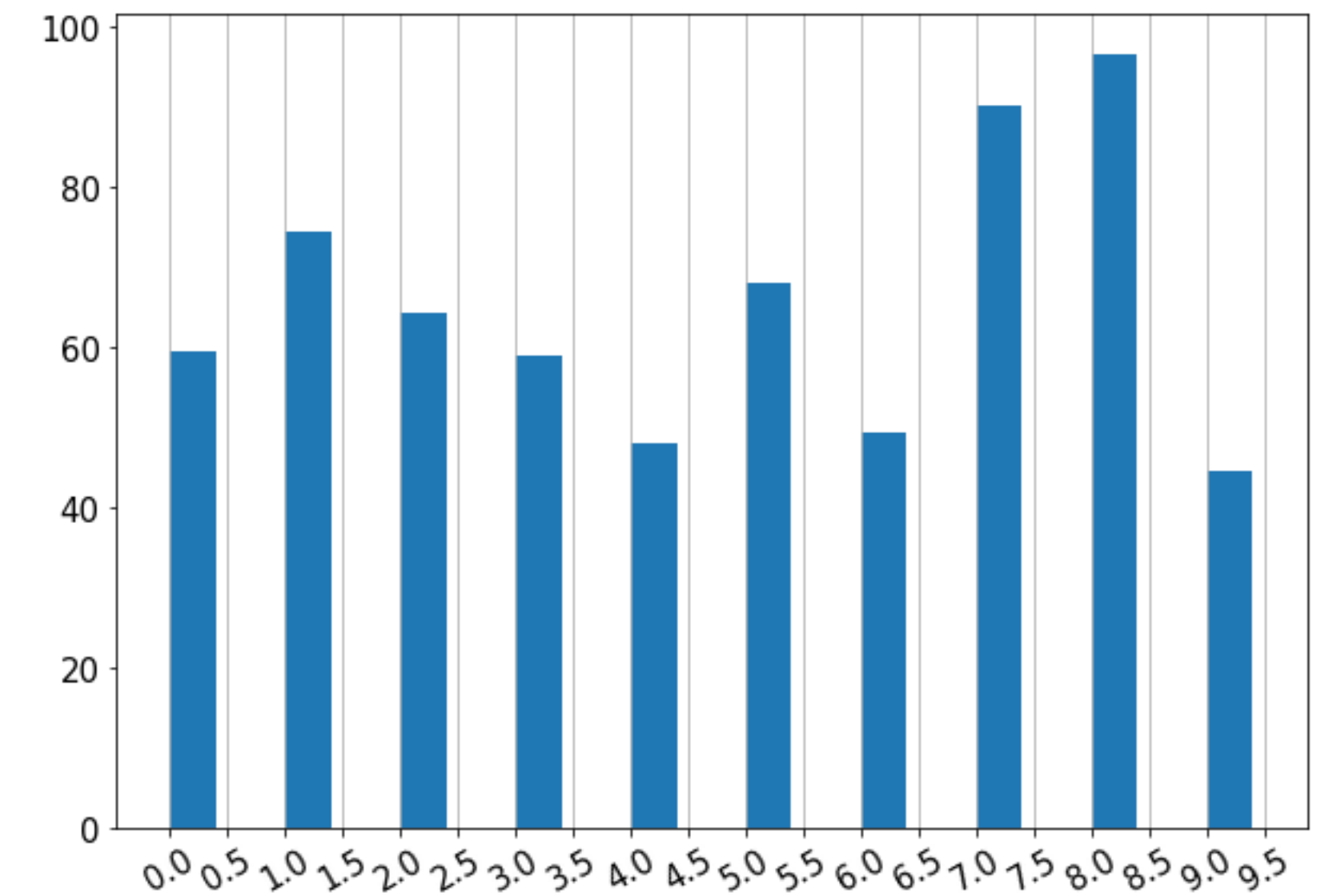
fig, ax = plt.subplots(figsize=(10, 7))

xticks = np.arange(-1, 10, 0.5)
ax.set_xticks(xticks)
ax.set_xticklabels(xticks,
                    rotation=30)
ax.grid(axis='x')
ax.tick_params(labelsize=15)

ax.bar(data_idx, data,
        width=0.4,
        align='edge')

-----

ax.bar(data_idx, data,
        width=-0.4,
        align='edge')
```



1. width and align Arguments(align)

```
import matplotlib.pyplot as plt
import numpy as np

np.random.seed(0)

n_data = 10
data = np.random.uniform(10, 100, (n_data,))
data_idx = np.arange(n_data)

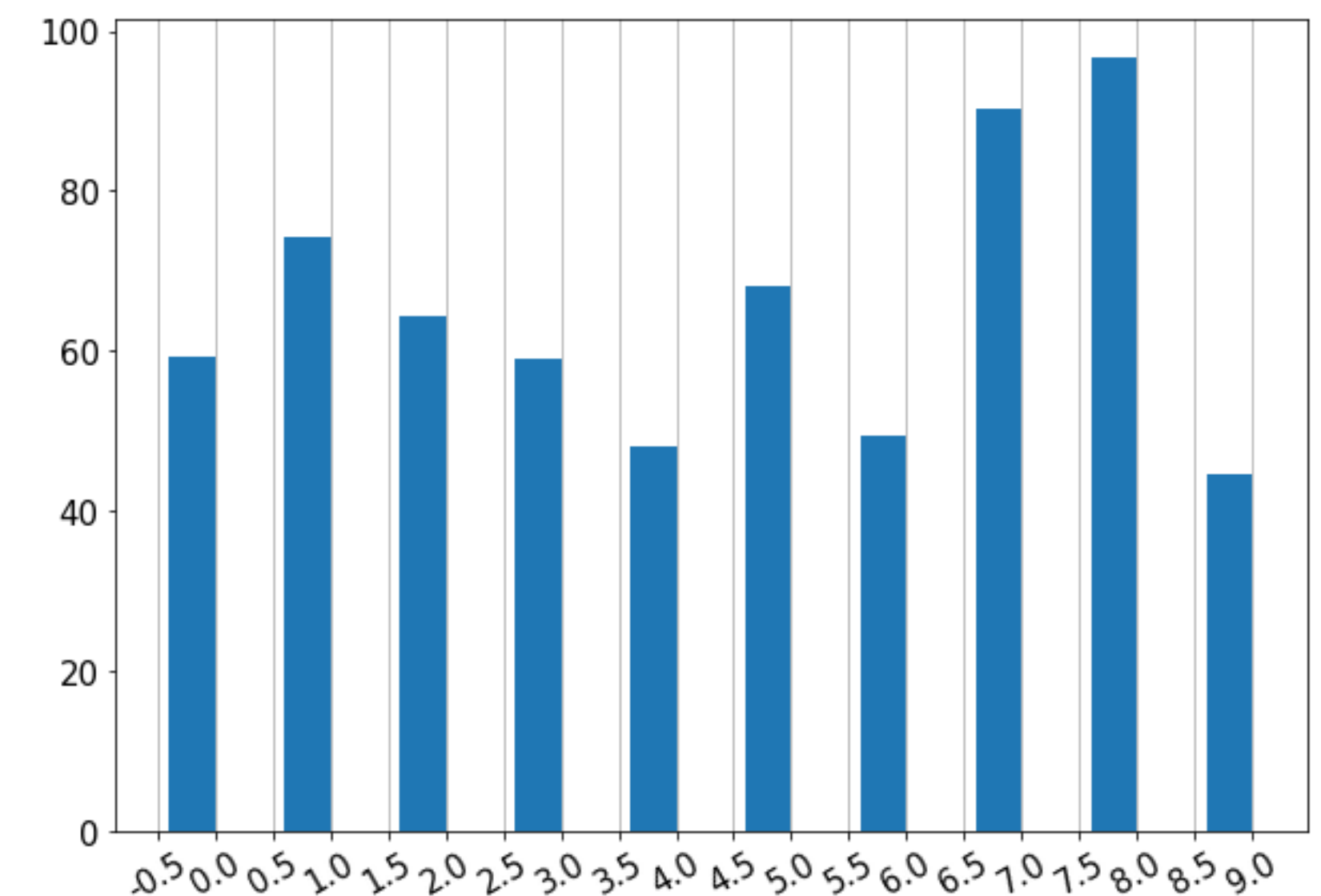
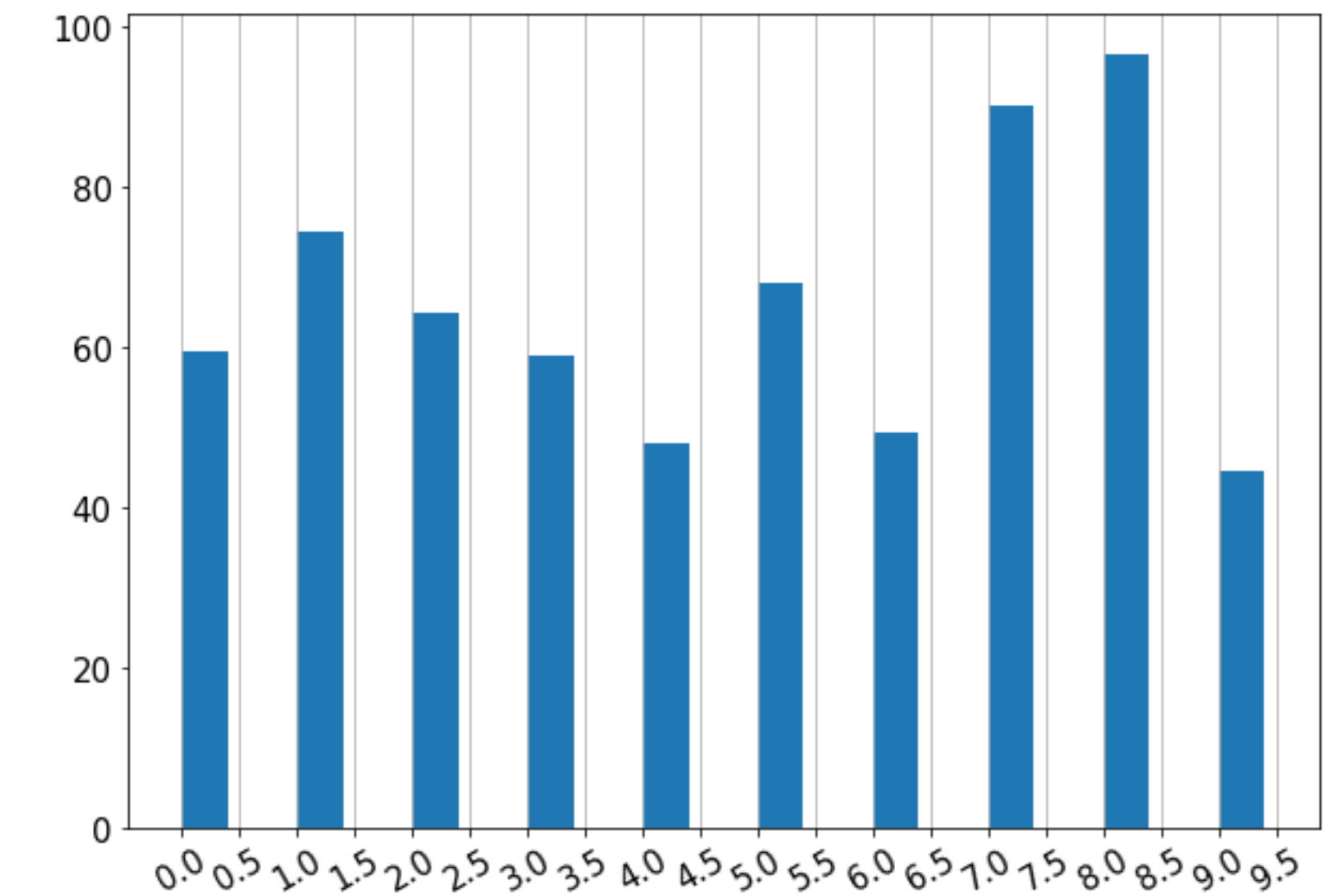
fig, ax = plt.subplots(figsize=(10, 7))

xticks = np.arange(-1, 10, 0.5)
ax.set_xticks(xticks)
ax.set_xticklabels(xticks,
                  rotation=30)
ax.grid(axis='x')
ax.tick_params(labelsize=15)
```

WIDTH = 0.4

