Diamantes

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Análisis de los diamantes

```
import numpy as np
import pandas as pd
import matplotlib
from plotnine.data import diamonds
from plotnine import ggplot

matplotlib.style.use("ggplot")

print(diamonds.shape)
```

```
## (53940, 10)
```

```
print(diamonds.head(10))
```

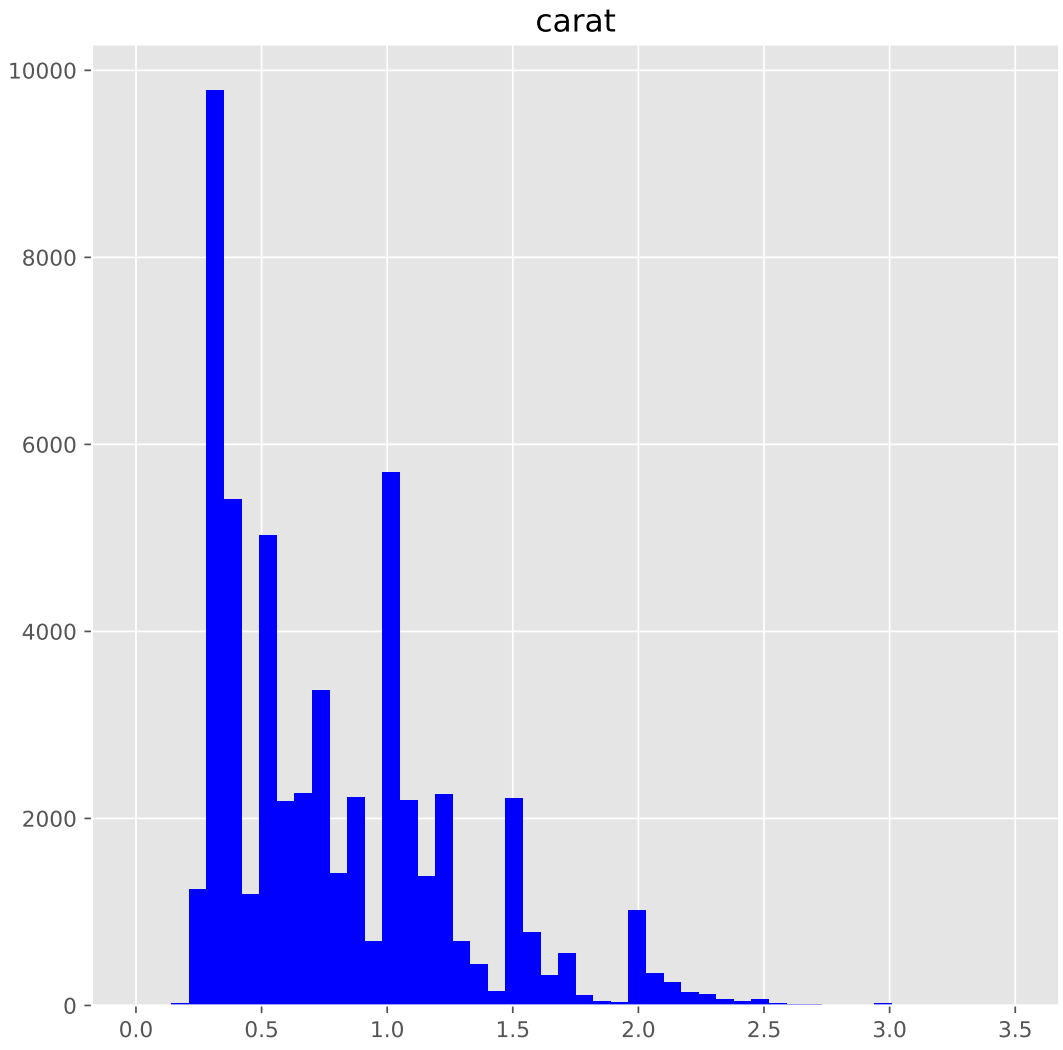
```
##    carat        cut color clarity  depth  table  price     x     y     z
## 0   0.23      Ideal     E     SI2   61.5   55.0    326  3.95  3.98  2.43
## 1   0.21    Premium     E     SI1   59.8   61.0    326  3.89  3.84  2.31
## 2   0.23       Good     E     VS1   56.9   65.0    327  4.05  4.07  2.31
## 3   0.29    Premium     I     VS2   62.4   58.0    334  4.20  4.23  2.63
## 4   0.31       Good     J     SI2   63.3   58.0    335  4.34  4.35  2.75
## 5   0.24  Very Good     J    VVS2   62.8   57.0    336  3.94  3.96  2.48
## 6   0.24  Very Good     I    VVS1   62.3   57.0    336  3.95  3.98  2.47
## 7   0.26  Very Good     H     SI1   61.9   55.0    337  4.07  4.11  2.53
## 8   0.22       Fair     E     VS2   65.1   61.0    337  3.87  3.78  2.49
## 9   0.23  Very Good     H     VS1   59.4   61.0    338  4.00  4.05  2.39
```

