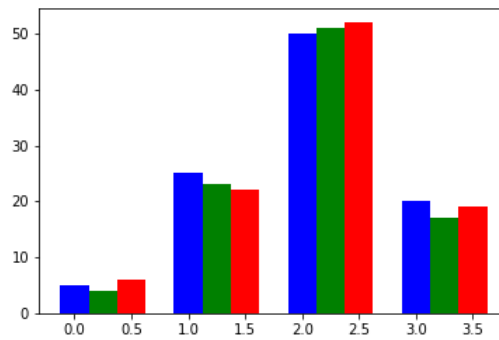


Figure 1: A simple bar chart



## 1 Matplotlib: Scatter plot, and labelling axes

### 1.1 A simple bar chart

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

import matplotlib.pyplot as plt
import numpy as np

data =[5.,25.,50.,20.]
x = range(len(data)) # creates a range of 0 to 4

plt.bar(x, data)

plt.show()
```

### 1.2 Multiple series

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

data =[[5.,25.,50.,20],
       [4.,23.,51.,17],
       [6., 22.,52.,19]]

X=np.arange(4)

plt.bar(X+0.00,data[0],color='b',width=0.25) # colour is blue
plt.bar(X+0.25,data[1],color='g',width=0.25) # colour is green
plt.bar(X+0.50,data[2],color='r',width=0.25) # colour is red

plt.show()
```

For larger data sets we could automate the creation of the bars:

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

data =[[5.,25.,50.,20],
       [4.,23.,51.,17],
       [6., 22.,52.,19]]
```

Figure 2: A multiple series bar chart

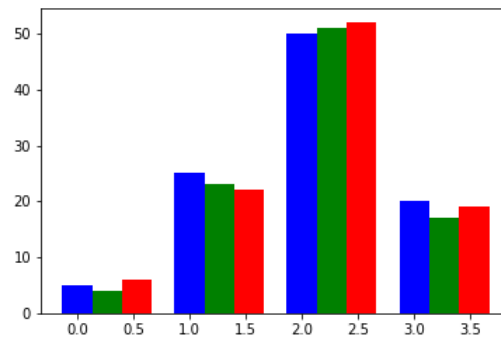
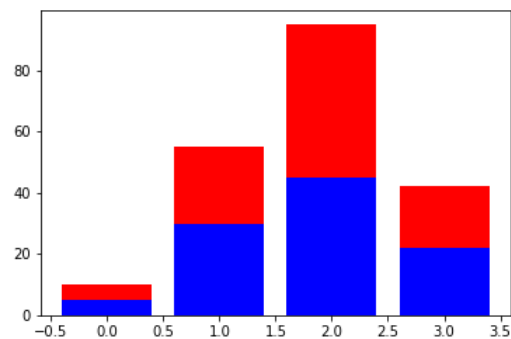


Figure 3: A stacked bar chart



```
color_list=['b','g','r']
gap=0.8/len(data)

for i, row in enumerate(data): # creates int i and list row
X=np.arange(len(row))
plt.bar(X+i*gap,row,width=gap,color=color_list[i])
plt.show()
```

### 1.3 Stacked bar chart

```
a=[5.,30.,45.,22.]
b=[5.,25.,50.,20.]
x=range(4)

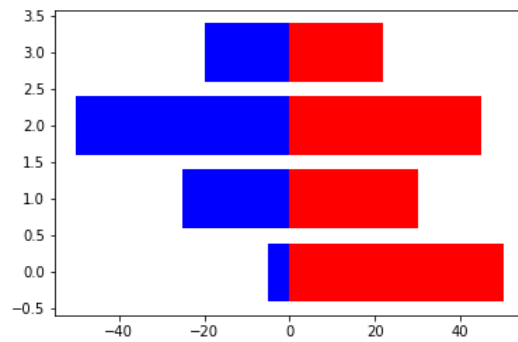
plt.bar(x,a,color='b')
plt.bar(x,b,color='r',bottom=a) # bottom specifies the starting position for a bar

plt.show()
```

### 1.4 Back to back bar chart

```
women_pop=np.array([50,30,45,22])
men_pop=np.array([5,25,50,20])
x=np.arange(4)
```

Figure 4: A back to back bar chart



```
plt.barh(x,women_pop,color='r')  
plt.barh(x,-men_pop,color='b') # the minus sign creates an opposite bar  
  
plt.show()
```