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In [1]: import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
plt.style.use('seaborn')
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In [2]: df = pd.read_csv(r'C:\Users\NEW\Downloads\winequality-red.csv', delimiter = ';')
```

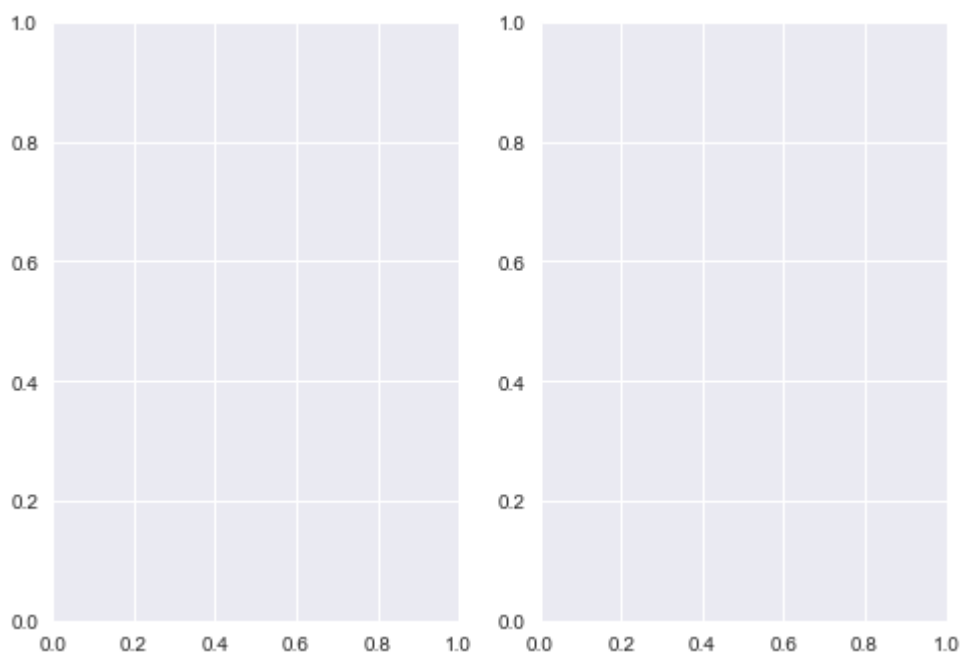
```
In [3]: df.head()
```

Out[3]:

	fixed acidity	volatile acidity	citric acid	residual sugar	chlorides	free sulfur dioxide	total sulfur dioxide	density	pH	sulphates	alcohol
0	7.4	0.70	0.00	1.9	0.076	11.0	34.0	0.9978	3.51	0.56	9.4
1	7.8	0.88	0.00	2.6	0.098	25.0	67.0	0.9968	3.20	0.68	9.8
2	7.8	0.76	0.04	2.3	0.092	15.0	54.0	0.9970	3.26	0.65	9.8
3	11.2	0.28	0.56	1.9	0.075	17.0	60.0	0.9980	3.16	0.58	9.8
4	7.4	0.70	0.00	1.9	0.076	11.0	34.0	0.9978	3.51	0.56	9.4

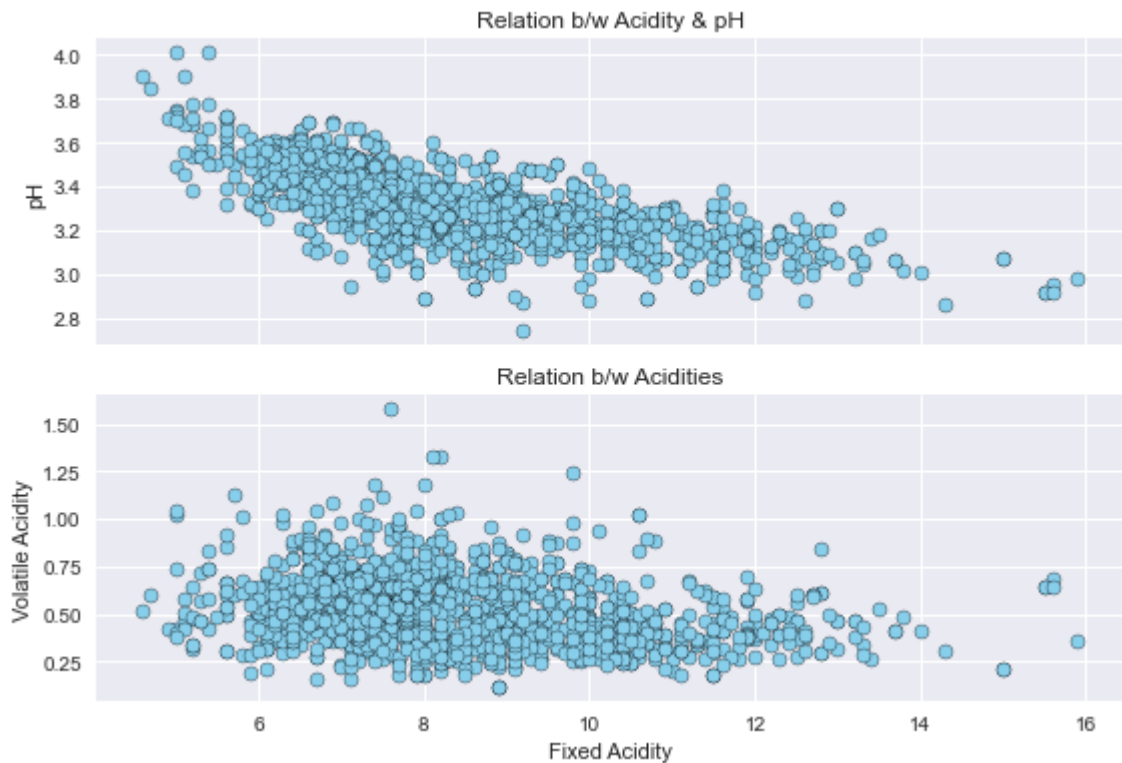