```
ax.bar(data_idx + WIDTH/2, data,
      width=WIDTH)
```

```
ax.bar(data_idx - WIDTH/2, data,
      width=WIDTH)
```



2. Multiple Bar Plots(2 Bar Plots)

```
import matplotlib.pyplot as plt
import numpy as np
np.random.seed(0)
```

```
N = 2
```

```
WIDTH = 0.8
```

```
BAR_WIDTH = WIDTH/N
```

```
n_data = 10
data1 = np.random.uniform(10, 100, (n_data,))
data2 = np.random.uniform(10, 100, (n_data,))
data_idx = np.arange(n_data)
```

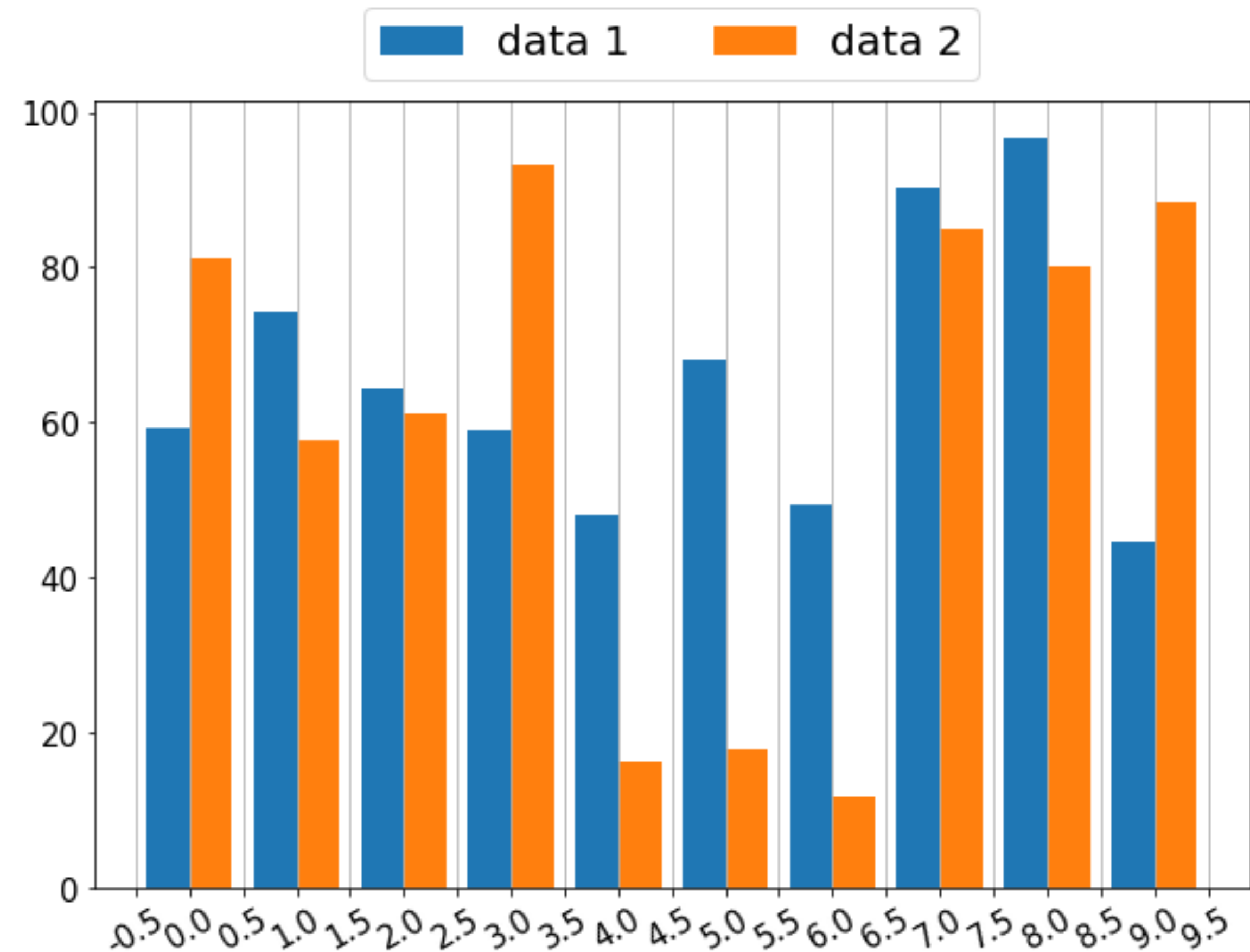
```
fig, ax = plt.subplots(figsize=(10, 7))
xticks = np.arange(-1, 10, 0.5)
ax.set_xticks(xticks)
ax.set_xticklabels(xticks,
                  rotation=30)
```

