

Python Seaborn Tutorial Part - 4 and Part - 5

How to draw Seaborn Histogram / Seaborn Distplot

#Import libraries

```
import seaborn as sns # For Data Visualization
from scipy.stats import norm # for scientific Computing
import matplotlib.pyplot as plt # For Data Visualization
```

#Load "tips" DataFrame from GitHub seaborn repository

```
tips_df = sns.load_dataset("tips")
```

```
tips_df
```

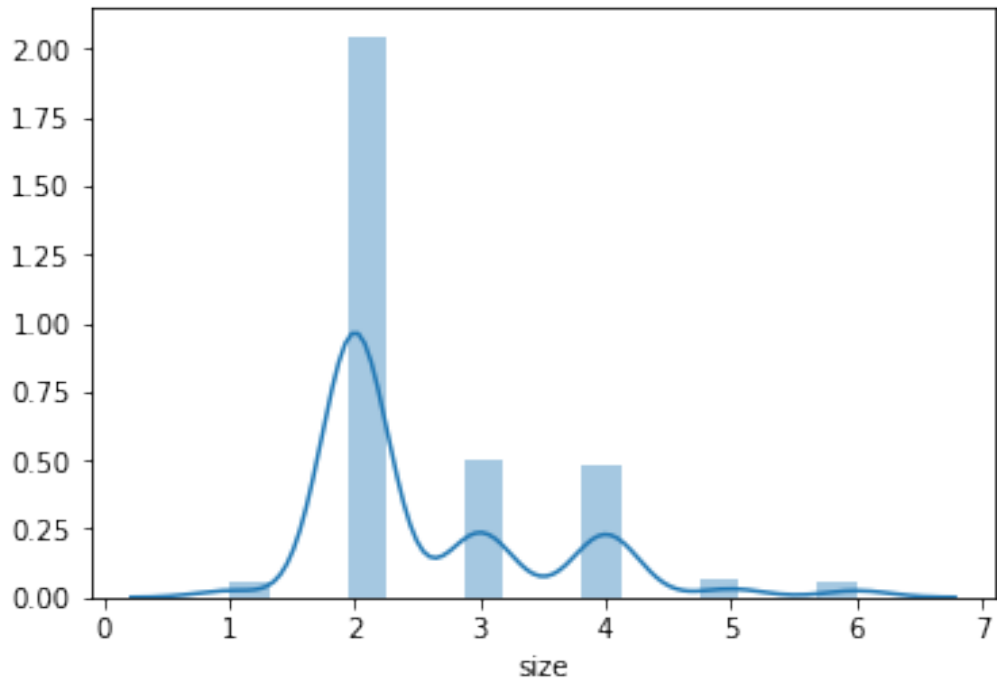
	total_bill	tip	sex	smoker	day	time	size
0	16.99	1.01	Female	No	Sun	Dinner	2
1	10.34	1.66	Male	No	Sun	Dinner	3
2	21.01	3.50	Male	No	Sun	Dinner	3
3	23.68	3.31	Male	No	Sun	Dinner	2
4	24.59	3.61	Female	No	Sun	Dinner	4
5	25.29	4.71	Male	No	Sun	Dinner	4
6	8.77	2.00	Male	No	Sun	Dinner	2
7	26.88	3.12	Male	No	Sun	Dinner	4
8	15.04	1.96	Male	No	Sun	Dinner	2
9	14.78	3.23	Male	No	Sun	Dinner	2
10	10.27	1.71	Male	No	Sun	Dinner	2
11	35.26	5.00	Female	No	Sun	Dinner	4
12	15.42	1.57	Male	No	Sun	Dinner	2
13	18.43	3.00	Male	No	Sun	Dinner	4
14	14.83	3.02	Female	No	Sun	Dinner	2
15	21.58	3.92	Male	No	Sun	Dinner	2
16	10.33	1.67	Female	No	Sun	Dinner	3
17	16.29	3.71	Male	No	Sun	Dinner	3
18	16.97	3.50	Female	No	Sun	Dinner	3
19	20.65	3.35	Male	No	Sat	Dinner	3
20	17.92	4.08	Male	No	Sat	Dinner	2
21	20.29	2.75	Female	No	Sat	Dinner	2
22	15.77	2.23	Female	No	Sat	Dinner	2
23	39.42	7.58	Male	No	Sat	Dinner	4
24	19.82	3.18	Male	No	Sat	Dinner	2
25	17.81	2.34	Male	No	Sat	Dinner	4
26	13.37	2.00	Male	No	Sat	Dinner	2
27	12.69	2.00	Male	No	Sat	Dinner	2
28	21.70	4.30	Male	No	Sat	Dinner	2
29	19.65	3.00	Female	No	Sat	Dinner	2
...
214	28.17	6.50	Female	Yes	Sat	Dinner	3
215	12.90	1.10	Female	Yes	Sat	Dinner	2
216	28.15	3.00	Male	Yes	Sat	Dinner	5