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In [4]: fig, ax = plt.subplots(nrows = 1, ncols = 2)
print(ax)
plt.show()
```

[<AxesSubplot:> <AxesSubplot:>]



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In [5]: fig, ax = plt.subplots(nrows = 2, ncols = 1, sharex = True)
ax[0].scatter(df['fixed acidity'], df['pH'], ec = 'k',
              color = 'skyblue')
ax[0].set_ylabel('pH')
ax[0].set_title('Relation b/w Acidity & pH')

ax[1].scatter(df['fixed acidity'], df['volatile acidity'], ec = 'k',
              color = 'skyblue')
ax[1].set_xlabel('Fixed Acidity')
ax[1].set_ylabel('Volatile Acidity')
ax[1].set_title('Relation b/w Acidities')
plt.tight_layout()
plt.show()
```



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In [6]: fig, ax = plt.subplots(nrows = 2, ncols = 2, figsize = (10,10))
ax[0,0].scatter(df['fixed acidity'], df['volatile acidity'], ec = 'k',
                color = 'slateblue')
ax[0,0].set_xlabel('Fixed Acidity')
ax[0,0].set_ylabel('Volatile Acidity')
ax[0,0].set_title('Relation b/w Acidities')

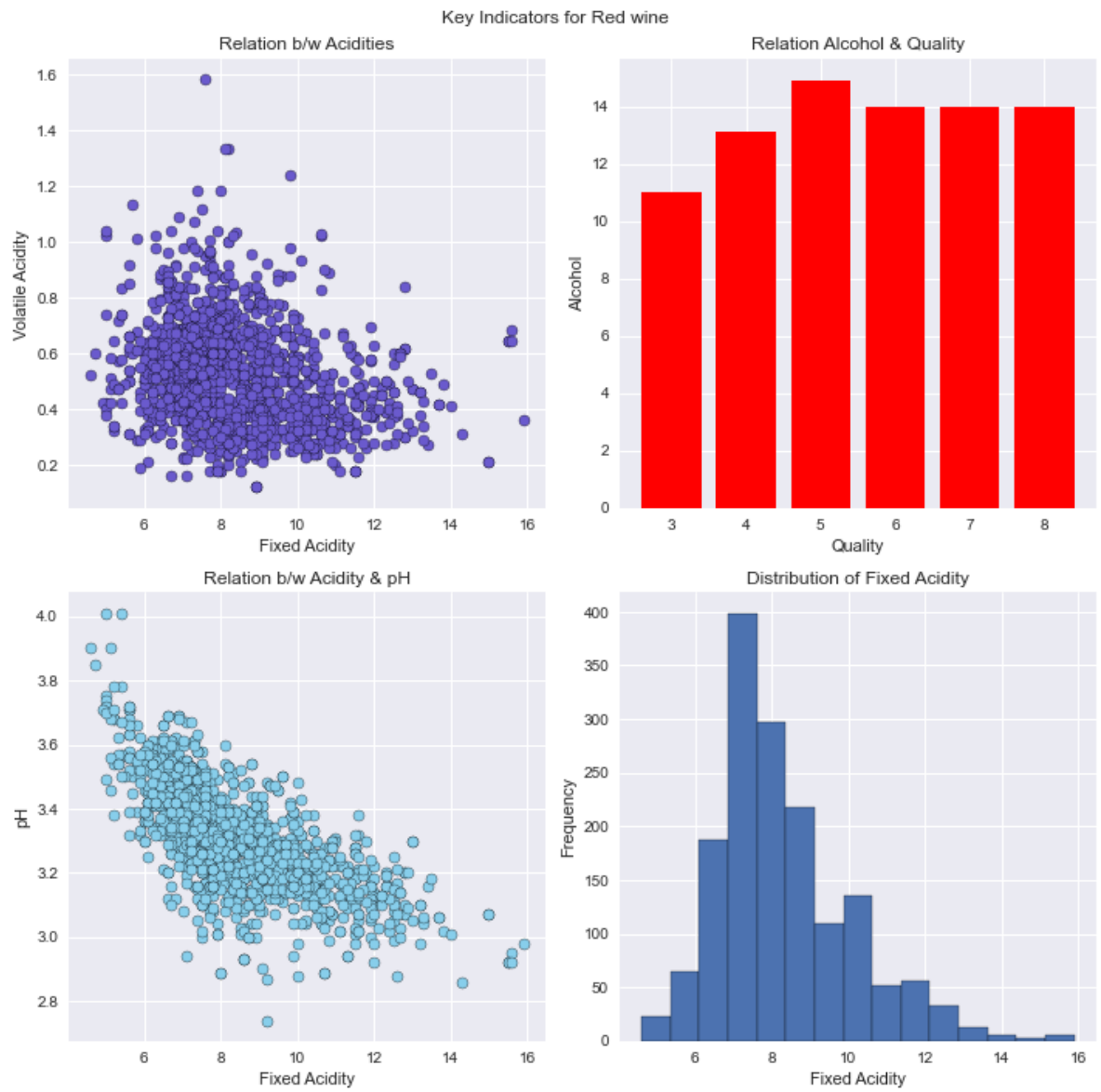
ax[0,1].bar(df['quality'], df['alcohol'],
            color = 'red')
ax[0,1].set_ylabel('Alcohol')
ax[0,1].set_xlabel('Quality')
ax[0,1].set_title('Relation Alcohol & Quality')

ax[1,0].scatter(df['fixed acidity'], df['pH'], ec = 'k',
                color = 'skyblue')
ax[1,0].set_ylabel('pH')
ax[1,0].set_xlabel('Fixed Acidity')
ax[1,0].set_title('Relation b/w Acidity & pH')

freq, bins = np.histogram(df['fixed acidity'], bins = 15)
ax[1,1].hist(df['fixed acidity'], ec = 'k',
             bins = bins)
ax[1,1].set_xlabel('Fixed Acidity')
ax[1,1].set_ylabel('Frequency')
ax[1,1].set_title('Distribution of Fixed Acidity')

fig.suptitle('Key Indicators for Red wine')

plt.tight_layout()
plt.show()
```



In [ ]: