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Introducción al análisis de Datos
Programación Estadística con Python

Sesión 3
Describing nominal and quantitative data

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MASTER EN DATA ANALYTICS PARA LA EMPRESA

Describing nominal variables (I)

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```
#Create a dataframe with the table of frequencies
mytable = wbr.groupby(['weathersit']).size()

# Transform frequencies to percentages
# a) obtain n
n=mytable.sum()

# b) divide by n in order to get
#    proportions,and multiply by 100

mytable = (mytable/n)*100

# Round to your pleasure
mytable3 = round(mytable2,1)
print (mytable3=
```

Table 1. Percentage of weather situations

Sunny	62
Cloudy	34
Rainy	4
(n)=731	

Describing nominal variables (II)

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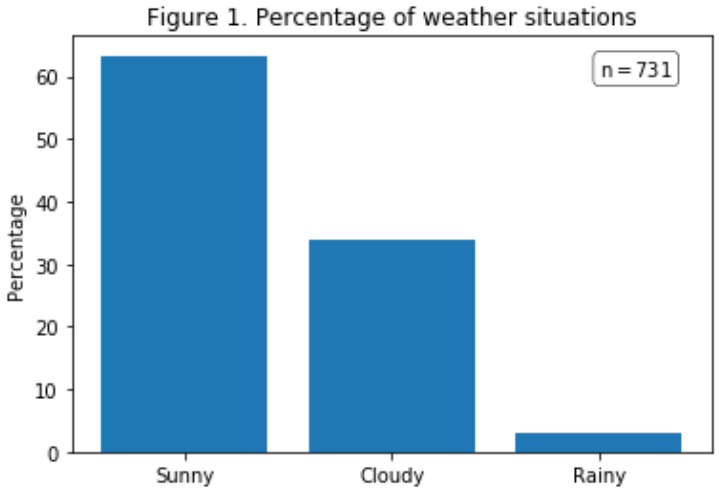


```
#Barchart2
bar_list = ['Sunny', 'Cloudy', 'Rainy']
plt.bar(bar_list, mytable2,edgecolor='black')
plt.ylabel('Percentage')
plt.title('Figure 1. Percentage of weather situations')
```

```
#############################################################################################
#Extra tip: Legend with sample size
# You need to have the sample size stored into n
props = dict(boxstyle='round', facecolor='white', lw=0.5)
textstr = '$\mathrm{n}=%.0f$'%(n)
plt.text (2,60, textstr ,   bbox=props)
#############################################################################################
```

Describing quantitative variables (I)

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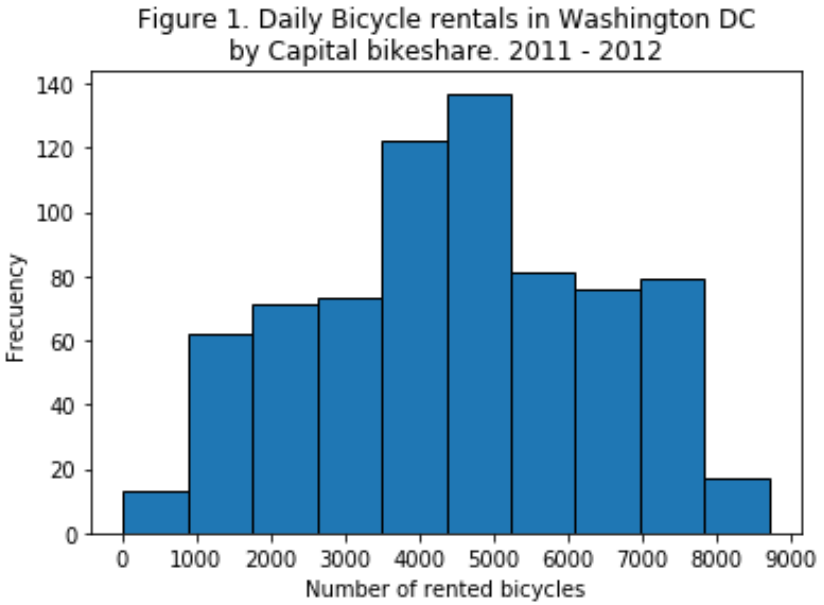
```
#Histogram Figure 1

plt.hist(x, bins=10,
         edgecolor='black')

plt.xticks(np.arange(0, 10000,
           step=1000))

plt.title('Figure 1. Daily Bicycle rentals
           in Washington DC''\n'
          'by Capital bikeshare.2011 - 2012')

plt.ylabel('Frecuency')