217	11.59	1.50	Male	Yes	Sat	Dinner	2
218	7.74	1.44	Male	Yes	Sat	Dinner	2
219	30.14	3.09	Female	Yes	Sat	Dinner	4
220	12.16	2.20	Male	Yes	Fri	Lunch	2
221	13.42	3.48	Female	Yes	Fri	Lunch	2
222	8.58	1.92	Male	Yes	Fri	Lunch	1
223	15.98	3.00	Female	No	Fri	Lunch	3
224	13.42	1.58	Male	Yes	Fri	Lunch	2
225	16.27	2.50	Female	Yes	Fri	Lunch	2
226	10.09	2.00	Female	Yes	Fri	Lunch	2
227	20.45	3.00	Male	No	Sat	Dinner	4
228	13.28	2.72	Male	No	Sat	Dinner	2
229	22.12	2.88	Female	Yes	Sat	Dinner	2
230	24.01	2.00	Male	Yes	Sat	Dinner	4
231	15.69	3.00	Male	Yes	Sat	Dinner	3
232	11.61	3.39	Male	No	Sat	Dinner	2
233	10.77	1.47	Male	No	Sat	Dinner	2
234	15.53	3.00	Male	Yes	Sat	Dinner	2
235	10.07	1.25	Male	No	Sat	Dinner	2
236	12.60	1.00	Male	Yes	Sat	Dinner	2
237	32.83	1.17	Male	Yes	Sat	Dinner	2
238	35.83	4.67	Female	No	Sat	Dinner	3
239	29.03	5.92	Male	No	Sat	Dinner	3
240	27.18	2.00	Female	Yes	Sat	Dinner	2
241	22.67	2.00	Male	Yes	Sat	Dinner	2
242	17.82	1.75	Male	No	Sat	Dinner	2
243	18.78	3.00	Female	No	Thur	Dinner	2

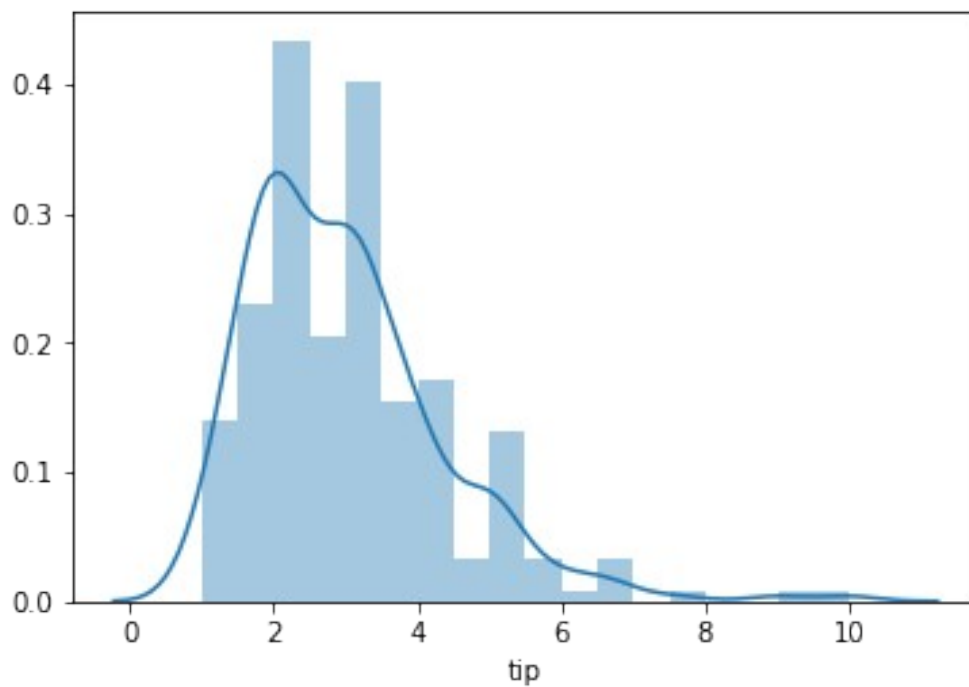
[244 rows x 7 columns]

```
#Plot Histogram of "size"
sns.distplot(tips_df["size"])
```

