Matplotlib 11_Belajar Violin Plot

June 7, 2022

1 Violin Plot / Violin Chart

Dalam sesi ini kita akan mempelajari cara membuat violin plot dengan Matplotlib.

1.1 1. Import Modules

[1]:
```
%matplotlib inline
```

[2]:
```
import matplotlib
import matplotlib.pyplot as plt
import numpy as np

print(matplotlib.__version__)
print(np.__version__)
```

```
3.3.4
1.20.1
```

1.2 2. Sample Dataset

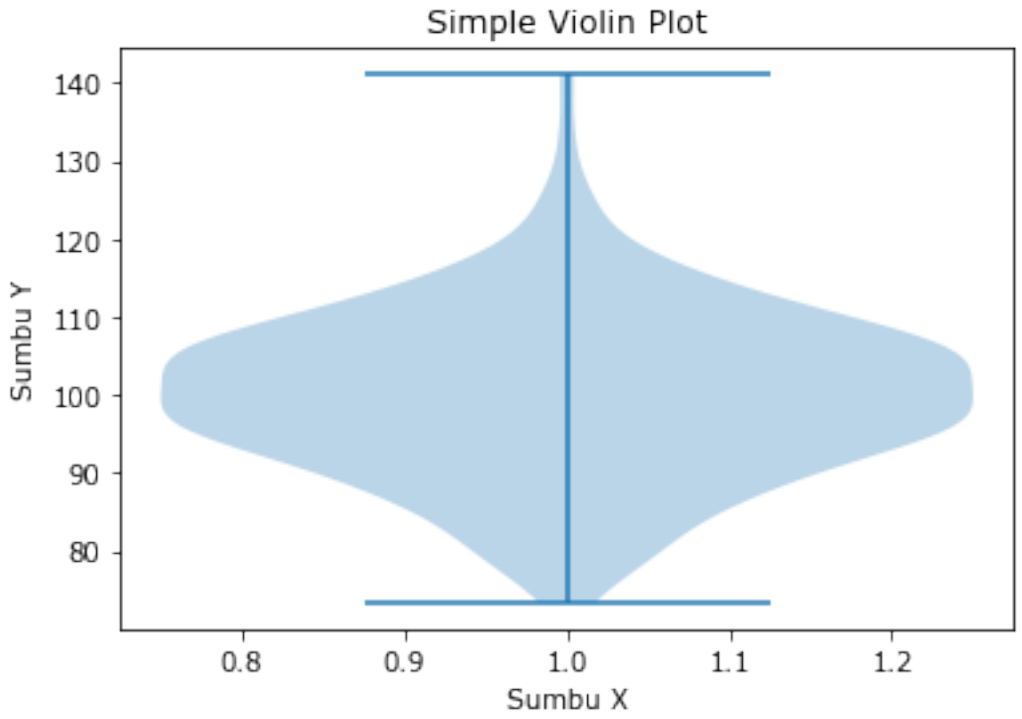
[3]:
```
np.random.seed(2)
data = np.random.normal(loc=100, scale=10, size=200)
data
```