```
ax.grid(axis='x')
ax.tick_params(labelsize=15)
```

```
ax.bar(data_idx - BAR_WIDTH/2, data1,
      width=BAR_WIDTH,
      label='data 1')
```

```
ax.bar(data_idx + BAR_WIDTH/2, data2,
      width=BAR_WIDTH,
      label='data 2')
```

```
ax.legend(loc='lower center',
        bbox_to_anchor=(0.5, 1),
        fontsize=20,
        ncol=2)
```



2. Multiple Bar Plots(3 Bar Plots)

```
import matplotlib.pyplot as plt
import numpy as np
np.random.seed(0)
```

N = 3

WIDTH = 0.8

BAR_WIDTH = WIDTH/N

```
n_data = 10
data1 = np.random.uniform(10, 100, (n_data,))
data2 = np.random.uniform(10, 100, (n_data,))
data3 = np.random.uniform(10, 100, (n_data,))
data_idx = np.arange(n_data)
```

```
fig, ax = plt.subplots(figsize=(10, 7))
xticks = np.arange(-1, 10, 0.5)
ax.set_xticks(xticks)
ax.set_xticklabels(xticks,
                  rotation=30)

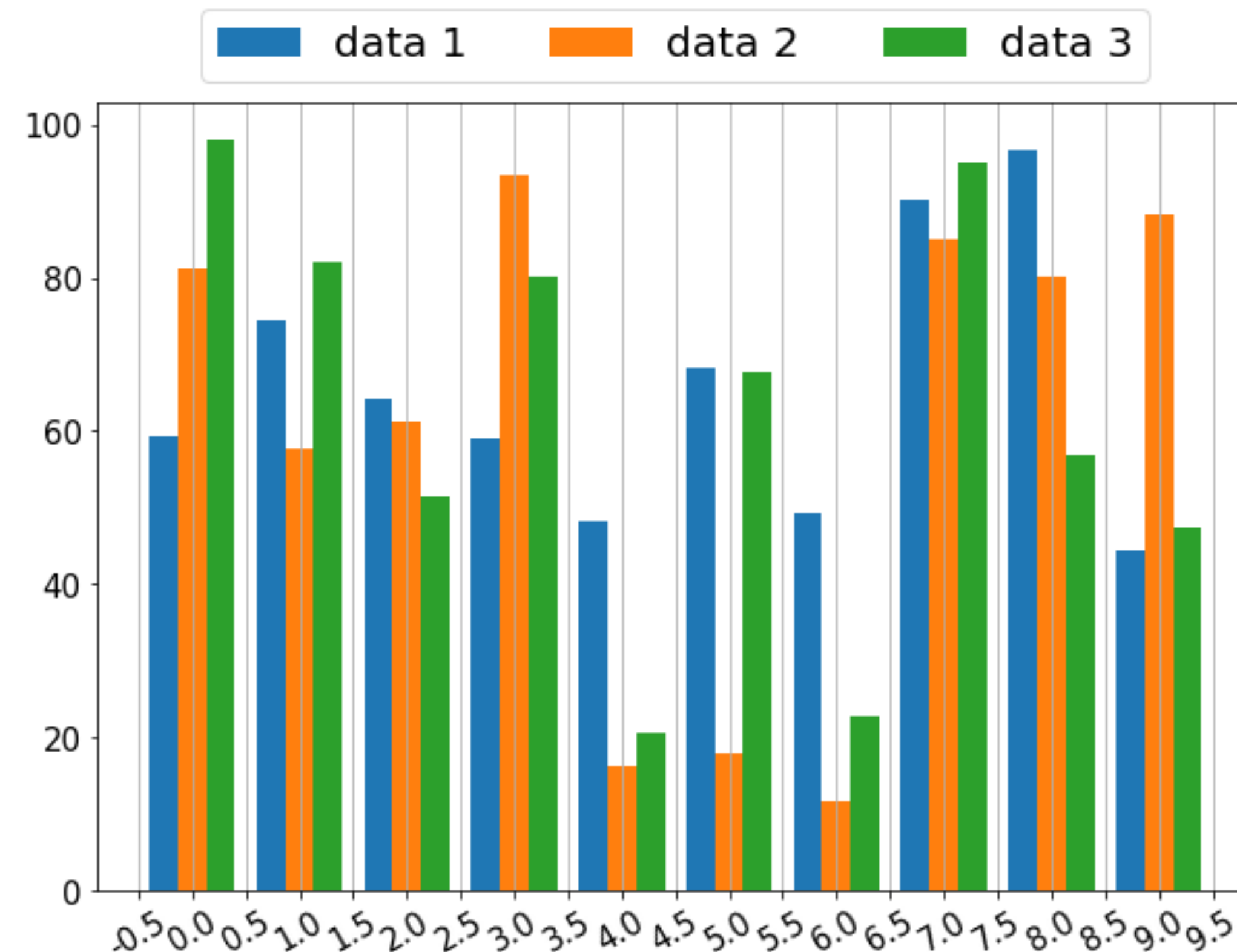
ax.grid(axis='x')
ax.tick_params(labelsize=15)
```

```
ax.bar(data_idx - BAR_WIDTH, data1,
      width=BAR_WIDTH,
      label='data 1')
```

```
ax.bar(data_idx, data2,
      width=BAR_WIDTH,
      label='data 2')
```

```
ax.bar(data_idx + BAR_WIDTH, data3,
      width=BAR_WIDTH,
      label='data 3')
```

```
ax.legend(loc='lower center',
      bbox_to_anchor=(0.5, 1),
      fontsize=20,
      ncol=3)
```



2. Multiple Bar Plots(4 Bar Plots)

```
import matplotlib.pyplot as plt
import numpy as np
np.random.seed(0)