<matplotlib.axes._subplots.AxesSubplot at 0x1d0089f62e8>

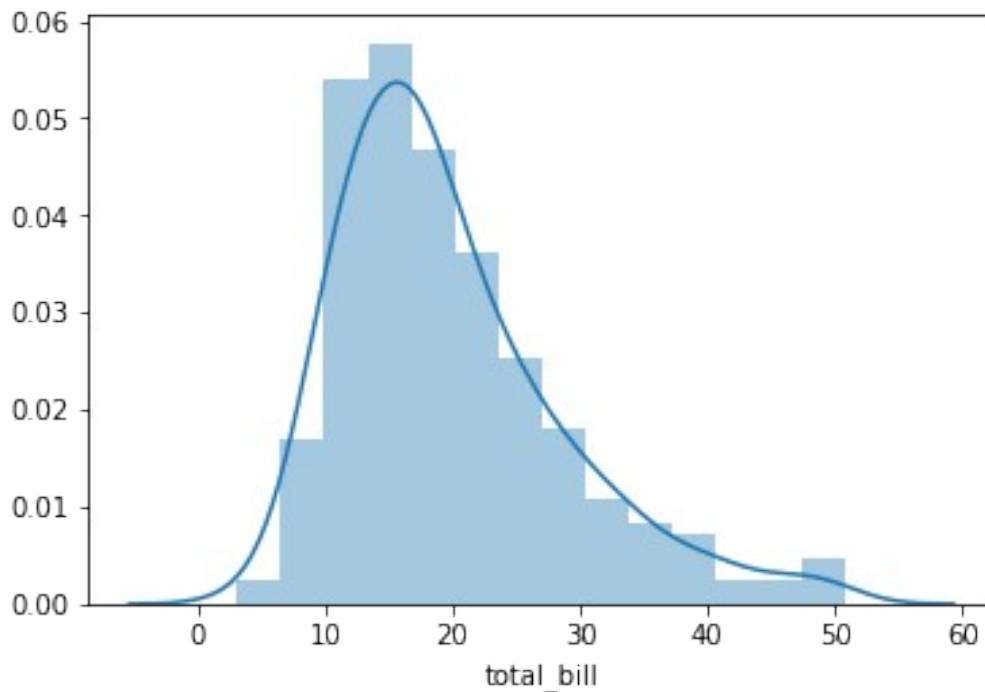


```
#Plot Histogram of "tip"  
sns.distplot(tips_df["tip"])  
<matplotlib.axes._subplots.AxesSubplot at 0x1d008d44ef0>
```



```
#Plot Histogram of "total_bill"  
sns.distplot(tips_df["total_bill"])
```

<matplotlib.axes._subplots.AxesSubplot at 0x1d009dea550>

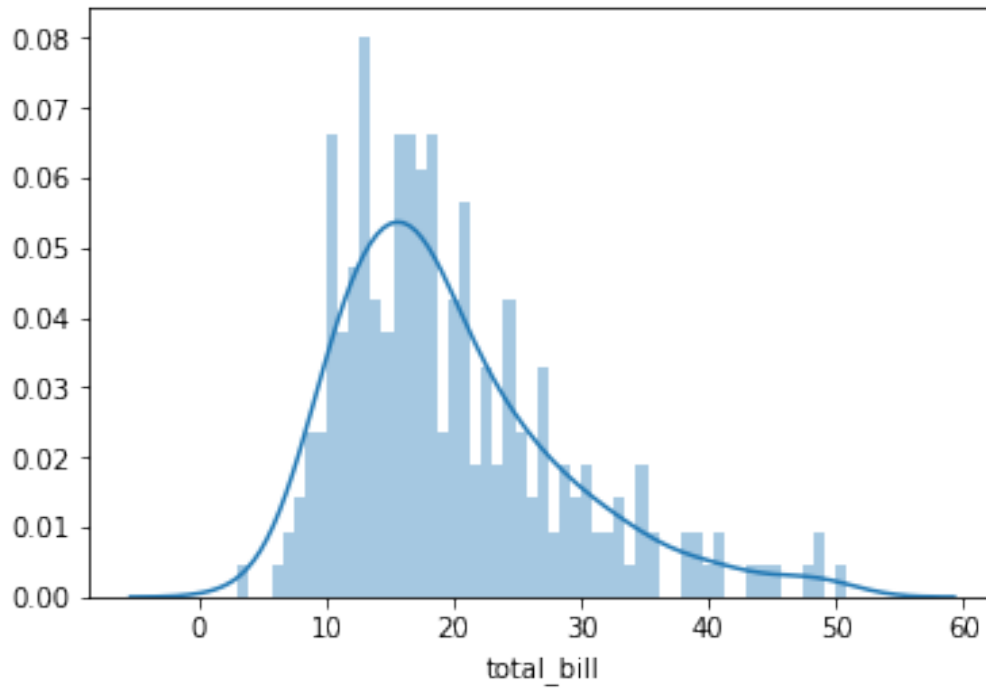


```
"""
sns.distplot(
    a,
    bins=None,
    hist=True,
    kde=True,
    rug=False,
    fit=None,
    hist_kws=None,
    kde_kws=None,
    rug_kws=None,
    fit_kws=None,
    color=None,
    vertical=False,
    norm_hist=False,
    axlabel=None,
    label=None,
    ax=None,
)
"""

'\nsns.distplot(\n    a,\n    bins=None,\n    hist=True,\n    kde=True,\n    rug=False,\n    fit=None,\n    hist_kws=None,\n    kde_kws=None,\n    rug_kws=None,\n    fit_kws=None,\n    color=None,\n    vertical=False,\n    norm_hist=False,\n    axlabel=None,\n    label=None,\n    ax=None,\n)\n'
```