Histograma

```
diamonds.hist(column="carat",figsize=(8,8), color="blue",
              bins = 50, range = (0,3.5))
```

```
## array([[<AxesSubplot:title={'center':'carat'}>]], dtype=object)
```

```
matplotlib.pyplot.show()
```



Filtro de outliers

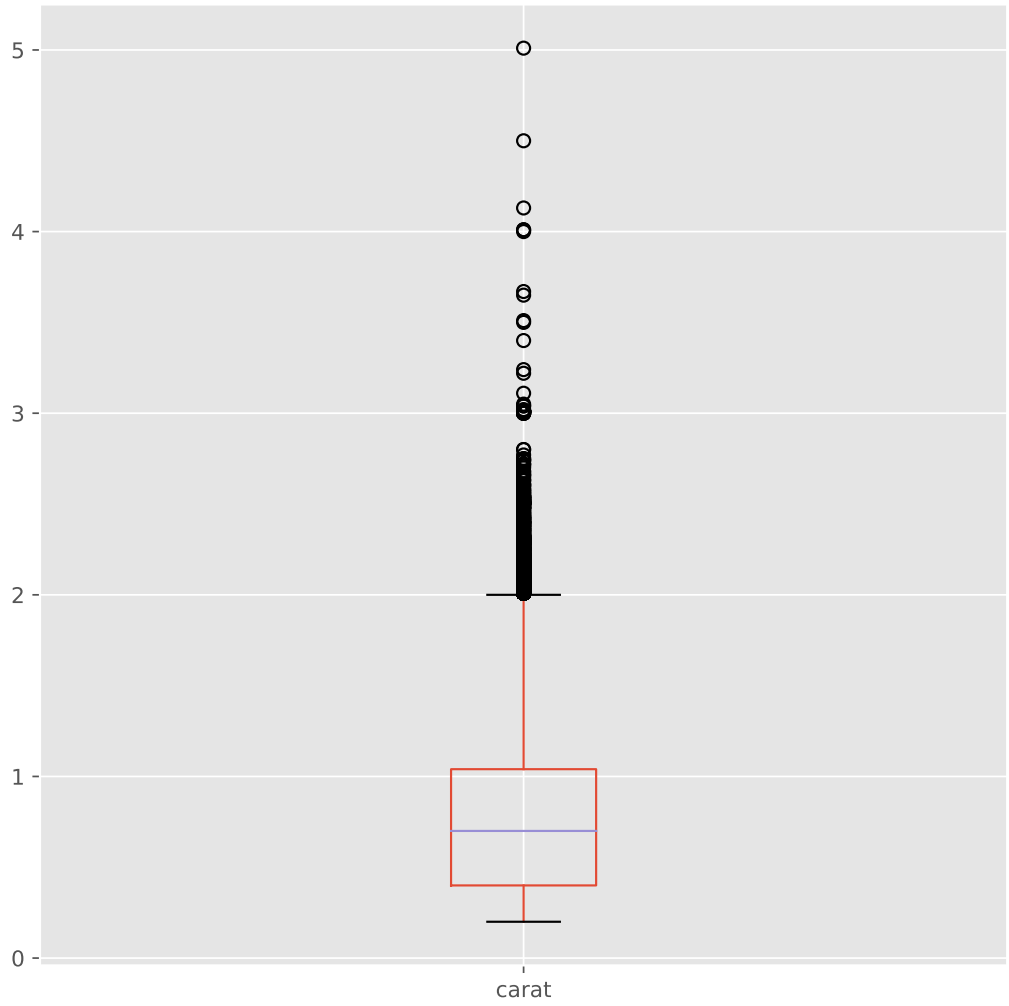
```
print(diamonds[diamonds["carat"]>3.5])
```

```
##        carat        cut color clarity  depth  table  price      x      y     z
## 23644   3.65       Fair     H      I1   67.1   53.0  11668   9.53   9.48  6.38
## 25998   4.01    Premium     I      I1   61.0   61.0  15223  10.14  10.10  6.17
## 25999   4.01    Premium     J      I1   62.5   62.0  15223  10.02   9.94  6.24
## 26444   4.00  Very Good     I      I1   63.3   58.0  15984  10.01   9.94  6.31
```