[3]:
```
array([ 95.83242153,  99.43733173,  78.63803904, 116.40270808,
        82.06564415,  91.58252634, 105.02881417,  87.54711913,
        89.42047781,  90.90992385, 105.51454045, 122.92208013,
       100.41539393,  88.82074555, 105.39058321,  94.038403  ,
        99.80869503, 111.7500122 ,  92.52129051, 100.09025251,
        91.21892107,  98.4356583 , 102.56570452,  90.11220951,
        96.61178034,  97.63815969,  93.62344988,  88.12387714,
        85.78782773,  98.46504804,  97.3094304 , 122.31366789,
        75.65232423, 101.12726505, 103.70444537, 113.59633863,
       105.01857207,  91.55786296, 100.00009761, 105.42352572,
        96.86491803, 107.71011738,  81.31909345, 117.31184666,
       114.67678011,  96.64322661, 106.1134078 , 100.47970592,
        91.70864711, 100.87710218, 110.00365887,  96.18907482,
        96.24330577,  99.25529237, 104.3349633 , 112.7837923 ,
```

```
 93.65320695, 105.08396243, 102.16116006,  81.41387614,
 95.80683518,  98.67671102,  99.6042976 , 103.26003433,
 79.59676951, 100.46255523,  93.22324423,  85.60560973,
105.2429643 , 107.35279576,  93.46749732, 108.42456282,
 96.18483518, 100.66489009,  89.01261053, 115.84487056,
 73.40550544,  99.08547377, 106.95119605,  79.66533454,
 98.10530735,  99.22781335, 108.24703005, 112.48212921,
 95.96107731,  86.15481333, 113.67235424, 112.17885633,
 95.37994652, 103.50888494, 103.81866234, 105.66275441,
102.04207979, 114.06696242,  82.62040496, 110.40823953,
103.8047197 ,  97.82864731, 111.73531498,  76.56396809,
111.61521491, 103.86078048,  88.66866726, 104.33092555,
 96.95913561, 125.85294868, 118.35332723, 104.40689872,
 92.80746159,  94.16585405,  96.74950372,  94.39765494,
 90.97753932,  94.09027725,  97.23820508,  94.83116106,
 93.0141005 ,  90.71108075, 125.50438236,  85.26826752,
 89.78585269, 104.32395701,  96.7641993 , 104.23824708,
107.99179995, 112.62613663, 107.51964849,  90.06239017,
111.09143281,  82.35082272,  98.85578703,  95.01825806,
 89.39200964, 105.91666521,  98.16743426, 110.19854729,
 85.17534522, 108.46311892, 104.97940148, 101.26504175,
 85.81189449,  97.48225882,  84.53325389,  79.17348064,
132.79745401, 109.7086132 , 117.92592852,  95.70986681,
106.9619798 , 106.97416272, 106.01515814, 100.03659491,
 97.71752442,  79.30387737, 106.10144086, 104.234969  ,
111.17886733,  97.25757911, 117.41812188,  95.52499124,
 87.44572782, 109.38163671,  95.3165374 ,  87.45279693,
101.24823646, 107.56502143, 102.41439629, 104.97425649,
141.08692624, 108.21120877, 115.31760316,  80.14154226,
103.65053516, 107.74082033,  96.35520908,  91.24020522,
103.96520159,  96.85382564,  94.06244417, 111.49500568,
113.35566168, 103.02629336,  95.45772145, 105.14370717,
108.29458431, 106.30621967,  85.4663565 ,  96.61982223,
103.59133332, 106.22220414, 109.60781945, 107.58370347,
 88.65681517,  92.92579112,  87.78570835, 118.04476642,
101.80409807, 105.53164274, 110.33029066,  96.70997565])
```

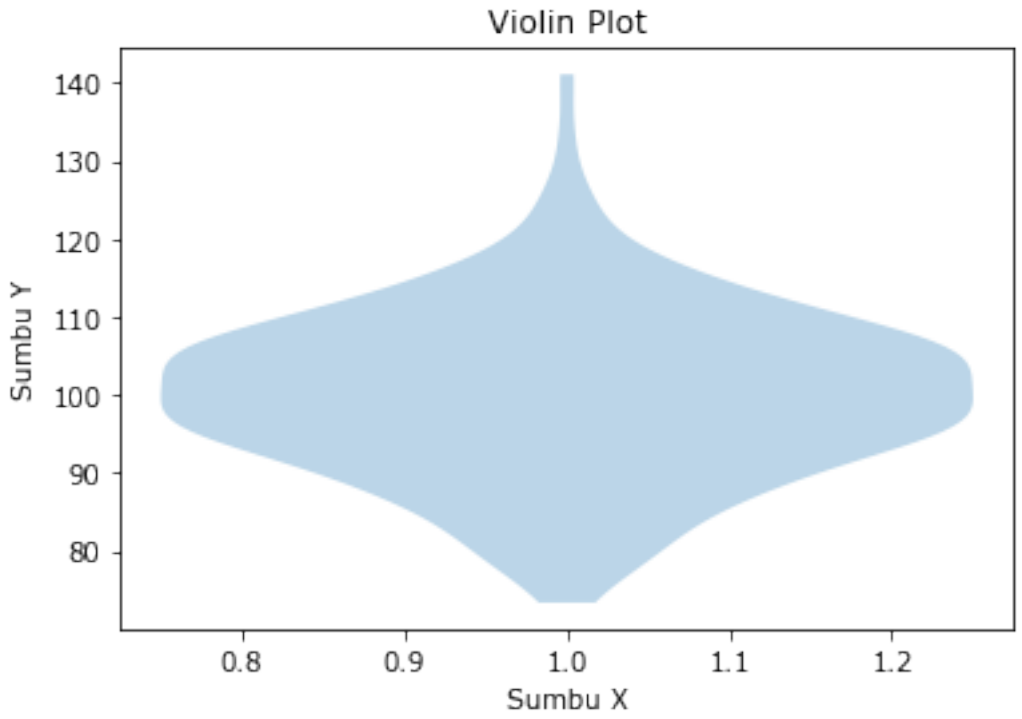
1.3 3. Simple Violin Plot

[4]:
```
plt.violinplot(data)

plt.title('Simple Violin Plot')
plt.ylabel('Sumbu Y')
plt.xlabel('Sumbu X')

plt.show()
```