plt.xlabel('Number of rented bicycles')
```



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Describing quantitative variables (II)

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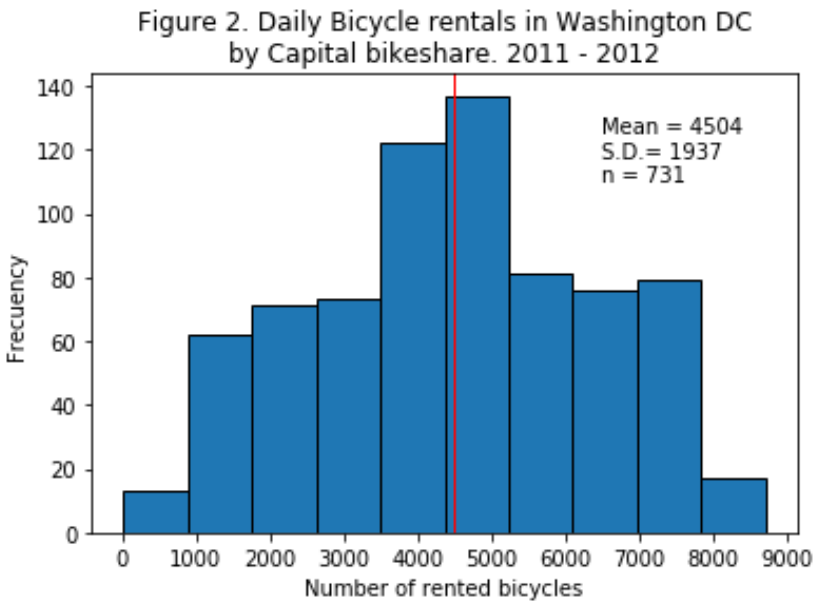
```
#Histogram Figure 2

plt.hist(x, bins=10,        edgecolor='black')

plt.xticks(np.arange(0, 10000,
step=1000))

plt.title('Figure 1. Daily Bicycle rentals
in Washington DC''\n'
          'by Capital bikeshare.2011 - 2012')

plt.ylabel('Frecuency')

plt.xlabel('Number of rented bicycles')

textstr = 'Mean = 4504\nS.D.= 1937 \nn = 731'

plt.text (6500,110, textstr)

# Add reference lines and store their names in
label for later legend
plt.axvline(x=4504,
            linewidth=1,
            linestyle= 'solid',
            color="red", label='Mean')
```



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Describing quantitative variables (III)

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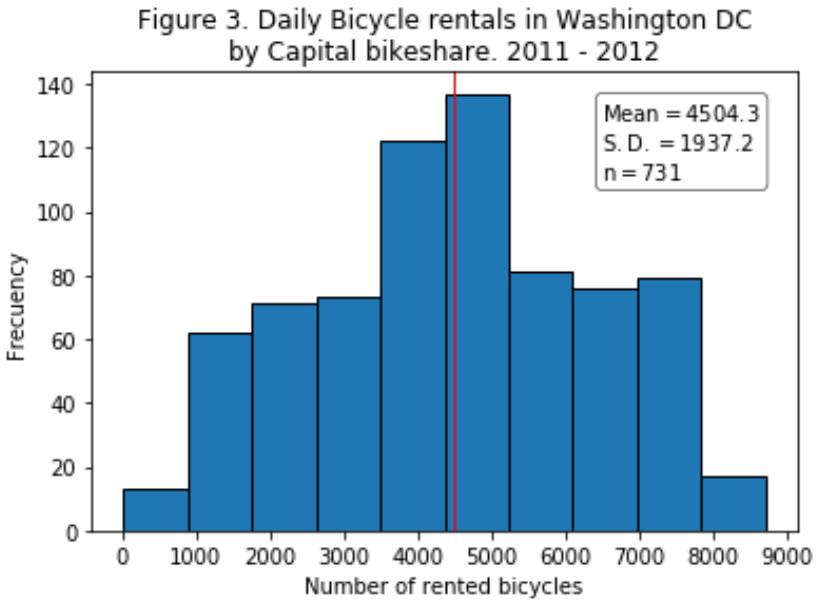
```
#histogram ver3
plt.hist(x, bins=10, edgecolor='black')
plt.xticks(np.arange(0, 10000, step=1000))
plt.title('Figure 3. Daily Bicycle rentals in Washington DC'
          '\n''by Capital bikeshare. 2011 - 2012')
plt.ylabel('Frecuency')
plt.xlabel('Number of rented bicycles')
```