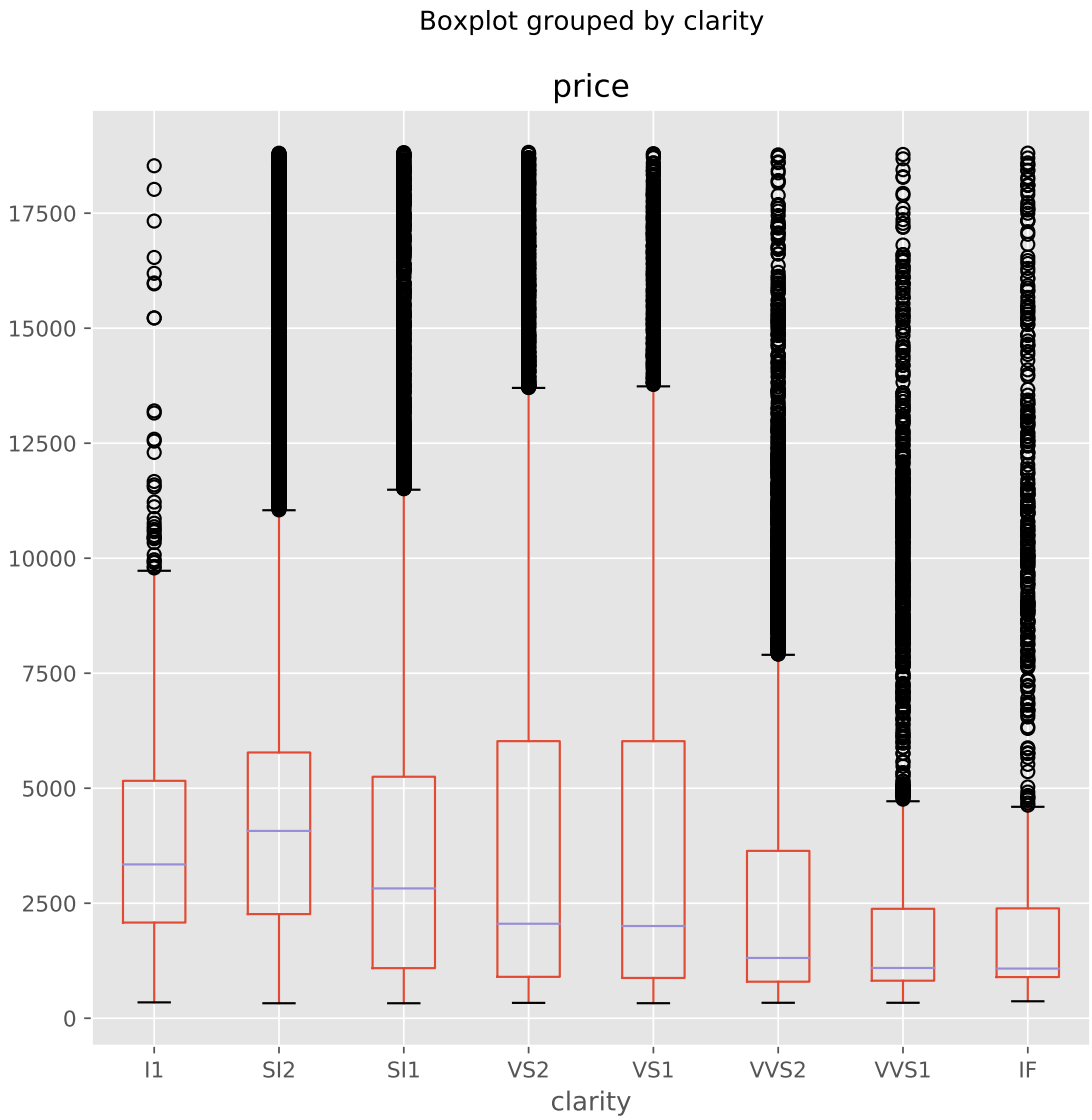
```
## 26534   3.67    Premium     I      I1   62.4   56.0  16193   9.86   9.81  6.13
## 27130   4.13       Fair     H      I1   64.8   61.0  17329  10.00   9.85  6.43
## 27415   5.01       Fair     J      I1   65.5   59.0  18018  10.74  10.54  6.98
## 27630   4.50       Fair     J      I1   65.8   58.0  18531  10.23  10.16  6.72
## 27679   3.51    Premium     J     VS2   62.5   59.0  18701   9.66   9.63  6.03
```

Boxplot

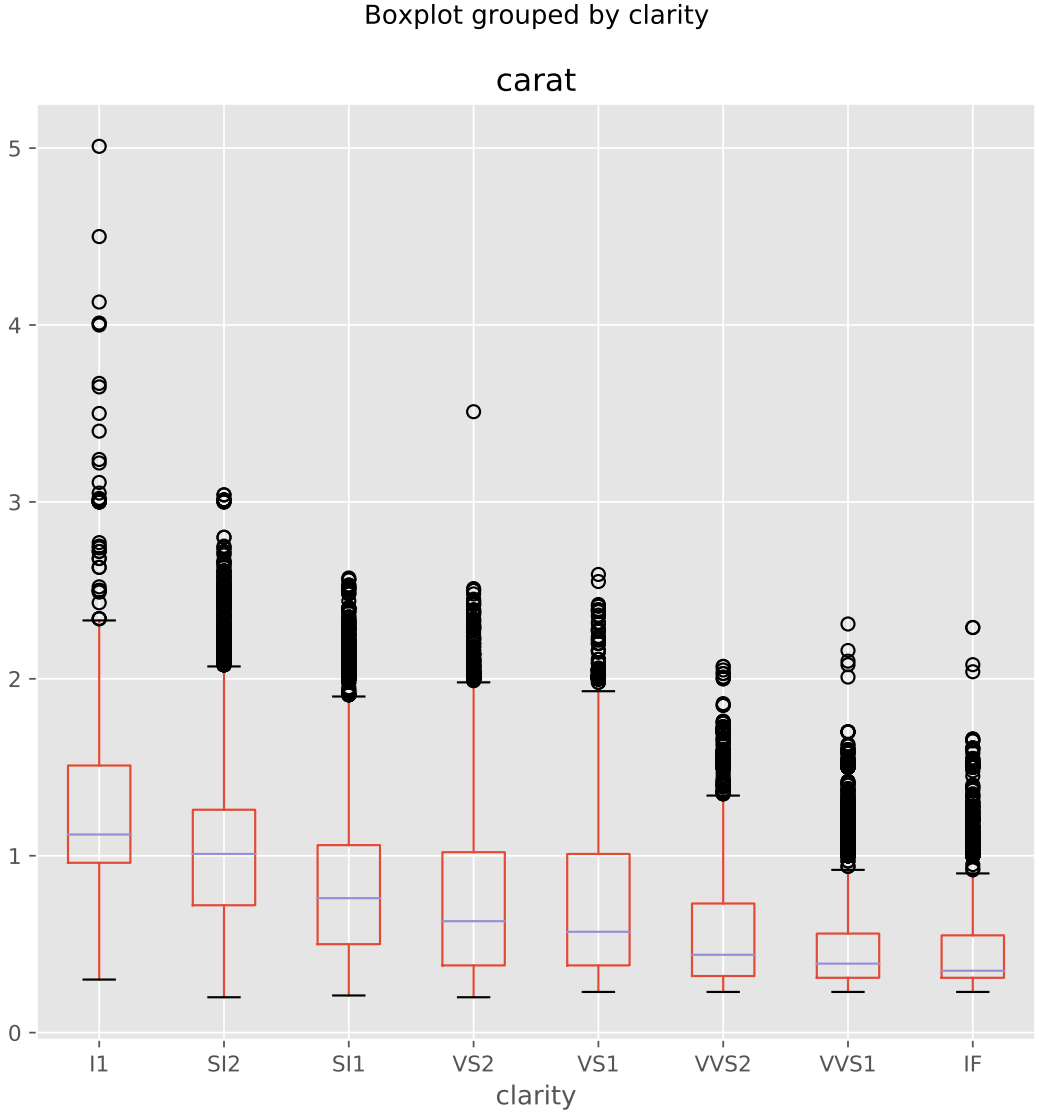
```
diamonds.boxplot(column = 'carat', figsize = (8,8))
matplotlib.pyplot.show()
```



```
# No existe relación entre precio y claridad
diamonds.boxplot(column = 'price', by = "clarity", figsize = (8,8))
matplotlib.pyplot.show()
```




```
# Los de menor claridad tienden a ser de mayor kilate
diamonds.boxplot(column = 'carat', by = "clarity", figsize = (8,8))
matplotlib.pyplot.show()
```



Densidades

```
diamonds["carat"].plot(kind= "density", figsize=(8,8), xlim=(0,5))
matplotlib.pyplot.show()
```

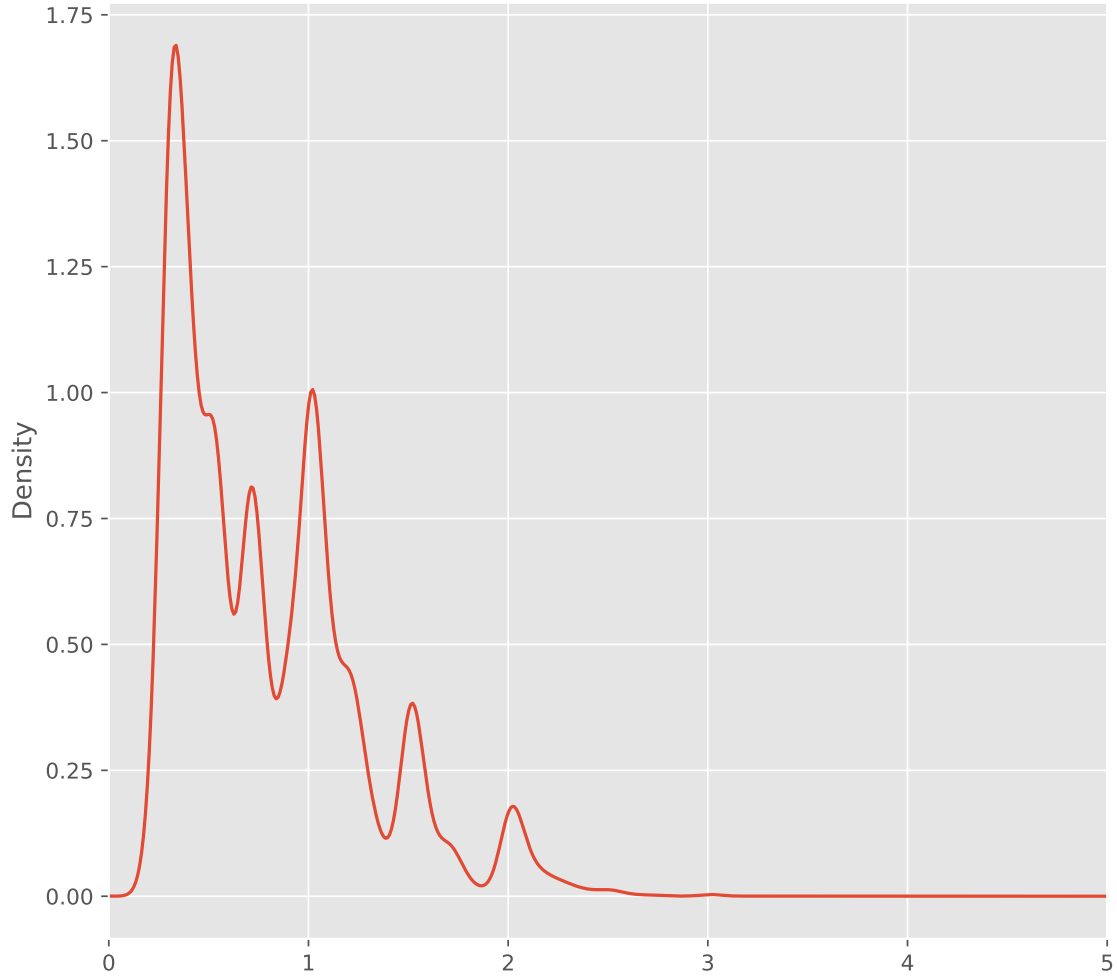


Tabla de frecuencias

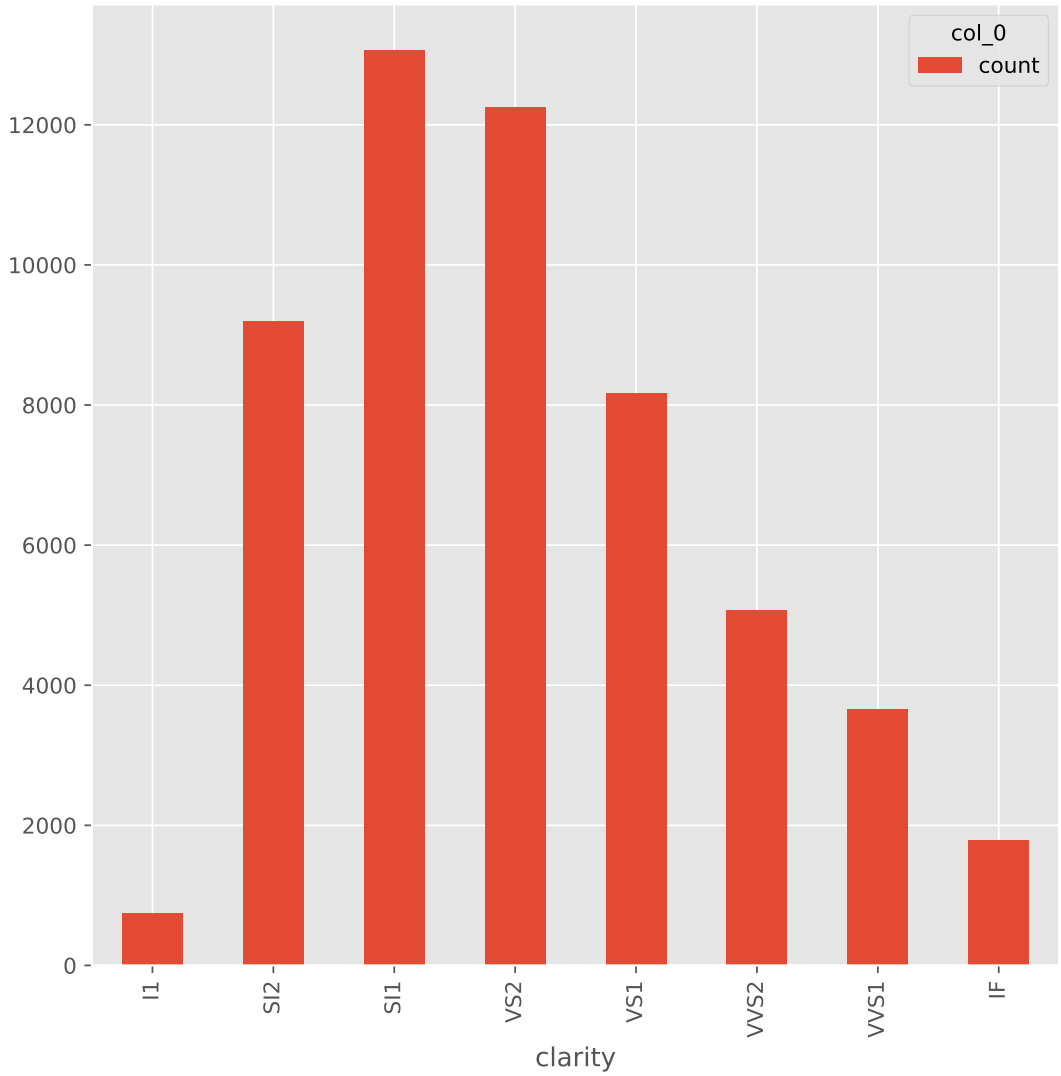
```
# Tabla de frecuencias absolutas
carat_table = pd.crosstab(index=diamonds["clarity"], columns="count")
print(carat_table)
```

```
## col_0    count
## clarity
## I1         741
## SI2       9194
## SI1      13065
```

```
## VS2      12258
## VS1       8171
## VVS2      5066
## VVS1      3655
## IF        1790
```