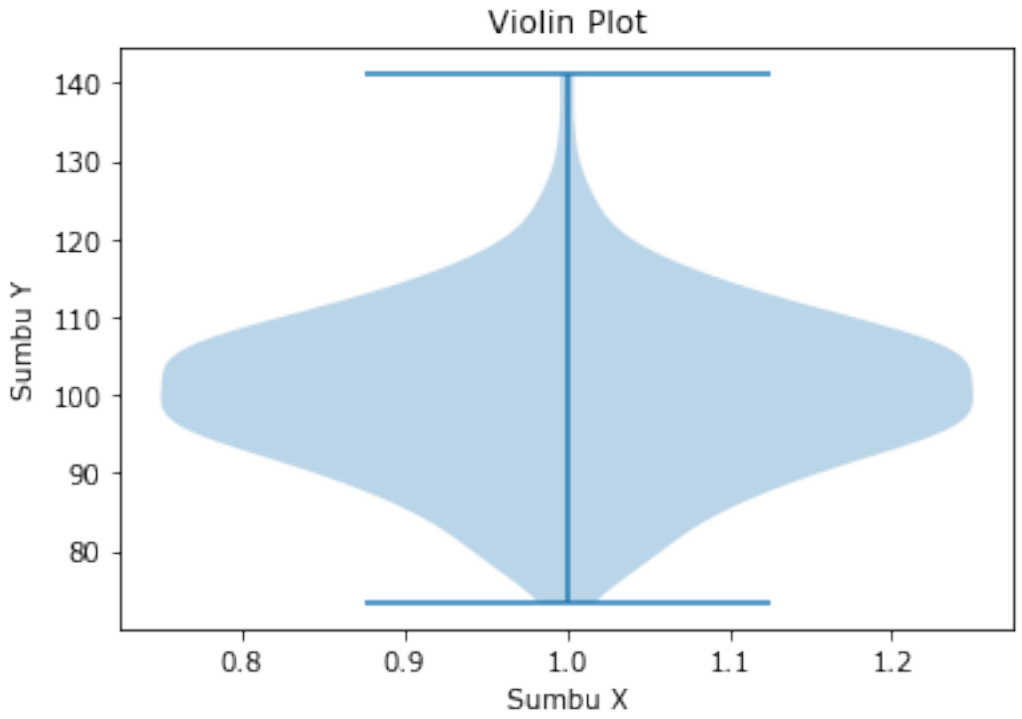


1.4 4. Pengaturan pada Violin Plot

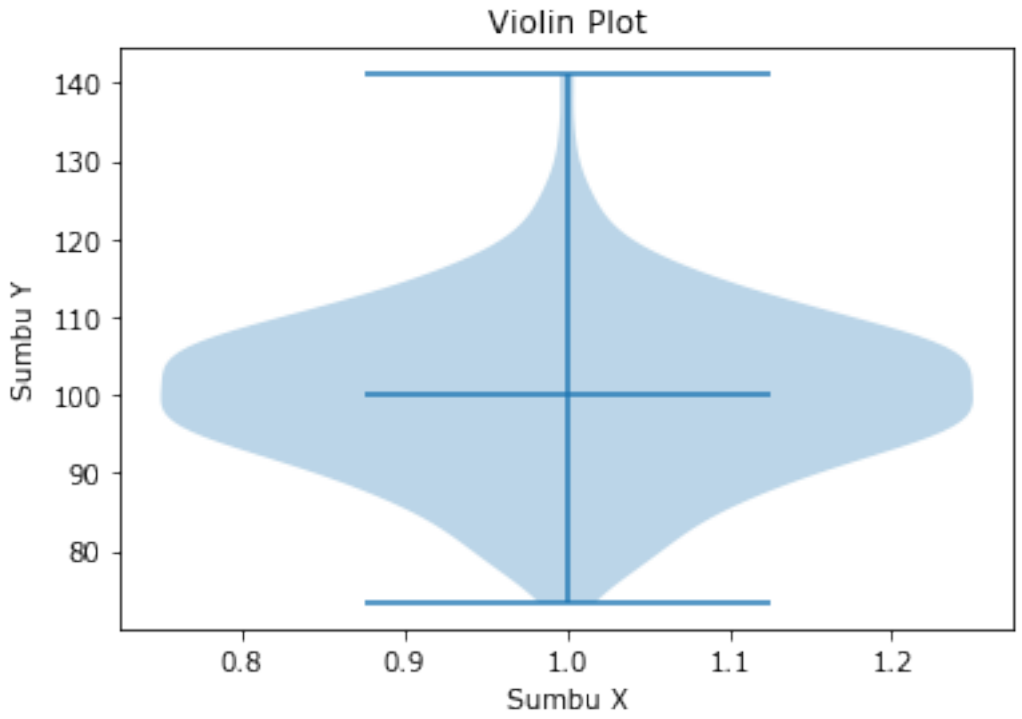
[5]:
```
plt.violinplot(data,
               showextrema=False,
               showmeans=False,
               showmedians=False,
               quantiles=None)

plt.title('Violin Plot')
plt.xlabel('Sumbu X')