```
props = dict(boxstyle='round', facecolor='white',lw=0.5)
textstr = '$\mathrm{Mean}=%.1f$\n$\mathrm{S.D.}=%.1f$\n$\mathrm{n}=%.0f$'%(m, sd, n)
plt.text (6500,110, textstr ,   bbox=props)

plt.axvline(x=m,
            linewidth=1,
            linestyle= 'solid',
            color="red", label='Mean')
```

Describing quantitative variables (IV)

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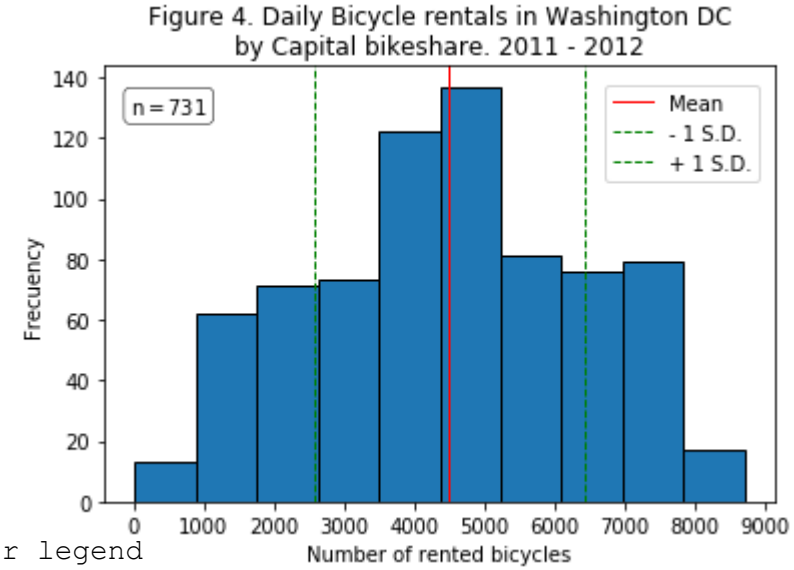
```
#histogram ver4
plt.hist(x, bins=10, edgecolor='black')
plt.xticks(np.arange(0, 10000, step=1000))
plt.title('Figure 1. Daily Bicycle rentals in Washington DC'
          '\n' 'by Capital bikeshare. 2011 - 2012')
plt.ylabel('Frecuency')
plt.xlabel('Number of rented bicycles')



props = dict(boxstyle='round', facecolor='white', lw=0.5)
textstr = '$\mathrm{n}=%.0f$'%(n)
plt.text (-50,128, textstr ,   bbox=props)

# Add reference lines and store their names in label for later legend
plt.axvline(x=m,
            linewidth=1,
            linestyle= 'solid',
            color="red", label='Mean')
plt.axvline(x=m-sd,
            linewidth=1,
            linestyle= 'dashed',
            color="green", label='- 1 S.D.')
plt.axvline(x=m + sd,
            linewidth=1,
            linestyle= 'dashed',
            color="green", label='+ 1 S.D.')

plt. legend(loc='upper left', bbox_to_anchor=(0.73, 0.98))
```



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Exploring quantitative variables (V)

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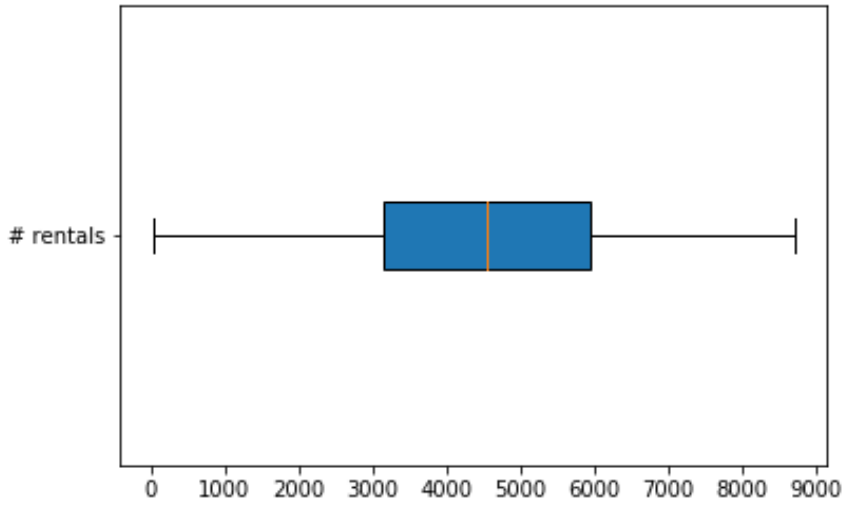
```
#Boxplot
plt.boxplot(x,patch_artist=True,
            vert=False,
            labels=['# rentals'])
plt.xticks(np.arange(0, 10000, step=1000))
plt.show()
```



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Questions?

Statistical Programming with Python

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Thank you !

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