Barplot

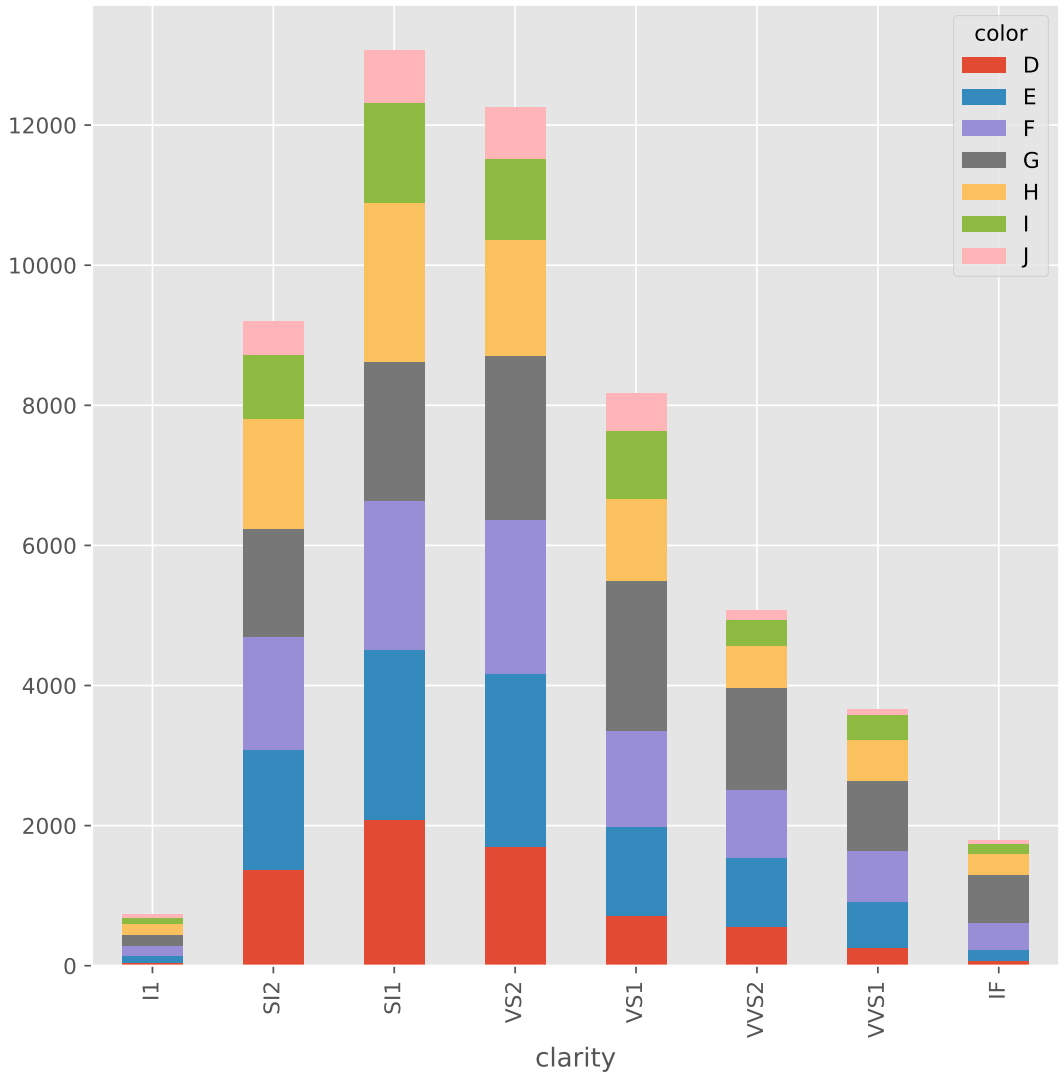
```
carat_table.plot(kind="bar", figsize=(8,8))
matplotlib.pyplot.show()
```



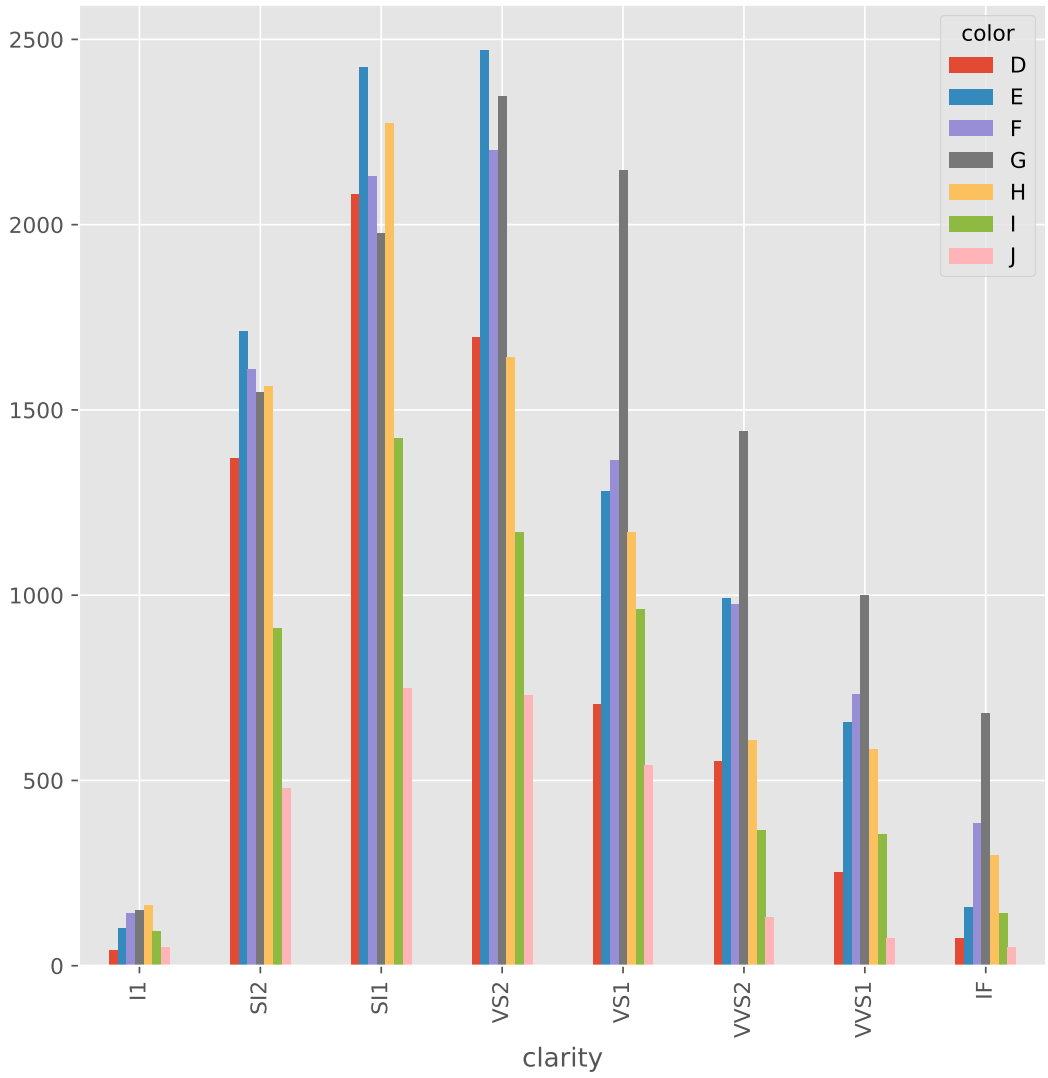
```
carat_table_2 = pd.crosstab(index=diamonds["clarity"], columns=diamonds["color"])
print(carat_table_2)
```

```
## color       D     E     F     G     H     I    J
## clarity
## I1         42   102   143   150   162    92   50
## SI2      1370  1713  1609  1548  1563   912  479
## SI1      2083  2426  2131  1976  2275  1424  750
## VS2      1697  2470  2201  2347  1643  1169  731
## VS1       705  1281  1364  2148  1169   962  542
## VVS2      553   991   975  1443   608   365  131
## VVS1      252   656   734   999   585   355   74
## IF         73   158   385   681   299   143   51
```

```
carat_table_2.plot(kind="bar", figsize=(8,8), stacked = True) #Apiladas
matplotlib.pyplot.show()
```



