# Bike_Sales_Store_Full_Completed_Python_Project

September 5, 2023

## 1 Bike Sales Store

### Importing Libraries and dependencies

[23]:

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
%matplotlib inline
```

[19]:

```
from sklearn.model_selection import train_test_split
from sklearn import svm
from sklearn.metrics import accuracy_score
from pandas.plotting import boxplot
```

### Step 2- Load and Processing bike sales Data

[4]:

```
# loading the data from csv file to a Pandas DataFrame
sales = pd.read_csv('/content/sales_data.csv')
```

## 2 The Data at Glance

### View the five column of sales data

[5]:

```
sales.head()
```

[5]:

```
         Date  Day     Month  Year  Customer_Age       Age_Group  \
0  2013-11-26   26  November  2013            19     Youth (<25)
1  2015-11-26   26  November  2015            19     Youth (<25)
2  2014-03-23   23     March  2014            49  Adults (35-64)
3  2016-03-23   23     March  2016            49  Adults (35-64)
4  2014-05-15   15       May  2014            47  Adults (35-64)

  Customer_Gender    Country             State Product_Category Sub_Category  \
0               M     Canada  British Columbia      Accessories   Bike Racks
1               M     Canada  British Columbia      Accessories   Bike Racks
2               M  Australia   New South Wales      Accessories   Bike Racks
3               M  Australia   New South Wales      Accessories   Bike Racks
4               F  Australia   New South Wales      Accessories   Bike Racks
```

```
               Product  Order_Quantity  Unit_Cost  Unit_Price  Profit  Cost  \
0  Hitch Rack - 4-Bike               8         45         120     590   360
1  Hitch Rack - 4-Bike               8         45         120     590   360
2  Hitch Rack - 4-Bike              23         45         120    1366  1035
3  Hitch Rack - 4-Bike              20         45         120    1188   900
4  Hitch Rack - 4-Bike               4         45         120     238   180

   Revenue
0      950
1      950
2     2401
3     2088
4      418
```

#### Count the column and rows datasets has

```
[7]: sales.shape
```

```
[7]: (113036, 18)
```

#### Read the Necessary info from data using info command

```
[8]: sales.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 113036 entries, 0 to 113035
Data columns (total 18 columns):
 #   Column            Non-Null Count   Dtype
---  ------            --------------   -----
 0   Date              113036 non-null  object
 1   Day               113036 non-null  int64
 2   Month             113036 non-null  object
 3   Year              113036 non-null  int64
 4   Customer_Age      113036 non-null  int64
 5   Age_Group         113036 non-null  object
 6   Customer_Gender   113036 non-null  object
 7   Country           113036 non-null  object
 8   State             113036 non-null  object
 9   Product_Category  113036 non-null  object
 10  Sub_Category      113036 non-null  object
 11  Product           113036 non-null  object
 12  Order_Quantity    113036 non-null  int64
 13  Unit_Cost         113036 non-null  int64
 14  Unit_Price        113036 non-null  int64
 15  Profit            113036 non-null  int64
 16  Cost              113036 non-null  int64
 17  Revenue           113036 non-null  int64
```

```
dtypes: int64(9), object(9)
memory usage: 15.5+ MB
```

**Look statistical analysis using describe command such as Mean,Count,Min ,Max, and Std**

[10]:

```
sales.describe()
```

[10]:

```
                 Day           Year   Customer_Age  Order_Quantity  \
count  113036.000000  113036.000000  113036.000000   113036.000000
mean       15.665753    2014.401739      35.919212       11.901660
std         8.781567       1.272510      11.021936        9.561857
min         1.000000    2011.000000      17.000000        1.000000
25%         8.000000    2013.000000      28.000000        2.000000
50%        16.000000    2014.000000      35.000000       10.000000
75%        23.000000    2016.000000      43.000000       20.000000
max        31.000000    2016.000000      87.000000       32.000000

           Unit_Cost     Unit_Price         Profit           Cost  \
count  113036.000000  113036.000000  113036.000000  113036.000000
mean      267.296366     452.938427     285.051665     469.318695
std       549.835483     922.071219     453.887443     884.866118
min         1.000000       2.000000     -30.000000       1.000000
25%         2.000000       5.000000      29.000000      28.000000
50%         9.000000      24.000000     101.000000     108.000000
75%        42.000000      70.000000     358.000000     432.000000
max      2171.000000    3578.000000   15096.000000   42978.000000

             Revenue
count  113036.000000
mean      754.370360
std      1309.094674
min         2.000000
25%        63.000000
50%       223.000000
75%       800.000000
max     58074.000000
```

## 3 Numerical Analysis and Visualizations

Analysising Unit_Cost column

[13]:

```
sales['Unit_Cost'].describe()
```

[13]:

```
count    113036.000000
mean        267.296366
std         549.835483
min           1.000000
```

```
25%            2.000000
50%            9.000000
75%           42.000000
max         2171.000000
Name: Unit_Cost, dtype: float64
```

[14]:

```
sales['Unit_Cost'].mean()
```

[14]:

```
267.296365759581
```

[15]:

```
sales['Unit_Cost'].median()
```

[15]:

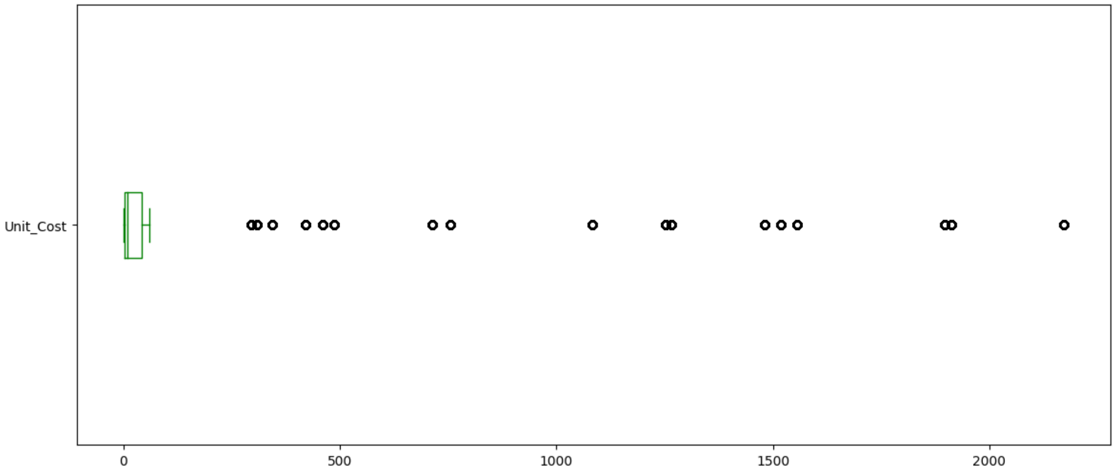
```
9.0
```

[30]:

```
sales['Unit_Cost'].plot(kind='box', vert=False, figsize=(14,6),color='green')
```

[30]:

```
<Axes: >
```

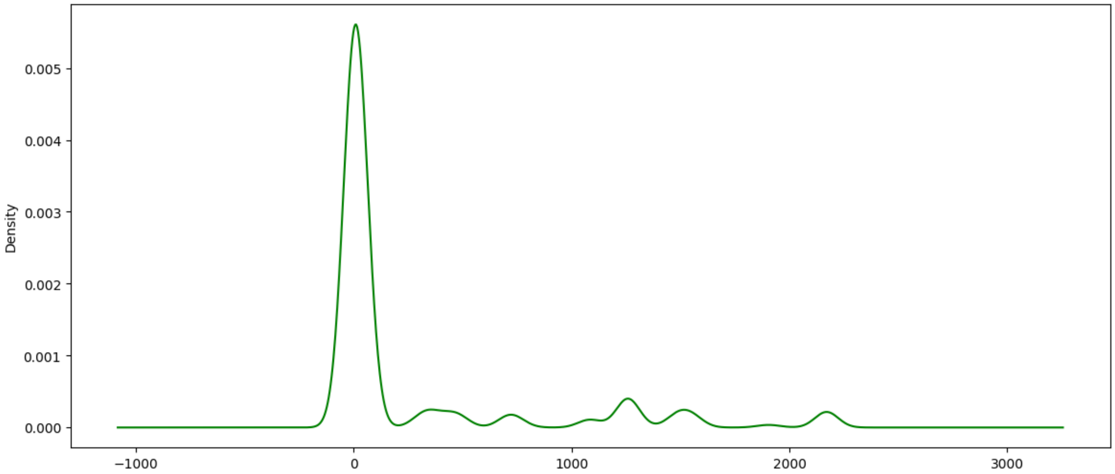


[31]:

```
sales['Unit_Cost'].plot(kind='density', figsize=(14,6),color='green') # kde
```

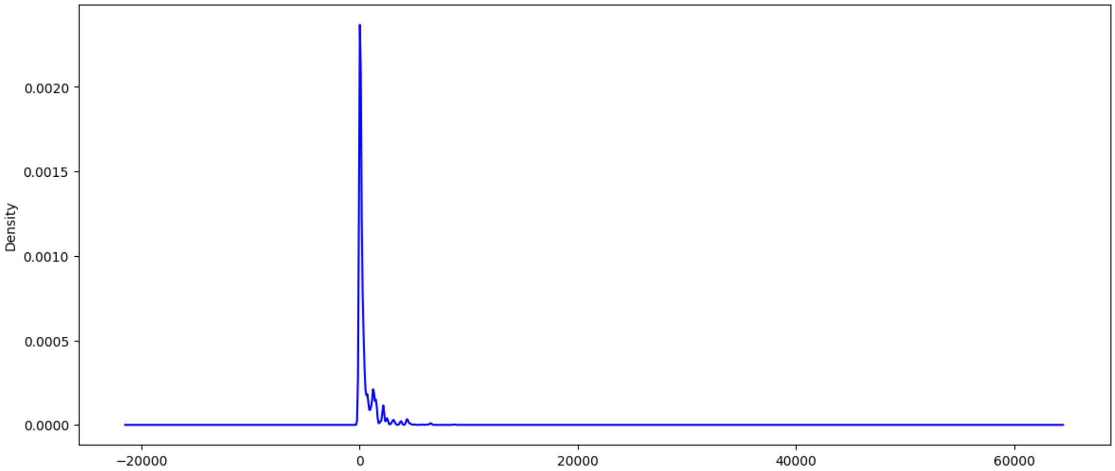
[31]:

```
<Axes: ylabel='Density'>
```



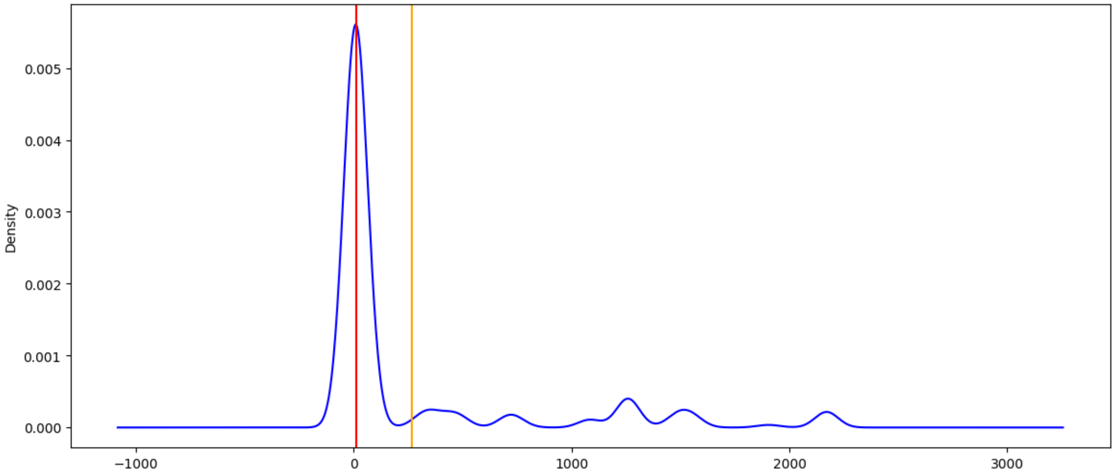
```
[35]: sales['Cost'].plot(kind='density', figsize=(14,6),color='blue') #kde
```

```
[35]: <Axes: ylabel='Density'>
```



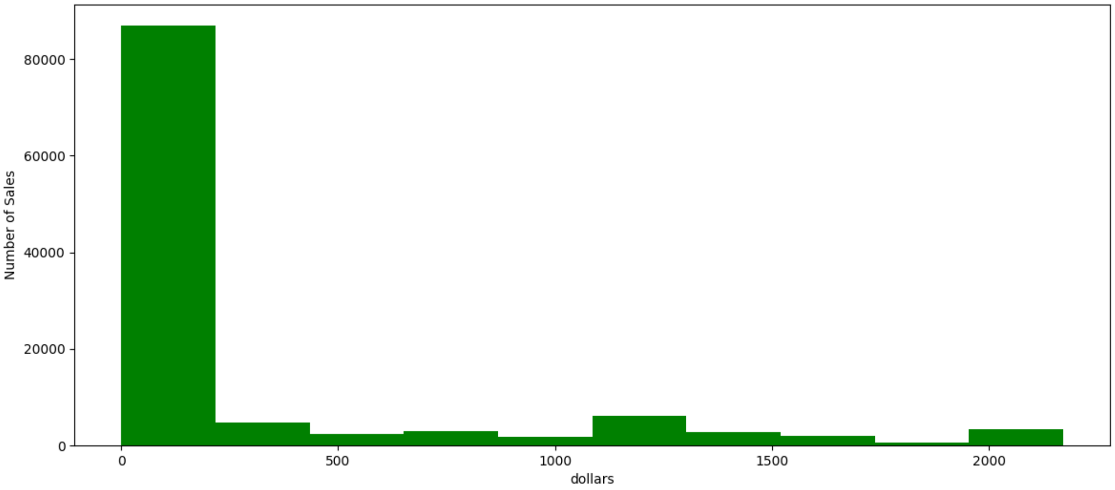
```
[36]: ax = sales['Unit_Cost'].plot(kind='density', figsize=(14,6),color='blue') # kde
      ax.axvline(sales['Unit_Cost'].mean(), color='orange')
      ax.axvline(sales['Unit_Cost'].median(), color='red')
```

```
[36]: <matplotlib.lines.Line2D at 0x79acb6e53010>
```



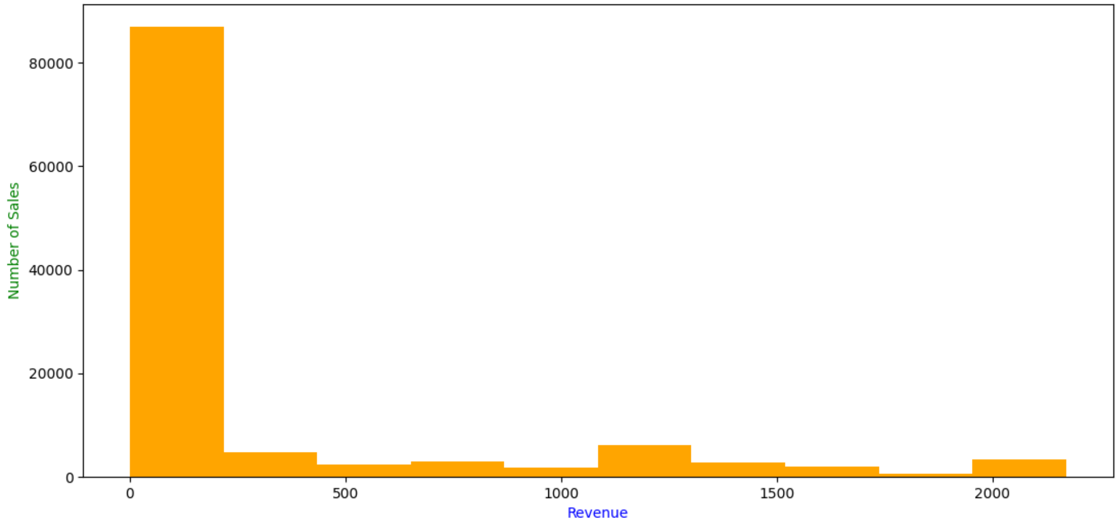
```
[33]: ax = sales['Unit_Cost'].plot(kind='hist', figsize=(14,6),color='green')
      ax.set_ylabel('Number of Sales')
      ax.set_xlabel('dollars')
```

```
[33]: Text(0.5, 0, 'dollars')
```



```
[37]: ax = sales['Unit_Cost'].plot(kind='hist', figsize=(13,6),color='orange')
      ax.set_ylabel('Number of Sales',color='green')
      ax.set_xlabel('Revenue',color='blue')
```

```
[37]: Text(0.5, 0, 'Revenue')
```



### Categorical Analysis and Visualizations

## 3.1 Analysizing Age_Group Admin

[38]:

```
sales.head()
```

[38]:

```
         Date  Day     Month  Year  Customer_Age       Age_Group  \
0  2013-11-26   26  November  2013            19     Youth (<25)   
1  2015-11-26   26  November  2015            19     Youth (<25)   
2  2014-03-23   23     March  2014            49  Adults (35-64)   
3  2016-03-23   23     March  2016            49  Adults (35-64)   
4  2014-05-15   15       May  2014            47  Adults (35-64)   

  Customer_Gender    Country             State Product_Category Sub_Category  \
0               M     Canada  British Columbia      Accessories   Bike Racks   
1               M     Canada  British Columbia      Accessories   Bike Racks   
2               M  Australia   New South Wales      Accessories   Bike Racks   
3               M  Australia   New South Wales      Accessories   Bike Racks   
4               F  Australia   New South Wales      Accessories   Bike Racks   

               Product  Order_Quantity  Unit_Cost  Unit_Price  Profit  Cost  \
0  Hitch Rack - 4-Bike               8         45         120     590   360   
1  Hitch Rack - 4-Bike               8         45         120     590   360   
2  Hitch Rack - 4-Bike              23         45         120    1366  1035   
3  Hitch Rack - 4-Bike              20         45         120    1188   900   
4  Hitch Rack - 4-Bike               4         45         120     238   180   

   Revenue
0      950
```

```
1       950
2      2401
3      2088
4       418
```

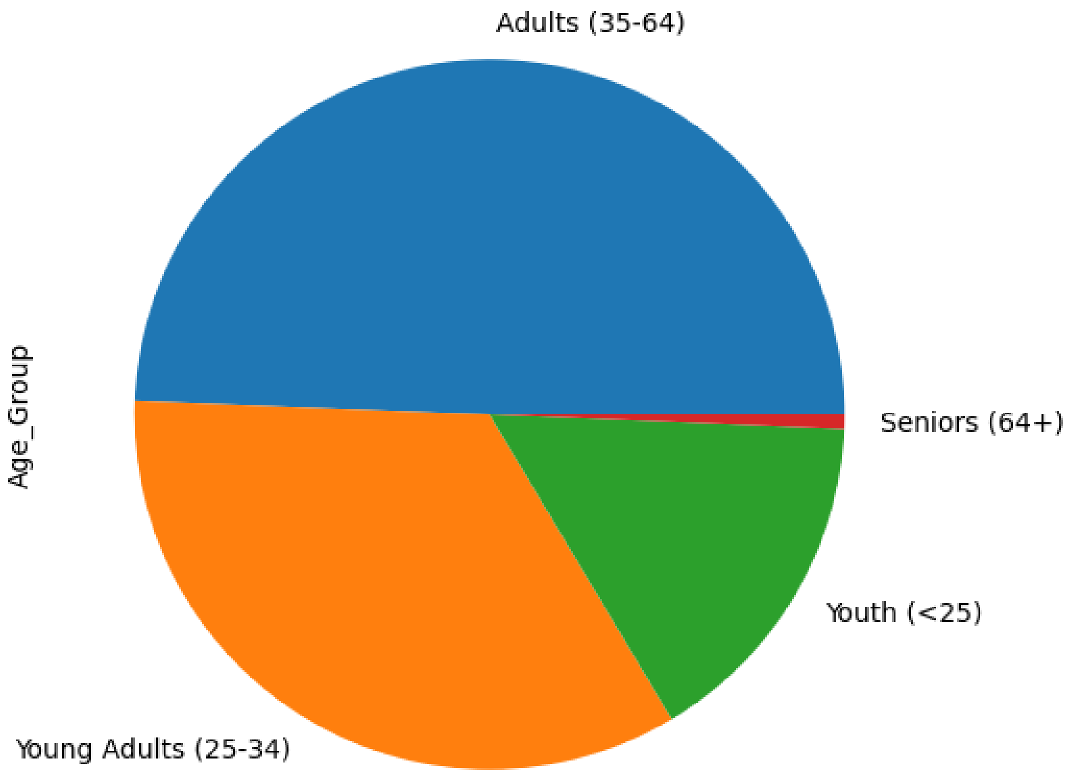
```
[39]: sales['Age_Group'].value_counts()
```

```
[39]: Adults (35-64)          55824
      Young Adults (25-34)    38654
      Youth (<25)             17828
      Seniors (64+)             730
      Name: Age_Group, dtype: int64
```

Plot Age_Group data on piechat

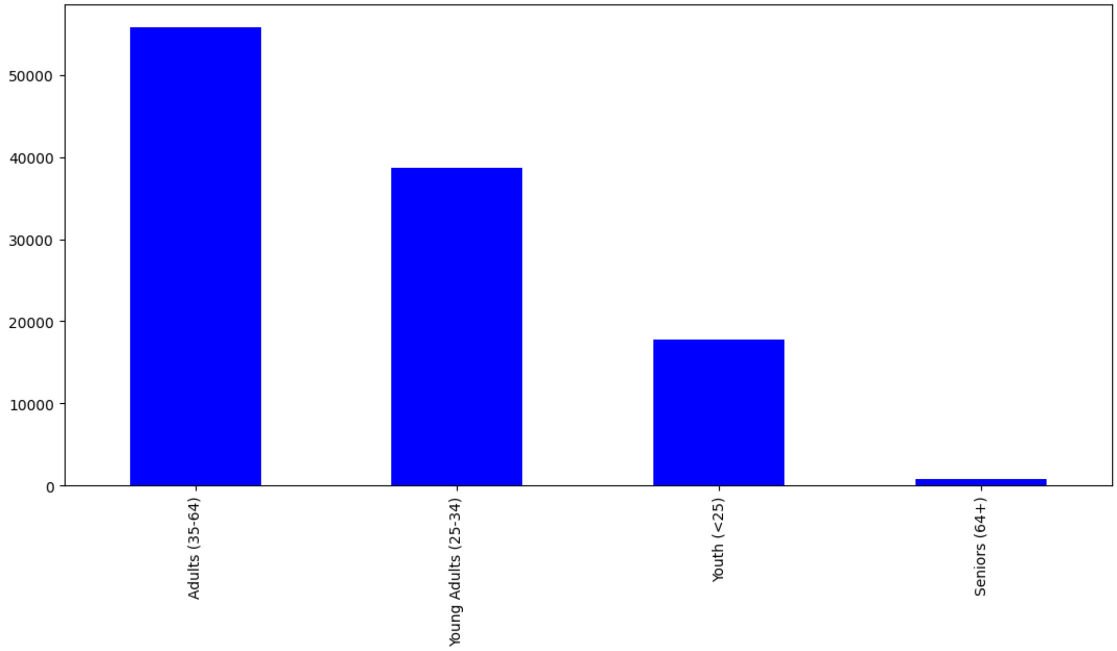
```
[41]: sales['Age_Group'].value_counts().plot(kind='pie', figsize=(13,6))
```