plt.ylabel('Sumbu Y')

plt.show()
```



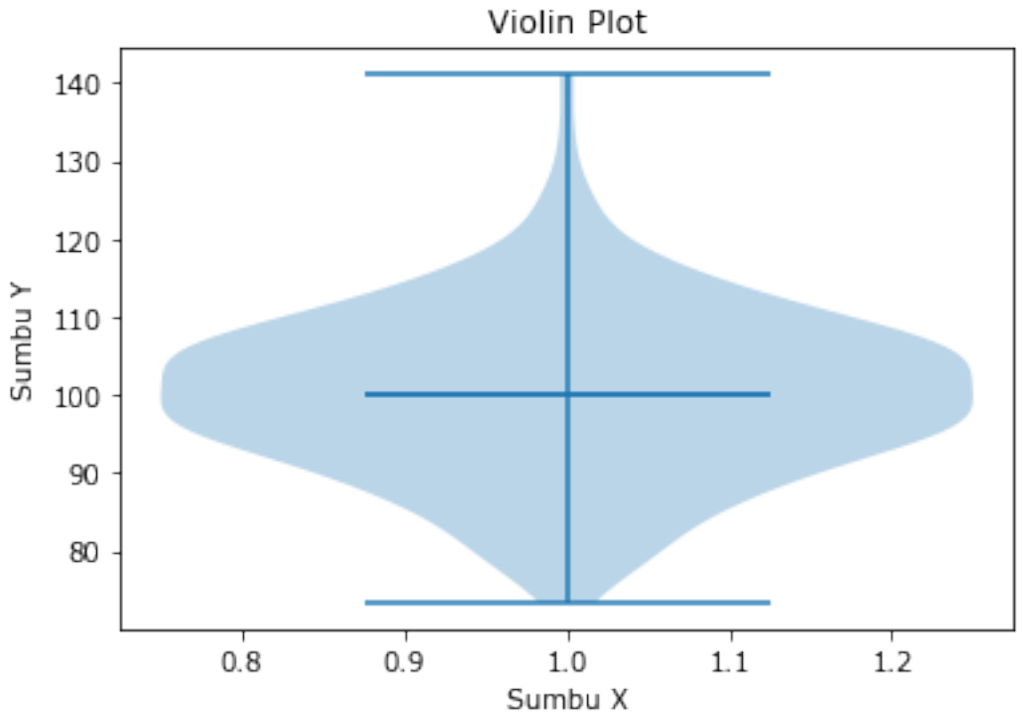
[6]:
```
plt.violinplot(data,
               showextrema=True,
               showmeans=False,
               showmedians=False,
               quantiles=None)

plt.title('Violin Plot')
plt.xlabel('Sumbu X')
plt.ylabel('Sumbu Y')

plt.show()
```