N = 4
WIDTH = 0.8
BAR_WIDTH = WIDTH/N

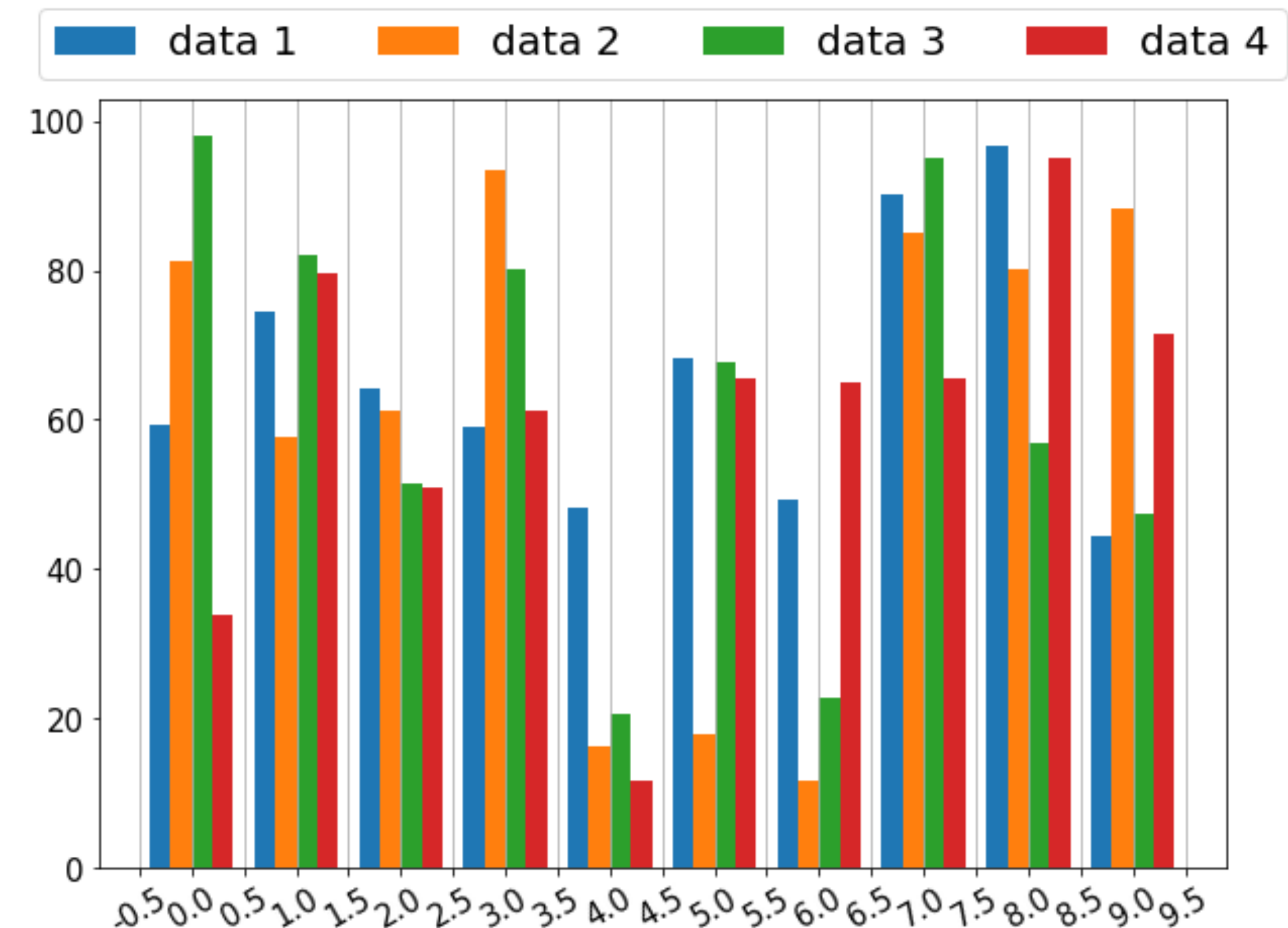
n_data = 10
data1 = np.random.uniform(10, 100, (n_data,))
data2 = np.random.uniform(10, 100, (n_data,))
data3 = np.random.uniform(10, 100, (n_data,))
data4 = np.random.uniform(10, 100, (n_data,))
data_idx = np.arange(n_data)

fig, ax = plt.subplots(figsize=(10, 7))
xticks = np.arange(-1, 10, 0.5)
ax.set_xticks(xticks)
ax.set_xticklabels(xticks,
                    rotation=30)
ax.grid(axis='x')
ax.tick_params(labelsize=15)

ax.bar(data_idx - BAR_WIDTH/2*3, data1,
        width=BAR_WIDTH,
        label='data 1')
ax.bar(data_idx - BAR_WIDTH/2, data2,
        width=BAR_WIDTH,
        label='data 2')
ax.bar(data_idx + BAR_WIDTH/2, data3,
        width=BAR_WIDTH,
        label='data 3')
```

```
ax.bar(data_idx + BAR_WIDTH/2*3, data4,
        width=BAR_WIDTH,
        label='data 4')
```

```
ax.legend(loc='lower center',
        bbox_to_anchor=(0.5, 1),
        fontsize=20,
        ncol=4)
```



Python for Data Visualization

-Chapter.4 Bar Plot -

4-02. Multiple Bar Plots

1. width and align Arguments
2. Multiple Bar Plots(2 Bar Plots)