```
[41]: <Axes: ylabel='Age_Group'>
```



[43]:
```
sales['Age_Group'].value_counts().plot(kind='bar', figsize=(13,6),color='blue')
ax.set_xlabel ('Number of Sales')
```

[43]:
```
Text(0.5, 24.0, 'Number of Sales')
```



### Relationship Between Column

### a significant relationship

[45]:
```
corr = sales.corr()
corr
```

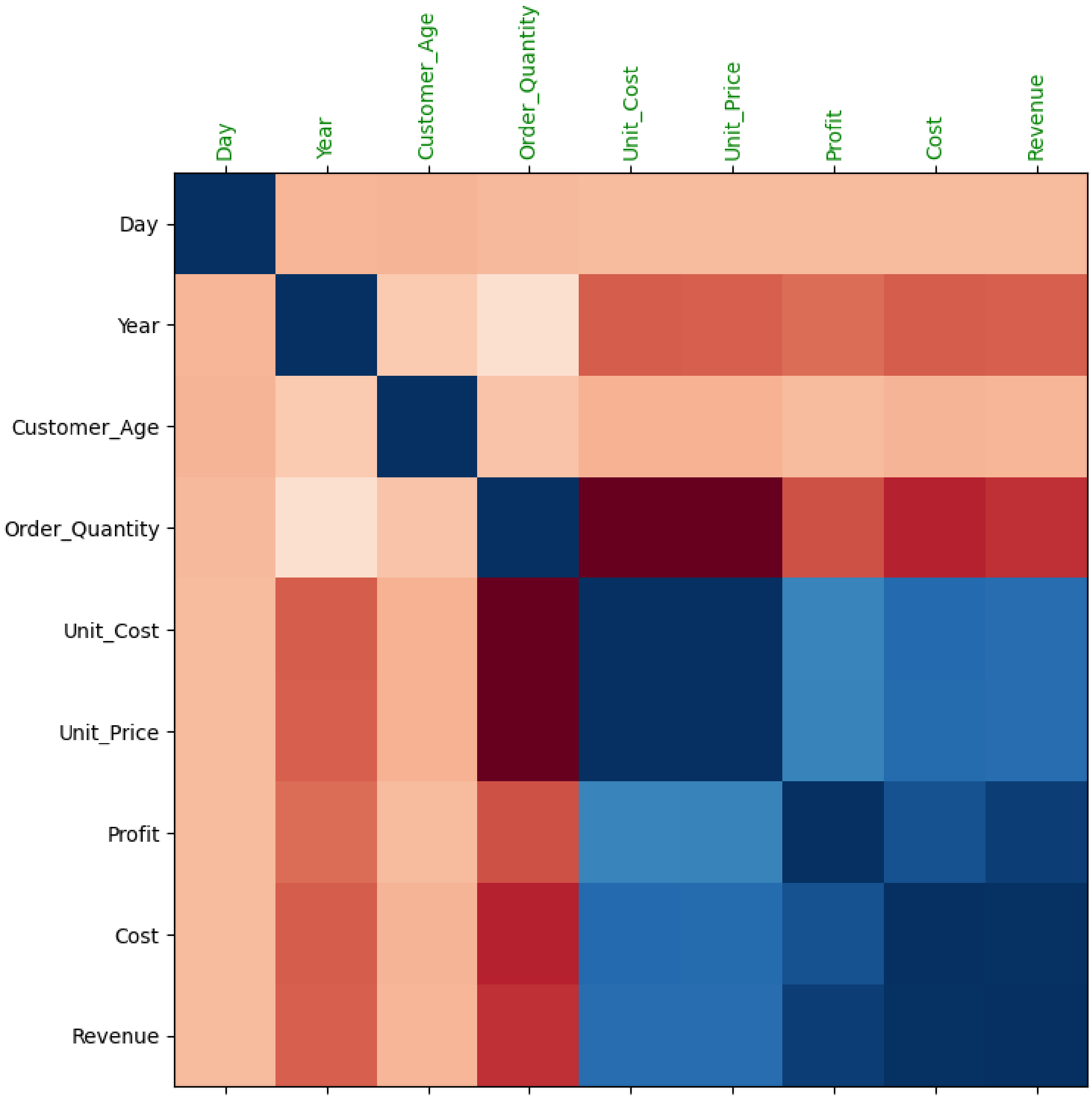
```
<ipython-input-45-9ba3b0e08523>:1: FutureWarning: The default value of
numeric_only in DataFrame.corr is deprecated. In a future version, it will
default to False. Select only valid columns or specify the value of numeric_only
to silence this warning.
  corr = sales.corr()
```

[45]:
```
                     Day      Year  Customer_Age  Order_Quantity  Unit_Cost  \
Day             1.000000 -0.007635     -0.014296       -0.002412   0.003133
Year           -0.007635  1.000000      0.040994        0.123169  -0.217575
Customer_Age   -0.014296  0.040994      1.000000        0.026887  -0.021374
Order_Quantity -0.002412  0.123169      0.026887        1.000000  -0.515835
Unit_Cost       0.003133 -0.217575     -0.021374       -0.515835   1.000000
Unit_Price      0.003207 -0.213673     -0.020262       -0.515925   0.997894
Profit          0.004623 -0.181525      0.004319       -0.238863   0.741020
Cost            0.003329 -0.215604     -0.016013       -0.340382   0.829869
```

```
Revenue          0.003853 -0.208673     -0.009326       -0.312895   0.817865

                Unit_Price    Profit      Cost   Revenue
Day               0.003207  0.004623  0.003329  0.003853
Year             -0.213673 -0.181525 -0.215604 -0.208673
Customer_Age     -0.020262  0.004319 -0.016013 -0.009326
Order_Quantity   -0.515925 -0.238863 -0.340382 -0.312895
Unit_Cost         0.997894  0.741020  0.829869  0.817865
Unit_Price        1.000000  0.749870  0.826301  0.818522
Profit            0.749870  1.000000  0.902233  0.956572
Cost              0.826301  0.902233  1.000000  0.988758
Revenue           0.818522  0.956572  0.988758  1.000000
```

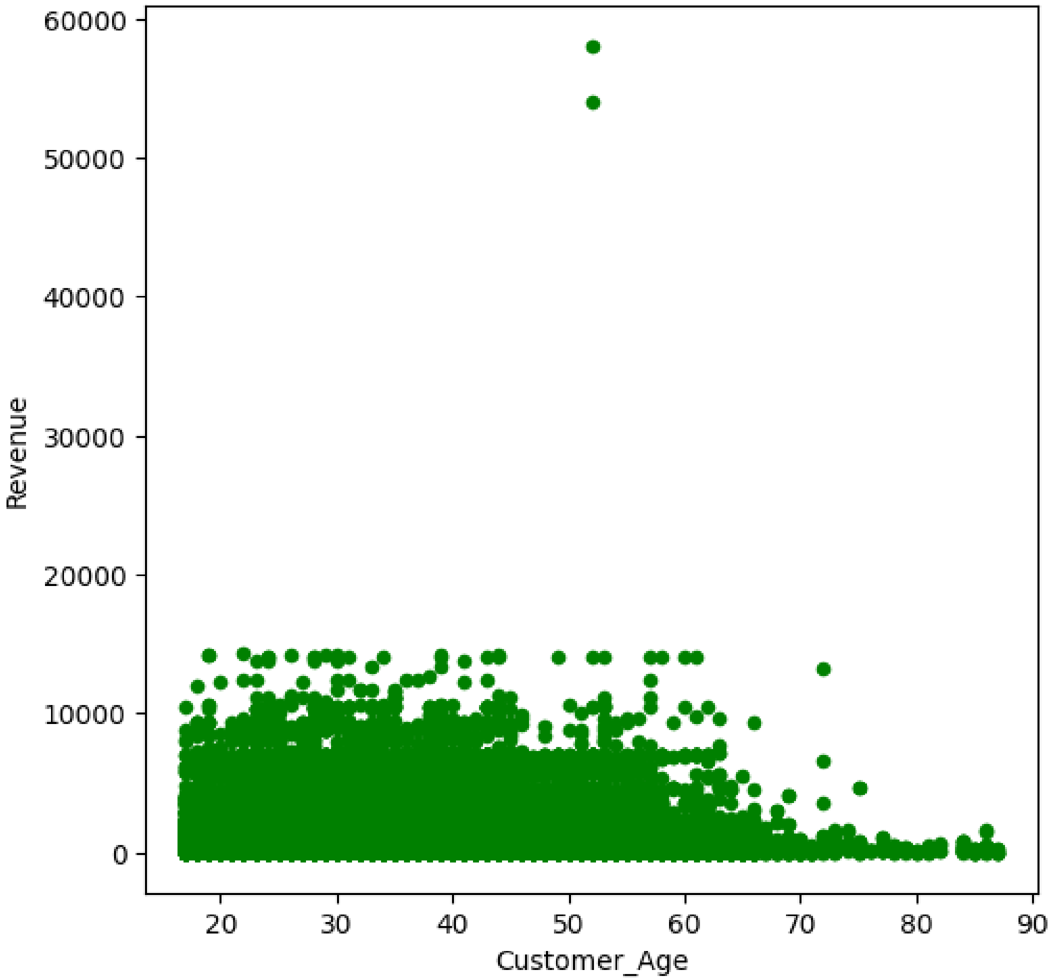
[49]:

```
fig = plt.figure(figsize=(8,8))
plt.matshow(corr, cmap='RdBu', fignum=fig.number)
plt.xticks(range(len(corr.columns)), corr.columns,␣
 ↪rotation='vertical',color='green');
plt.yticks(range(len(corr.columns)), corr.columns,color='black');
```



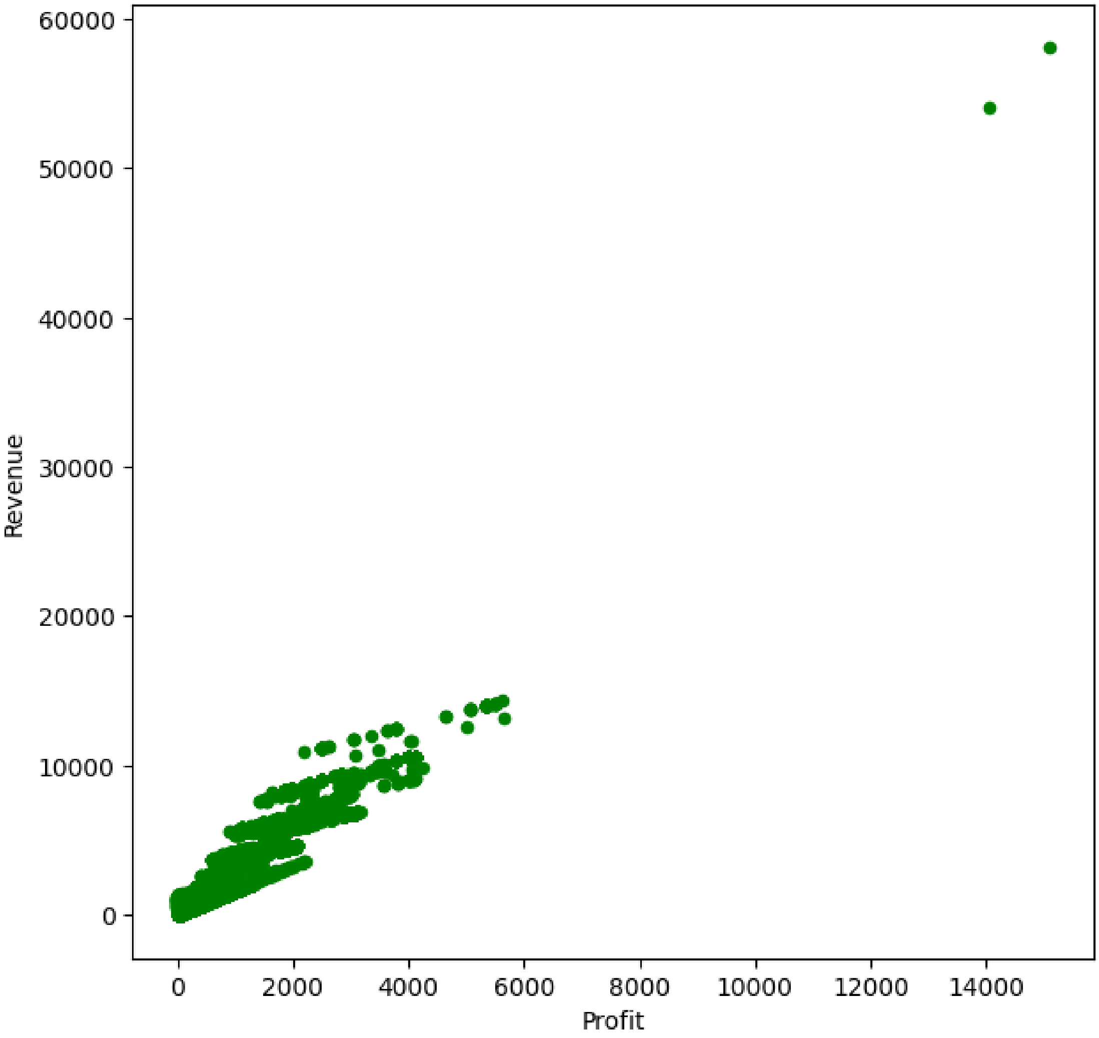
```
[50]: sales.plot(kind='scatter', x='Customer_Age', y='Revenue',␣
       ↪figsize=(6,6),color='green')
```

```
[50]: <Axes: xlabel='Customer_Age', ylabel='Revenue'>
```



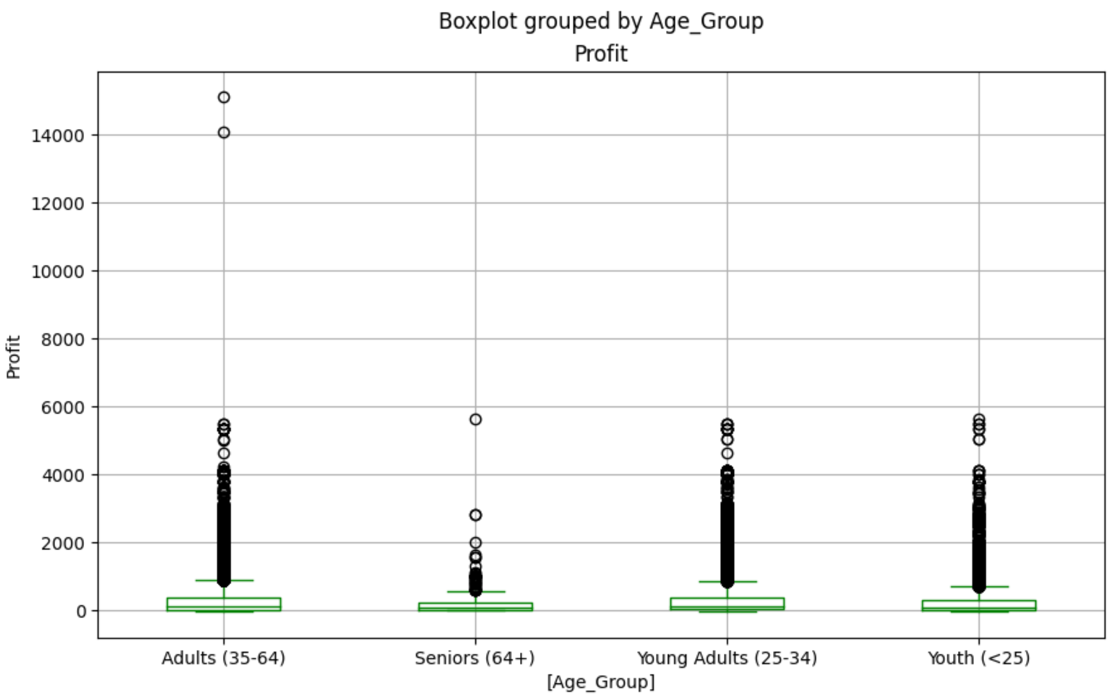
```
[51]: sales.plot(kind='scatter', x='Profit', y='Revenue', figsize=(7,7),color='green')
```

```
[51]: <Axes: xlabel='Profit', ylabel='Revenue'>
```



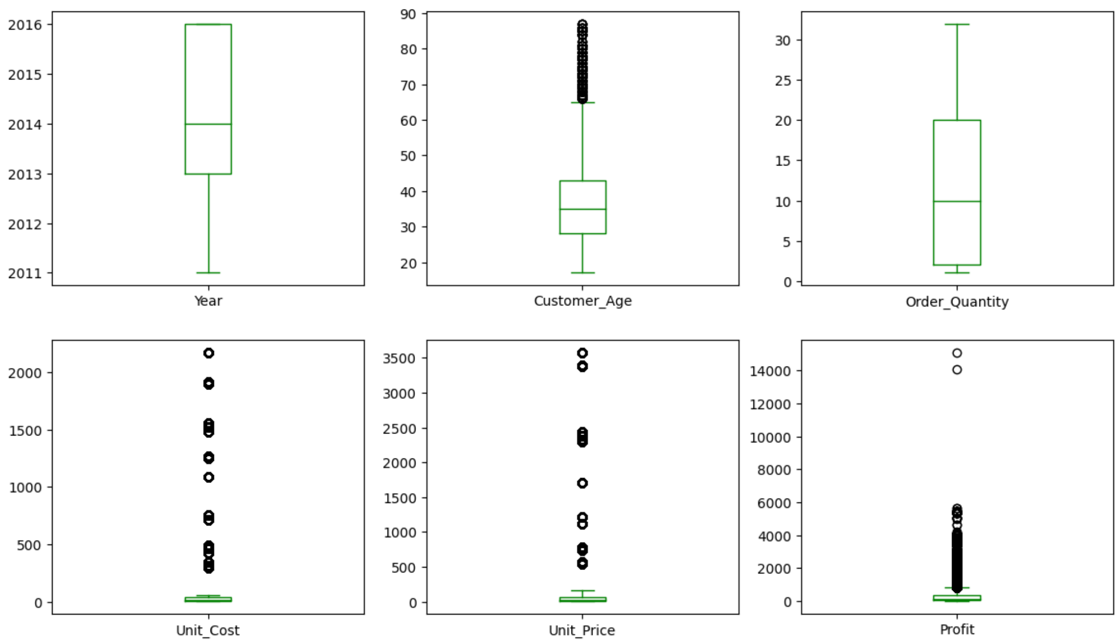
```
[53]: ax = sales[['Profit', 'Age_Group']].boxplot(by='Age_Group',␣
        ↪figsize=(10,6),color='green')
      ax.set_ylabel('Profit')
```

```
[53]: Text(0, 0.5, 'Profit')
```



[55]:
```
boxplot_cols = ['Year', 'Customer_Age', 'Order_Quantity', 'Unit_Cost',␣
 ↪'Unit_Price', 'Profit']

sales[boxplot_cols].plot(kind='box', subplots=True, layout=(2,3),␣
 ↪figsize=(14,8),color='green')
```

[55]:
```
Year                 Axes(0.125,0.53;0.227941x0.35)
Customer_Age      Axes(0.398529,0.53;0.227941x0.35)
Order_Quantity    Axes(0.672059,0.53;0.227941x0.35)
Unit_Cost            Axes(0.125,0.11;0.227941x0.35)
Unit_Price        Axes(0.398529,0.11;0.227941x0.35)
Profit            Axes(0.672059,0.11;0.227941x0.35)
dtype: object
```



### Column wrangling

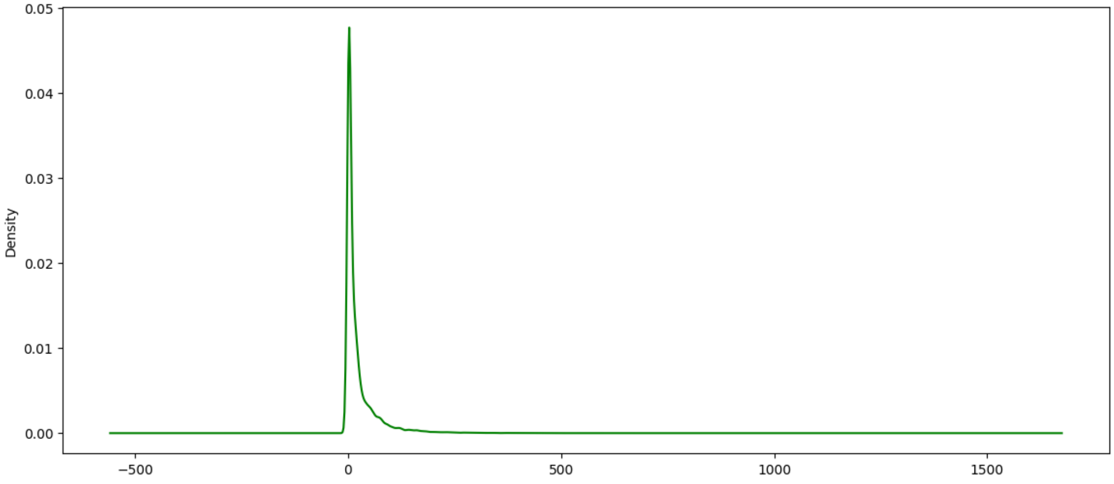
### Addding new column of Revenue per Cutomer Age

```
[56]: sales['Revenue_per_Age'] = sales['Revenue'] / sales['Customer_Age']
      sales['Revenue_per_Age'].head()
```

```
[56]: 0    50.000000
      1    50.000000
      2    49.000000
      3    42.612245
      4     8.893617
      Name: Revenue_per_Age, dtype: float64
```

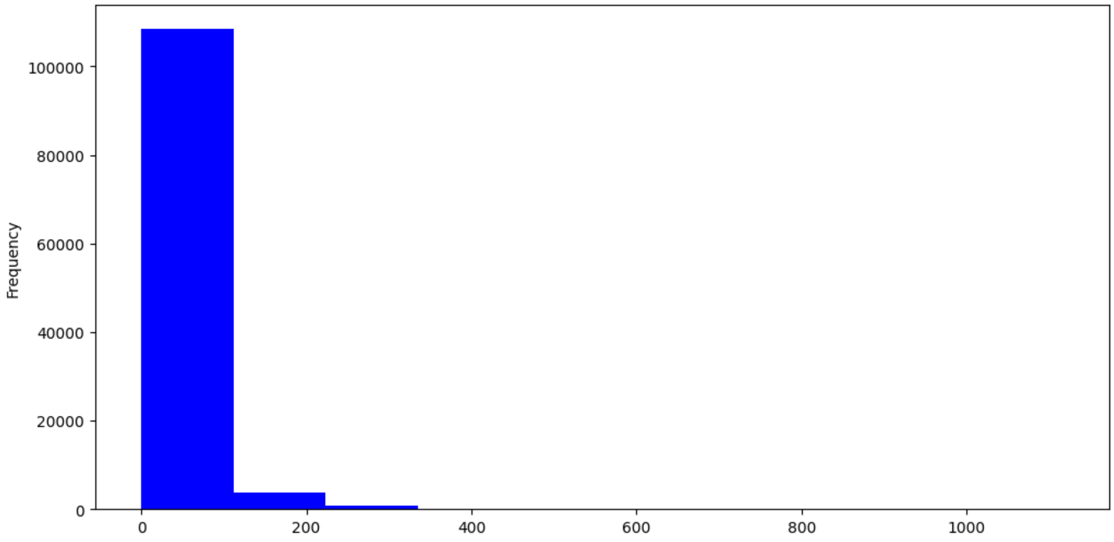
```
[57]: sales['Revenue_per_Age'].plot(kind='density', figsize=(14,6), color='green')
```

```
[57]: <Axes: ylabel='Density'>
```



```
[58]: sales['Revenue_per_Age'].plot(kind='hist', figsize=(12,6), color='blue')
```

```
[58]: <Axes: ylabel='Frequency'>
```



### Add and calculate a new Calculated_Cost column

```
[59]: sales['Calculated_Cost'] = sales['Order_Quantity'] * sales['Unit_Cost']

      sales['Calculated_Cost'].head()
```

```
[59]: 0       360
      1       360
```

```
2    1035
3     900
4     180
Name: Calculated_Cost, dtype: int64
```

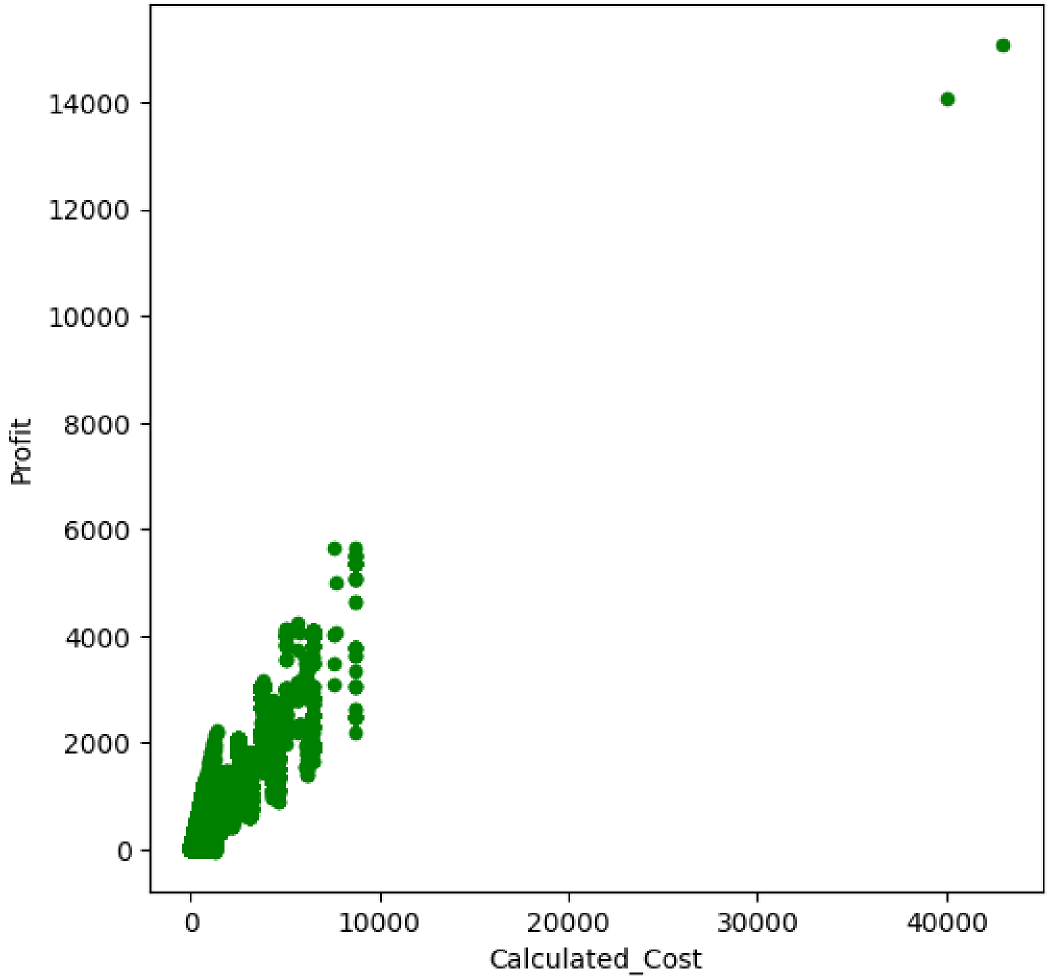
```
[64]: (sales['Calculated_Cost'] != sales['Cost']).sum()
```

```
[64]: 0
```

**Relationship between Cost and Profit using a scatter plot:**

```
[65]: sales.plot(kind='scatter',x='Calculated_Cost', y='Profit',␣
        ↪figsize=(6,6),color='green')
```

```
[65]: <Axes: xlabel='Calculated_Cost', ylabel='Profit'>
```



**Add and calculate a new Calculated__Revenue column**

Formula to find Calculated_Revenue is **Cost + Profit** for column sales data

```
[66]: sales['Calculated_Revenue'] = sales['Cost'] + sales['Profit']
      sales['Calculated_Revenue'].head()
```

```
[66]: 0      950
      1      950
      2     2401
      3     2088
      4      418
      Name: Calculated_Revenue, dtype: int64
```

### Sum if Calculated_Revenue is not equal to Revenue sales

```
[71]: (sales['Calculated_Revenue'] != sales['Revenue'])
```

```
[71]: 0          False
      1          False
      2          False
      3          False
      4          False
                 …
      113031     False
      113032     False
      113033     False
      113034     False
      113035     False
      Length: 113036, dtype: bool
```

```
[72]: (sales['Calculated_Revenue'] != sales['Revenue']).sum()
```

```
[72]: 0
```

Sum if Calculated_Revenue is less than equal to Revenue sales *

```
[68]: (sales['Calculated_Revenue']<= sales['Revenue'])
```

```
[68]: 0          True
      1          True
      2          True
      3          True
      4          True
                 …
      113031     True
      113032     True
      113033     True
      113034     True
      113035     True
```

```
Length: 113036, dtype: bool
```

[70]:
```
(sales['Calculated_Revenue']<= sales['Revenue']).sum()
```

[70]:
```
113036
```

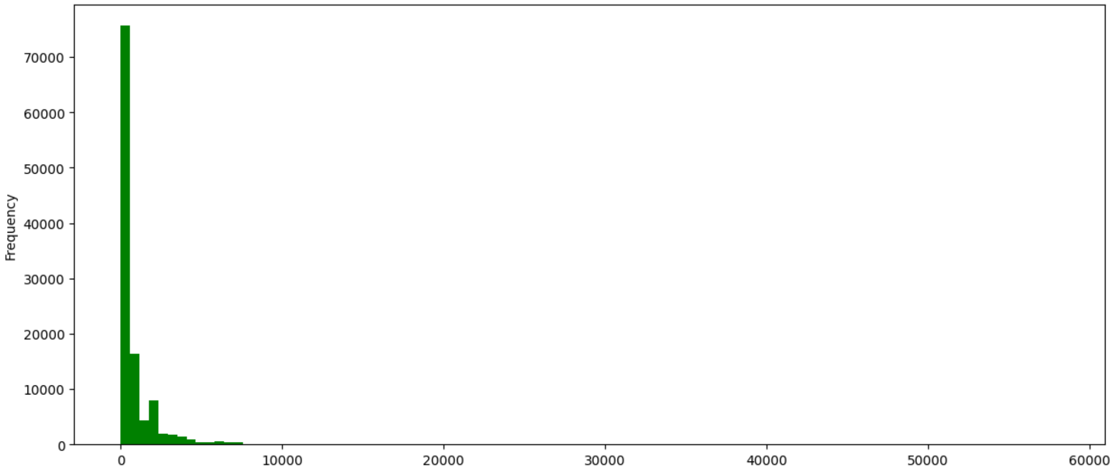
[73]:
```
sales.head()
```

[73]:
```
         Date  Day     Month  Year  Customer_Age       Age_Group  \
0  2013-11-26   26  November  2013            19     Youth (<25)
1  2015-11-26   26  November  2015            19     Youth (<25)
2  2014-03-23   23     March  2014            49  Adults (35-64)
3  2016-03-23   23     March  2016            49  Adults (35-64)
4  2014-05-15   15       May  2014            47  Adults (35-64)

  Customer_Gender    Country             State Product_Category  …  \
0               M     Canada  British Columbia      Accessories  …
1               M     Canada  British Columbia      Accessories  …
2               M  Australia   New South Wales      Accessories  …
3               M  Australia   New South Wales      Accessories  …
4               F  Australia   New South Wales      Accessories  …

             Product Order_Quantity  Unit_Cost  Unit_Price  Profit  Cost  \
0  Hitch Rack - 4-Bike              8         45         120     590   360
1  Hitch Rack - 4-Bike              8         45         120     590   360
2  Hitch Rack - 4-Bike             23         45         120    1366  1035
3  Hitch Rack - 4-Bike             20         45         120    1188   900
4  Hitch Rack - 4-Bike              4         45         120     238   180

  Revenue  Revenue_per_Age  Calculated_Cost  Calculated_Revenue
0     950        50.000000              360                 950
1     950        50.000000              360                 950
2    2401        49.000000             1035                2401
3    2088        42.612245              900                2088
4     418         8.893617              180                 418

[5 rows x 21 columns]
```

```
Warning: Total number of columns (21) exceeds max_columns (20) limiting to first
(20) columns.
```

[74]:
```
sales['Revenue'].plot(kind='hist', bins=100, figsize=(14,6),color='green')
```

[74]:
```
<Axes: ylabel='Frequency'>
```



Modify all **Unit_Price values adding 3% tax** to them

```
[75]: sales['Unit_Price'].head()
```

```
[75]: 0    120
      1    120
      2    120
      3    120
      4    120
      Name: Unit_Price, dtype: int64
```

```
[76]: #sales['Unit_Price'] = sales['Unit_Price'] * 1.03
      sales['Unit_Price'] *= 1.03
```

```
[78]: sales['Unit_Price'].head()
```

```
[78]: 0    123.6
      1    123.6
      2    123.6
      3    123.6
      4    123.6
      Name: Unit_Price, dtype: float64
```

## 4 Selection & Indexing:

Get all the sales made in the **state of Kentucky**

```
[79]: sales.loc[sales['State'] == 'Kentucky']
```

```
[79]:
             Date  Day     Month  Year  Customer_Age       Age_Group  \
156    2013-11-04    4  November  2013            40  Adults (35-64)
157    2015-11-04    4  November  2015            40  Adults (35-64)
23826  2014-04-16   16     April  2014            40  Adults (35-64)
23827  2016-04-16   16     April  2016            40  Adults (35-64)
31446  2014-04-16   16     April  2014            40  Adults (35-64)
31447  2016-04-16   16     April  2016            40  Adults (35-64)
79670  2014-04-16   16     April  2014            40  Adults (35-64)
79671  2014-04-16   16     April  2014            40  Adults (35-64)
79672  2016-04-16   16     April  2016            40  Adults (35-64)
79673  2016-04-16   16     April  2016            40  Adults (35-64)

      Customer_Gender        Country     State Product_Category  ...  \
156                 M  United States  Kentucky      Accessories  ...
157                 M  United States  Kentucky      Accessories  ...
23826               M  United States  Kentucky      Accessories  ...
23827               M  United States  Kentucky      Accessories  ...
31446               M  United States  Kentucky      Accessories  ...
31447               M  United States  Kentucky      Accessories  ...
79670               M  United States  Kentucky      Accessories  ...
79671               M  United States  Kentucky      Accessories  ...
79672               M  United States  Kentucky      Accessories  ...
79673               M  United States  Kentucky      Accessories  ...

                      Product Order_Quantity  Unit_Cost  Unit_Price  Profit  \
156       Hitch Rack - 4-Bike              1         45      123.60      63
157       Hitch Rack - 4-Bike              1         45      123.60      63
23826   Fender Set - Mountain             12          8       22.66     142
23827   Fender Set - Mountain             14          8       22.66     165
31446  Sport-100 Helmet, Blue             29         13       36.05     537
31447  Sport-100 Helmet, Blue             31         13       36.05     574
79670        ML Mountain Tire              2         11       30.90      32
79671        ML Mountain Tire             21         11       30.90     336
79672        ML Mountain Tire              1         11       30.90      16
79673        ML Mountain Tire             18         11       30.90     288

       Cost  Revenue  Revenue_per_Age  Calculated_Cost  Calculated_Revenue
156      45      108            2.700               45                 108
157      45      108            2.700               45                 108
23826    96      238            5.950               96                 238
23827   112      277            6.925              112                 277
31446   377      914           22.850              377                 914
31447   403      977           24.425              403                 977
79670    22       54            1.350               22                  54
79671   231      567           14.175              231                 567
79672    11       27            0.675               11                  27
79673   198      486           12.150              198                 486
```

```
[10 rows x 21 columns]
```

```
Warning: Total number of columns (21) exceeds max_columns (20) limiting to first
(20) columns.
```

[80]:
```
sales.loc[sales['State']=='New South Wales']
```

[80]:
```
              Date  Day    Month  Year  Customer_Age           Age_Group  \
2       2014-03-23   23    March  2014            49      Adults (35-64)   
3       2016-03-23   23    March  2016            49      Adults (35-64)   
4       2014-05-15   15      May  2014            47      Adults (35-64)   
5       2016-05-15   15      May  2016            47      Adults (35-64)   
120     2014-01-02    2  January  2014            34  Young Adults (25-34)   
…            …  …      …   …            …                   …                
112985  2016-05-05    5      May  2016            25  Young Adults (25-34)   
112996  2014-03-25   25    March  2014            58      Adults (35-64)   
112997  2016-03-25   25    March  2016            58      Adults (35-64)   
112998  2014-04-06    6    April  2014            58      Adults (35-64)   
112999  2016-04-06    6    April  2016            58      Adults (35-64)   

       Customer_Gender    Country            State Product_Category  …  \
2                    M  Australia  New South Wales      Accessories  …   
3                    M  Australia  New South Wales      Accessories  …   
4                    F  Australia  New South Wales      Accessories  …   
5                    F  Australia  New South Wales      Accessories  …   
120                  F  Australia  New South Wales      Accessories  …   
…                 …        …               …            …  …       
112985               M  Australia  New South Wales         Clothing  …   
112996               F  Australia  New South Wales         Clothing  …   
112997               F  Australia  New South Wales         Clothing  …   
112998               F  Australia  New South Wales         Clothing  …   
112999               F  Australia  New South Wales         Clothing  …   

                    Product Order_Quantity  Unit_Cost  Unit_Price  Profit  \
2       Hitch Rack - 4-Bike             23         45      123.60    1366   
3       Hitch Rack - 4-Bike             20         45      123.60    1188   
4       Hitch Rack - 4-Bike              4         45      123.60     238   
5       Hitch Rack - 4-Bike              5         45      123.60     297   
120     Hitch Rack - 4-Bike              5         45      123.60     297   
…                     …            …        …         …      …      
112985      Classic Vest, L             14         24       65.92     444   
112996      Classic Vest, L              9         24       65.92     285   
112997      Classic Vest, L             10         24       65.92     317   
112998      Classic Vest, L             25         24       65.92     792   
112999      Classic Vest, L             22         24       65.92     697   
```

```
        Cost  Revenue  Revenue_per_Age  Calculated_Cost  Calculated_Revenue
2       1035     2401        49.000000             1035                2401
3        900     2088        42.612245              900                2088
4        180      418         8.893617              180                 418
5        225      522        11.106383              225                 522
120      225      522        15.352941              225                 522
…       …     …              …                …                  …
112985   336      780        31.200000              336                 780
112996   216      501         8.637931              216                 501
112997   240      557         9.603448              240                 557
112998   600     1392        24.000000              600                1392
112999   528     1225        21.120690              528                1225

[10412 rows x 21 columns]
```

**Get the mean revenue of the Adults (35-64) sales group**

```
[81]: sales.loc[sales['Age_Group'] == 'Adults (35-64)', 'Revenue'].mean()
```

```
[81]: 762.8287654055604
```

**How many records belong to Age Group Youth (<25) or Adults (35-64)?**

```
[82]: sales.loc[(sales['Age_Group'] == 'Youth (<25)') | (sales['Age_Group'] ==␣
       ↪'Adults (35-64)')].shape[0]
```

```
[82]: 73652
```

**Get the mean revenue of the sales group Adults (35-64) in United States**

```
[83]: sales.loc[(sales['Age_Group'] == 'Adults (35-64)') & (sales['Country'] ==␣
       ↪'United States'), 'Revenue'].mean()
```

```
[83]: 726.7260473588342
```

**Increase the revenue by 10% to every sale made in France**

```
[84]: sales.loc[sales['Country'] == 'France', 'Revenue'].head()
```

```
[84]: 50     787
      51     787
      52    2957
      53    2851
      60     626
      Name: Revenue, dtype: int64
```

```
[85]: #sales.loc[sales['Country'] == 'France', 'Revenue'] = sales.
       ↪loc[sales['Country'] == 'France', 'Revenue'] * 1.1
```

```
sales.loc[sales['Country'] == 'France', 'Revenue'] *= 1.1
```

[86]:
```
sales.loc[sales['Country'] == 'France', 'Revenue'].head()
```

[86]:
```
50     865.7
51     865.7
52    3252.7
53    3136.1
60     688.6
Name: Revenue, dtype: float64
```

### Converty Notebook to HTML and then print out PDF

[91]:
```
!jupyter nbconvert -- to pdf /content/
 ↪Bike_Sales_Store_Full_Completed_Python_Project.ipynb
```

```
[NbConvertApp] WARNING | pattern 'to' matched no files
[NbConvertApp] WARNING | pattern 'pdf' matched no files
Traceback (most recent call last):
  File "/usr/local/bin/jupyter-nbconvert", line 8, in <module>
    sys.exit(main())
  File "/usr/local/lib/python3.10/dist-packages/jupyter_core/application.py",
line 285, in launch_instance
    return super().launch_instance(argv=argv, **kwargs)
  File "/usr/local/lib/python3.10/dist-
packages/traitlets/config/application.py", line 992, in launch_instance
    app.start()
  File "/usr/local/lib/python3.10/dist-packages/nbconvert/nbconvertapp.py", line
423, in start
    self.convert_notebooks()
  File "/usr/local/lib/python3.10/dist-packages/nbconvert/nbconvertapp.py", line
585, in convert_notebooks
    raise ValueError(
ValueError: Please specify an output format with '--to <format>'.
The following formats are available: ['asciidoc', 'custom', 'html', 'latex',
'markdown', 'notebook', 'pdf', 'python', 'rst', 'script', 'slides', 'webpdf']
```

[ ]:
```

```