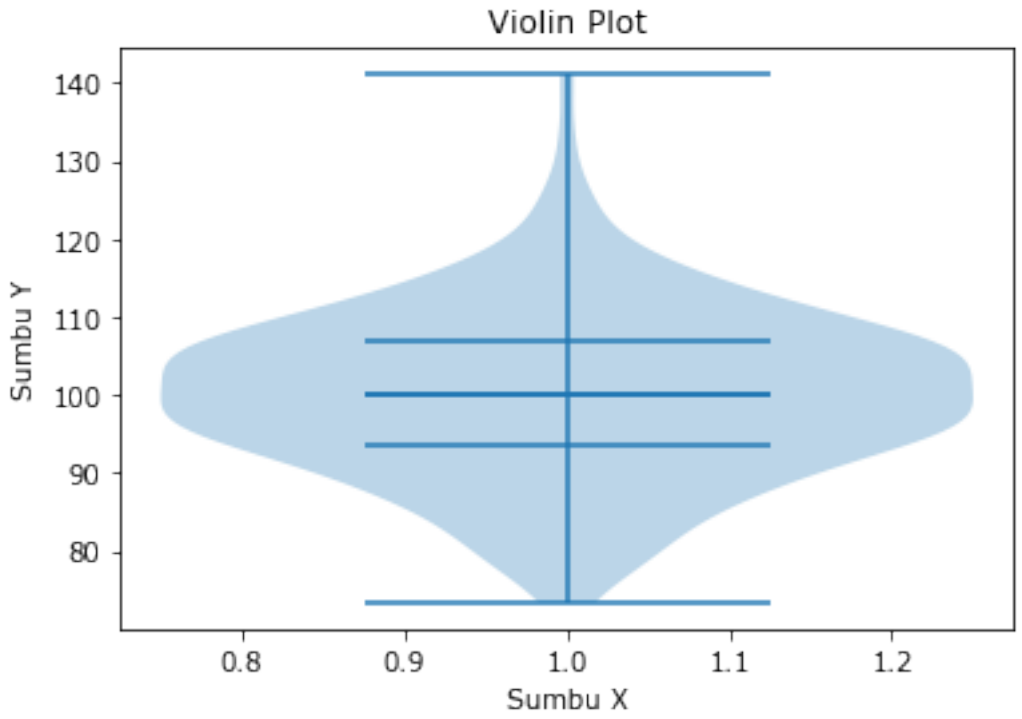
[7]:
```
plt.violinplot(data,
               showextrema=True,
               showmeans=True,
               showmedians=False,
               quantiles=None)

plt.title('Violin Plot')
plt.xlabel('Sumbu X')
plt.ylabel('Sumbu Y')

plt.show()
```



[8]:
```
plt.violinplot(data,
               showextrema=True,
               showmeans=True,
               showmedians=True,
               quantiles=None)

plt.title('Violin Plot')
plt.xlabel('Sumbu X')
plt.ylabel('Sumbu Y')

plt.show()
```