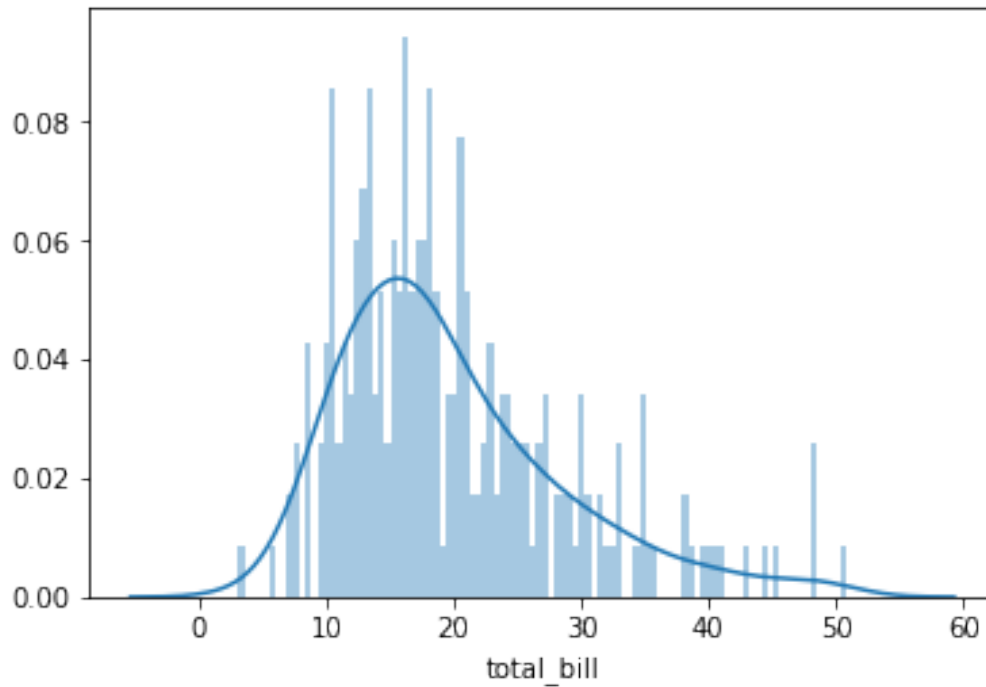
```
#Plot Histogram of "total_bill" with bins parameters  
sns.distplot(tips_df["total_bill"], bins=55)
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x1d009e58358>
```



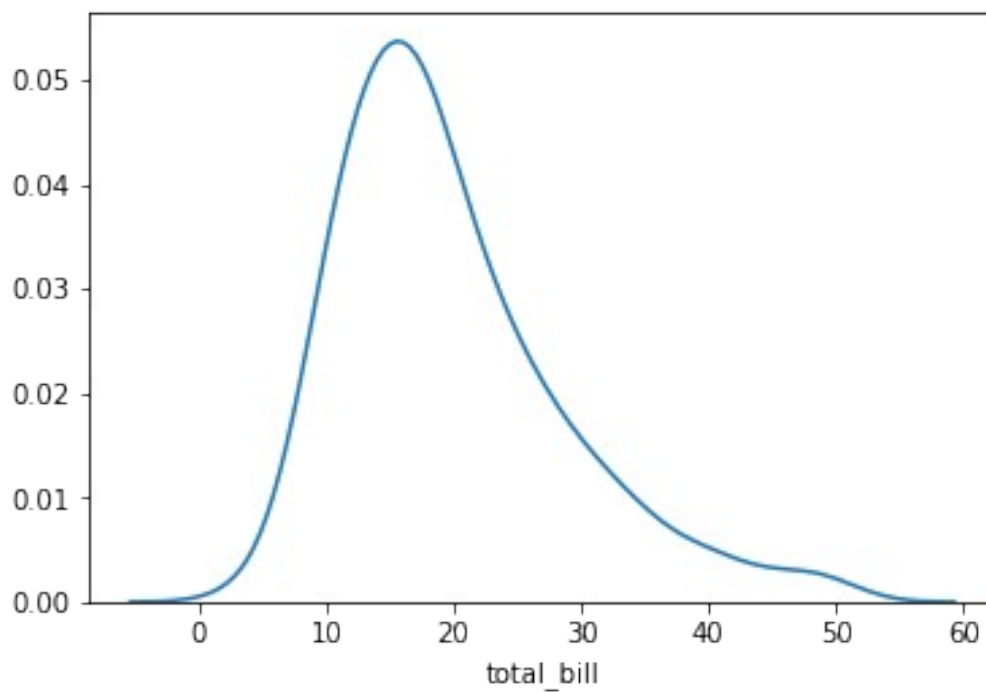
```
#Plot Histogram of "total_bill" with bins parameters  
sns.distplot(tips_df["total_bill"], bins=100)
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x1d009ef6e80>
```



```
#Plot Histogram of "total_bill" with hist parameters
sns.distplot(tips_df["total_bill"], hist = False)

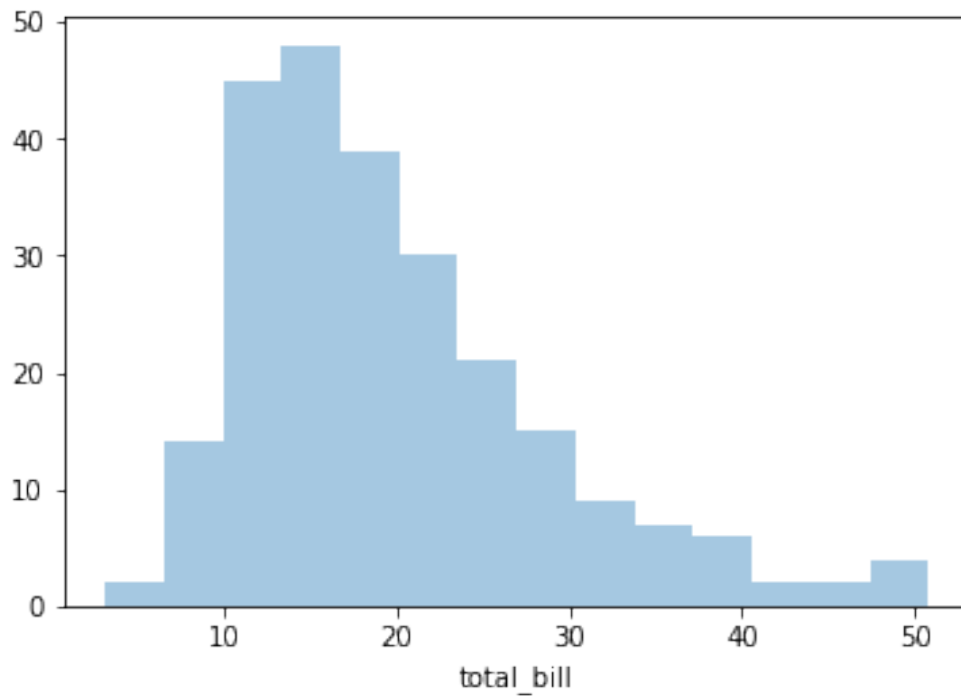
<matplotlib.axes._subplots.AxesSubplot at 0x1d00a0957f0>
```



```
#Plot Histogram of "total_bill" with kde (kernal density estimator)  
parameters
```

```
sns.distplot(tips_df["total_bill"], kde=False,)
```