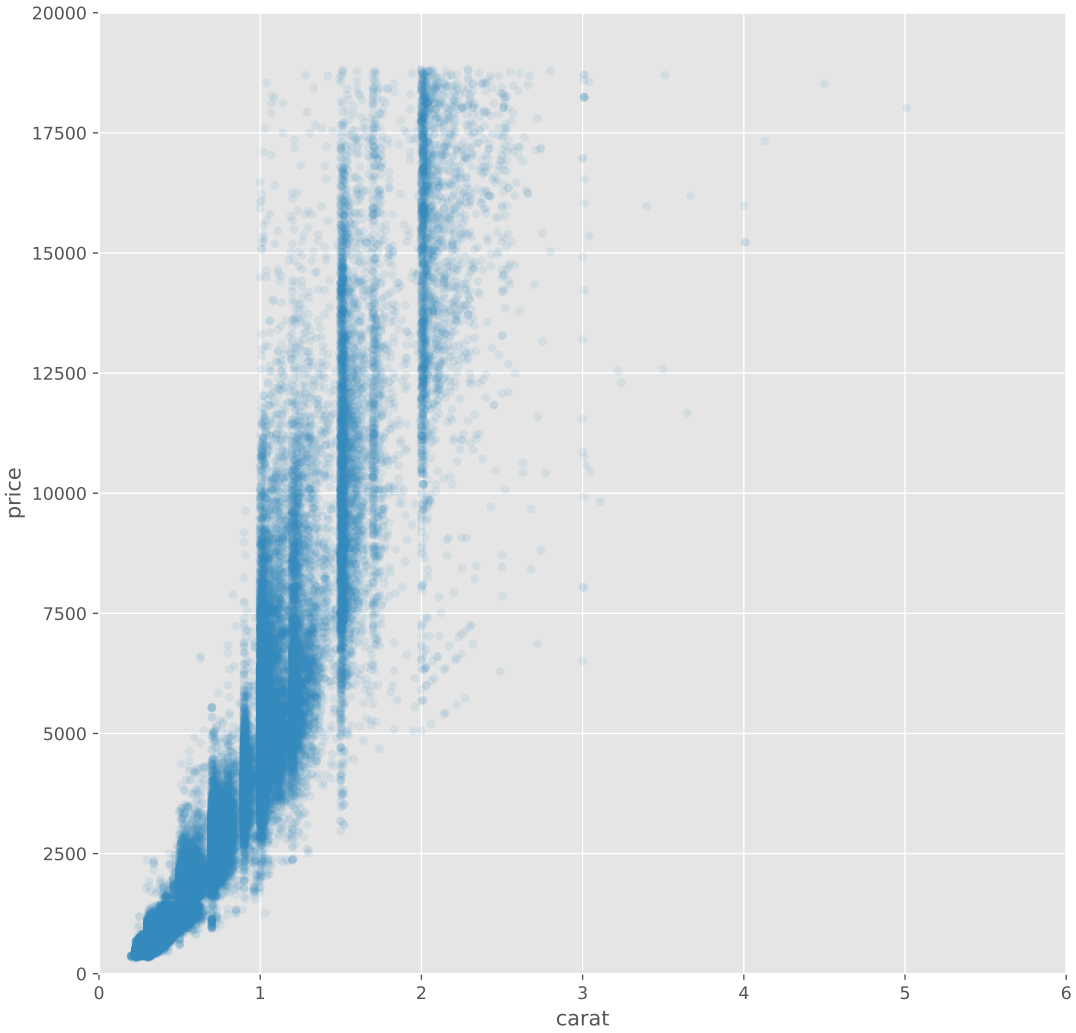

```
carat_table_2.plot(kind="bar", figsize=(8,8), stacked = False) #Sin apilar
matplotlib.pyplot.show()
```



Scatterplot

Nube de puntos

```
diamonds.plot(kind="scatter", x = "carat", y="price",
              figsize=(10,10),
              ylim=(0,20000), xlim=(0,6), alpha = 0.1)
              # alpha = 1 es 100% opaco
              # alpha = 0 es transparente
matplotlib.pyplot.show()
# Los diamantes cuanto mas kilate mas valen pero can teniendo mas dispersion
```


20000
17500
15000
12500
10000
7500
5000
2500
0
price
0
1
2
3
4
5
6
carat