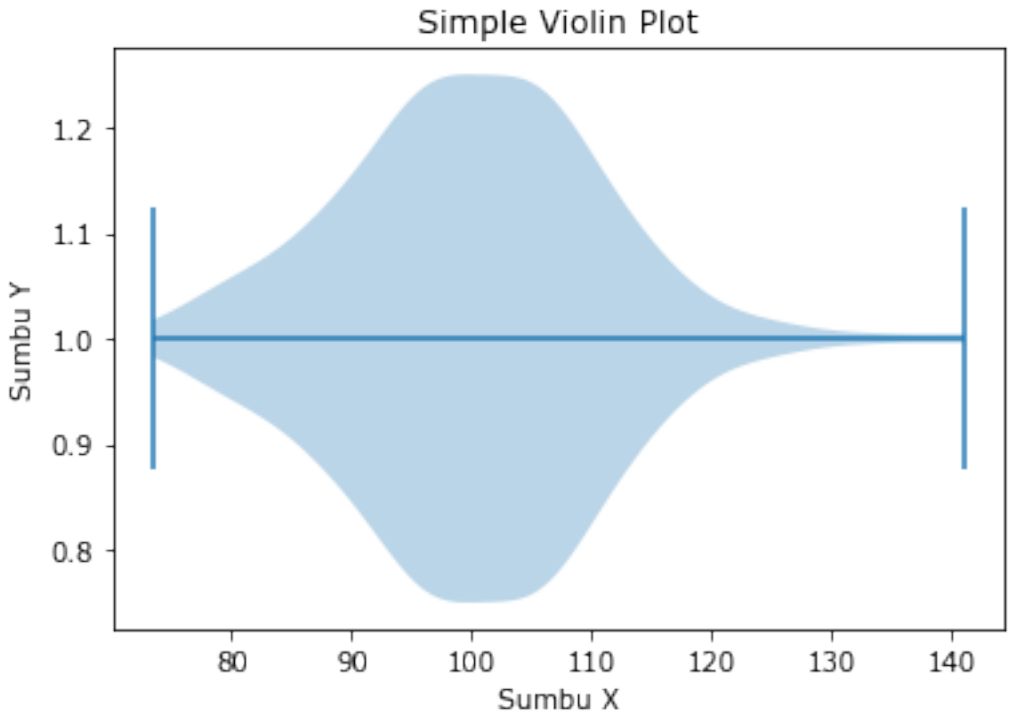


[9]:
```
plt.violinplot(data,
               showextrema=True,
               showmeans=True,
               showmedians=True,
               quantiles=[0.25, 0.5, 0.75])

plt.title('Violin Plot')
plt.xlabel('Sumbu X')
plt.ylabel('Sumbu Y')

plt.show()
```



1.5 5. Horizontal Violin Plot

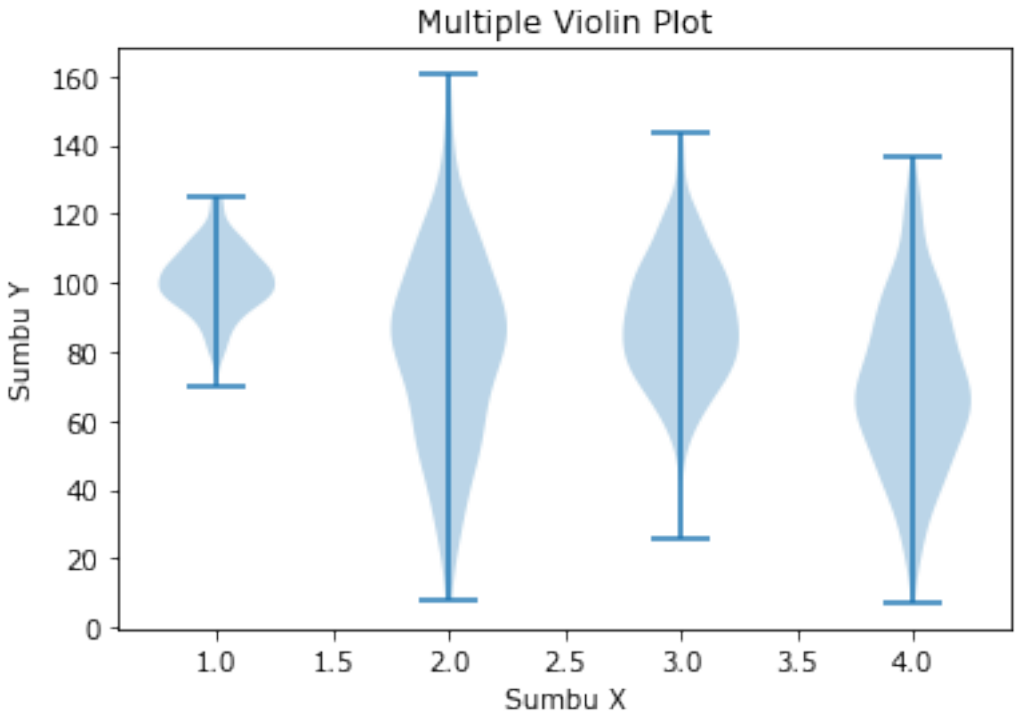
[10]:
```
plt.violinplot(data, vert=False)

plt.title('Simple Violin Plot')
plt.ylabel('Sumbu Y')
plt.xlabel('Sumbu X')

plt.show()
```



1.6 6. Multiple Violin Plot

[11]:
```
np.random.seed(10)
data1 = np.random.normal(100, 10, 200)
data2 = np.random.normal(80, 30, 200)
data3 = np.random.normal(90, 20, 200)
data4 = np.random.normal(70, 25, 200)

data = [data1, data2, data3, data4]
```

[12]:
```
plt.violinplot(data)

plt.title('Multiple Violin Plot')
plt.xlabel('Sumbu X')
plt.ylabel('Sumbu Y')

plt.show()
```


Multiple Violin Plot
Sumbu Y
160
140
120
100
80
60
40
20
0
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Sumbu X