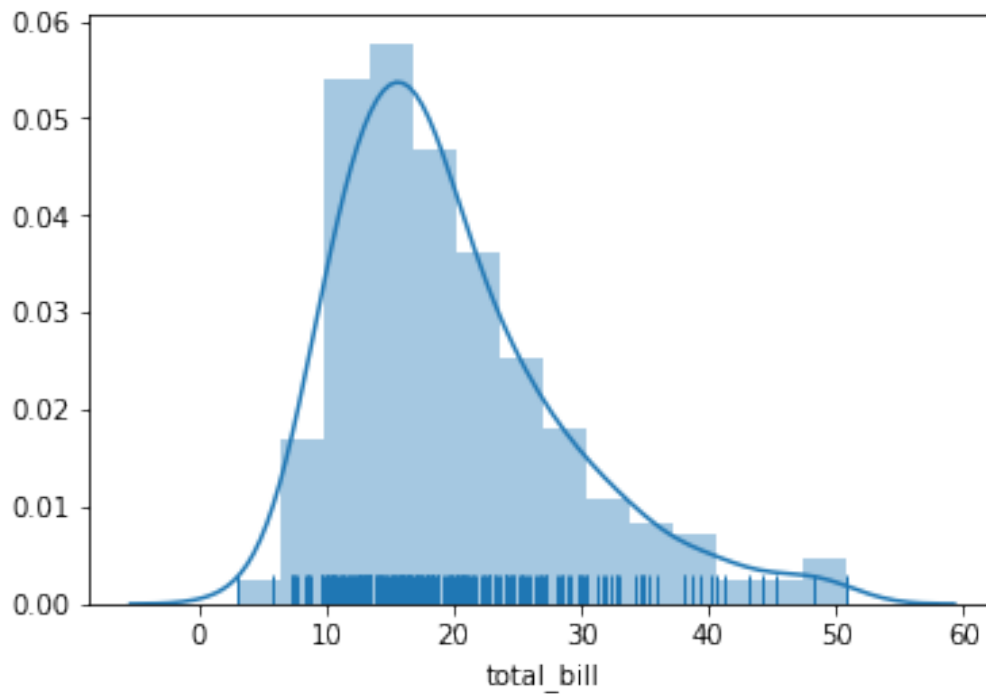
```
<matplotlib.axes._subplots.AxesSubplot at 0x1d00a0fab00>
```



```
#Plot Histogram of "total_bill" with rugplot parameters
```

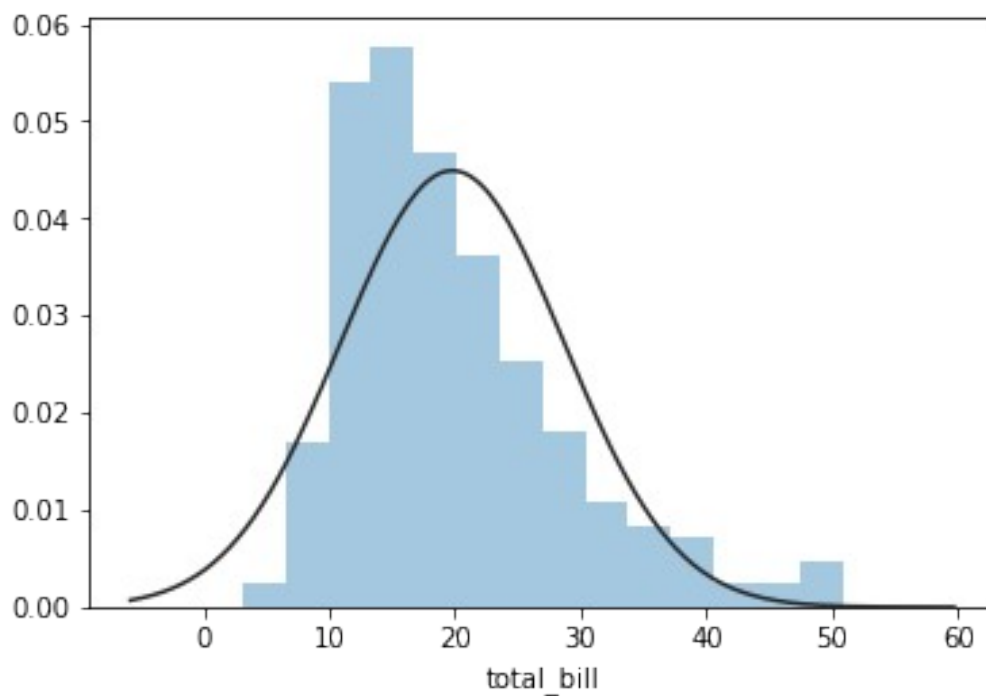
```
sns.distplot(tips_df["total_bill"], rug=True,)
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x1d00a157940>
```



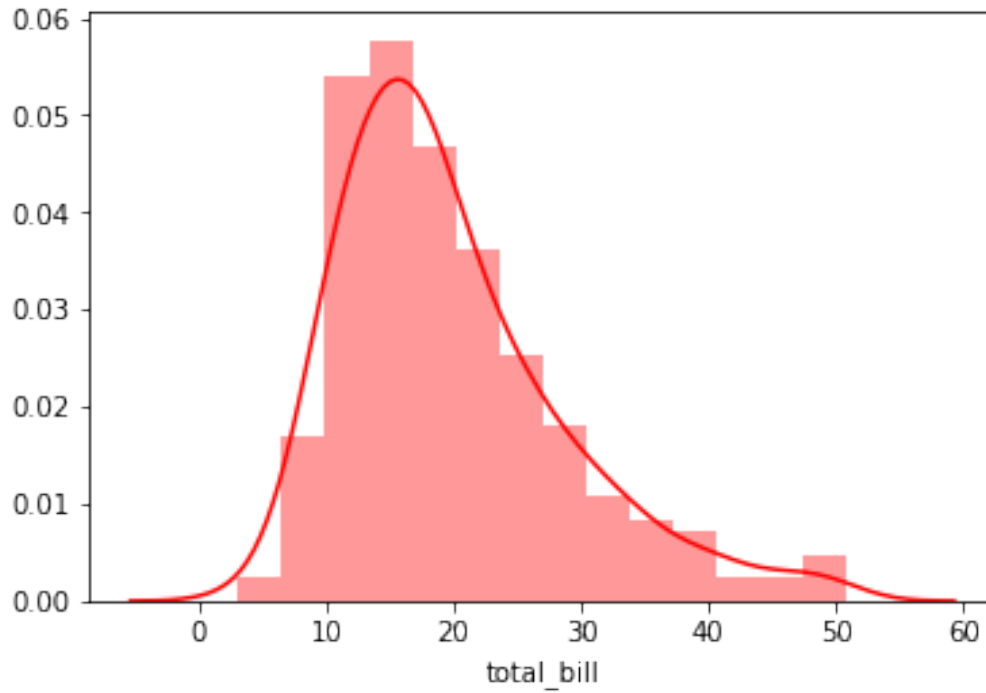
```
#Plot Histogram of "total_bill" with fit and kde parameters
sns.distplot(tips_df["total_bill"],fit=norm, kde = False) # for fit
(prm) - from scipy.stats import norm
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x1d00a20af60>
```



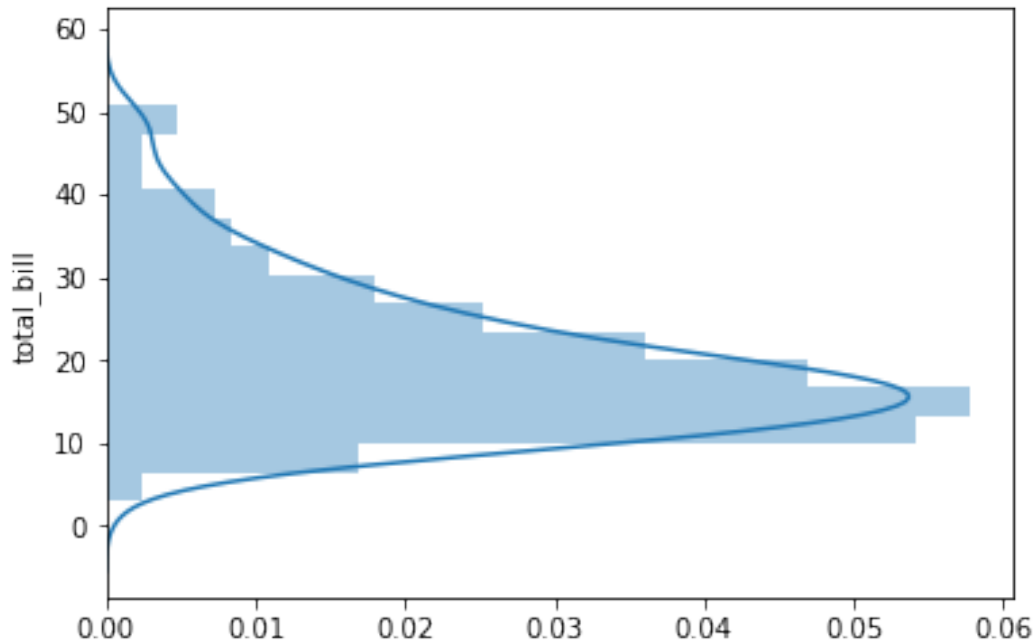

```
#Plot Histogram of "total_bill" with color parameters  
sns.distplot(tips_df["total_bill"],color="r",)
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x1d00a295828>
```



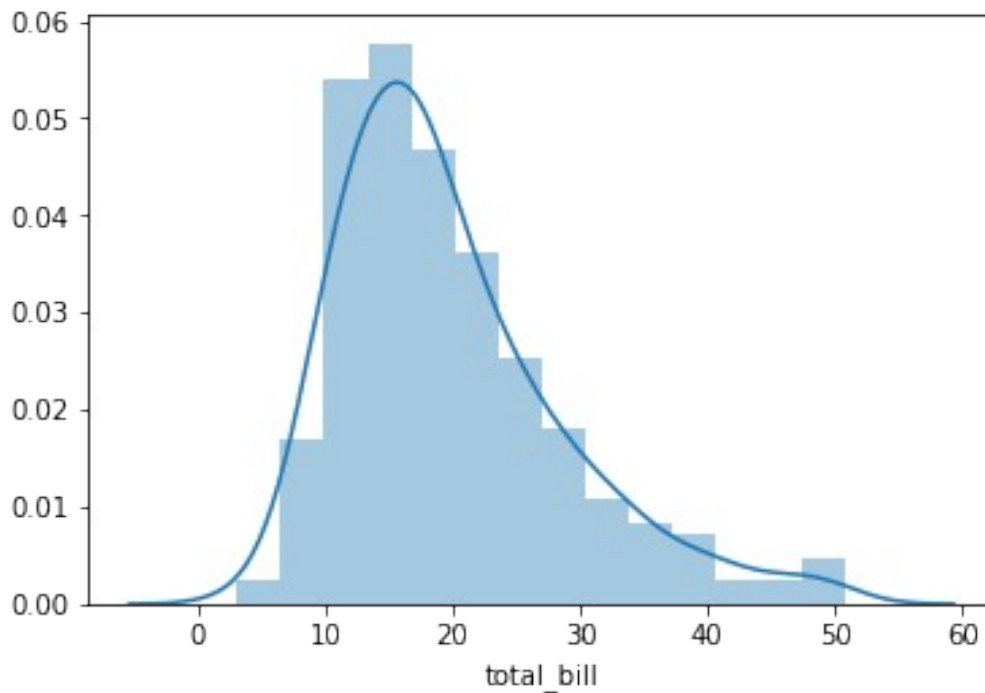
```
#Plot Histogram of "total_bill" with vertical parameters  
sns.distplot(tips_df["total_bill"],vertical=True,)
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x1d00a2e8630>
```



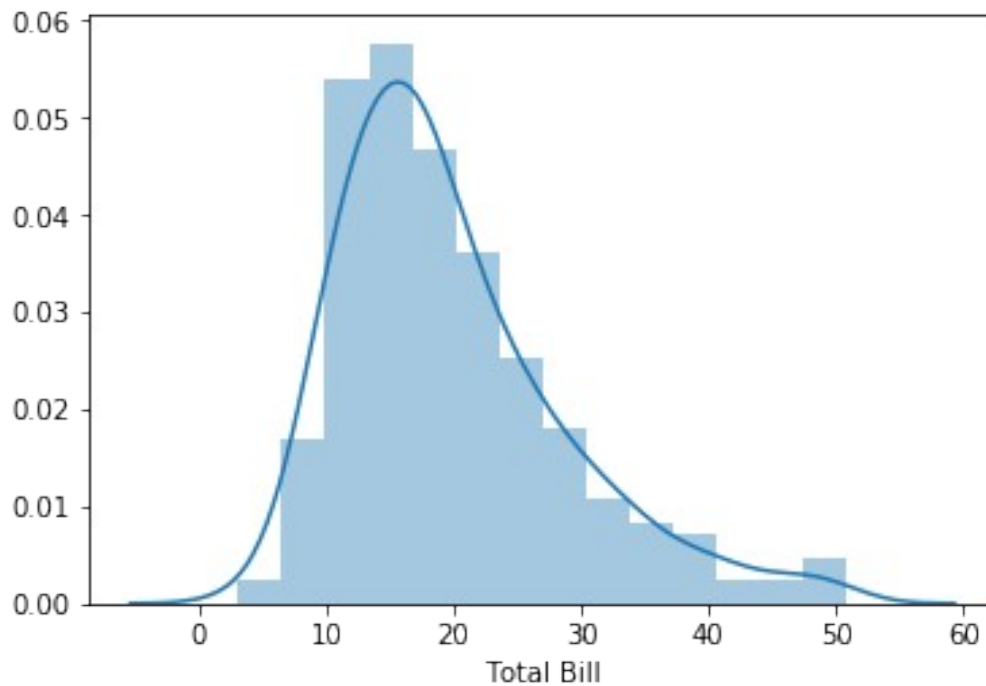
#Plot Histogram of "total_bill" with norm_hist parameters
`sns.distplot(tips_df["total_bill"],norm_hist=True,)`

`<matplotlib.axes._subplots.AxesSubplot at 0x1d00a30de48>`



#Plot Histogram of "total_bill" with axlabel parameters
`sns.distplot(tips_df["total_bill"],axlabel="Total Bill",)`

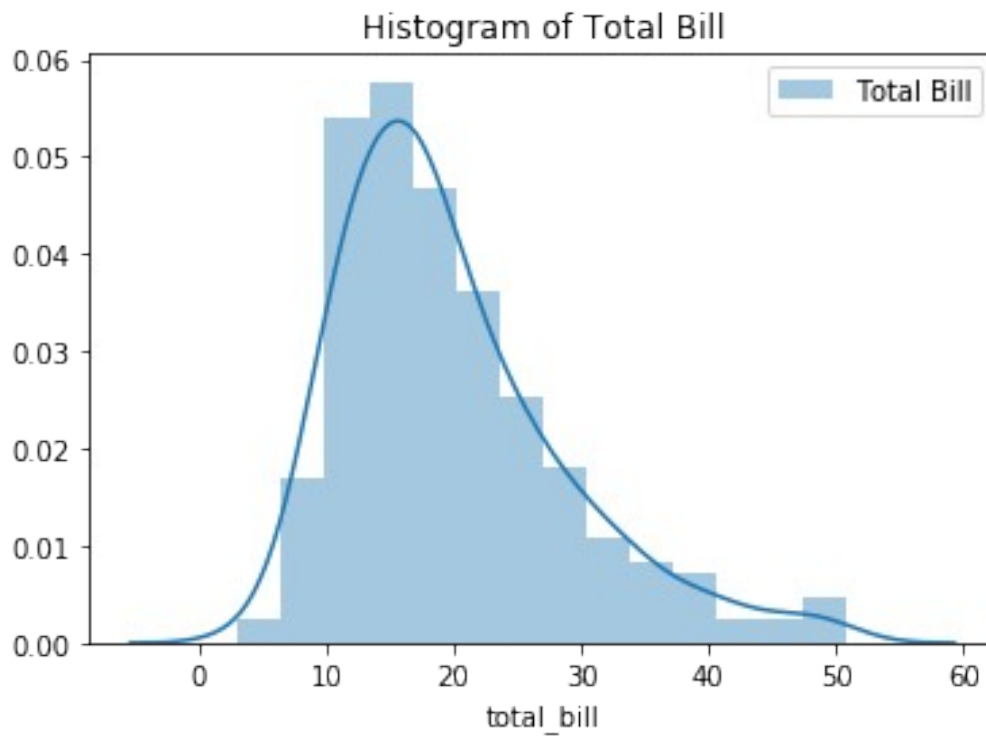
<matplotlib.axes._subplots.AxesSubplot at 0x1d00a4269e8>



```
#Plot Histogram of "total_bill" with label parameters
sns.distplot(tips_df["total_bill"],label="Total Bill",)

plt.title("Histogram of Total Bill") # for histogram title
plt.legend() # for label
```

<matplotlib.legend.Legend at 0x1d00a4c2400>

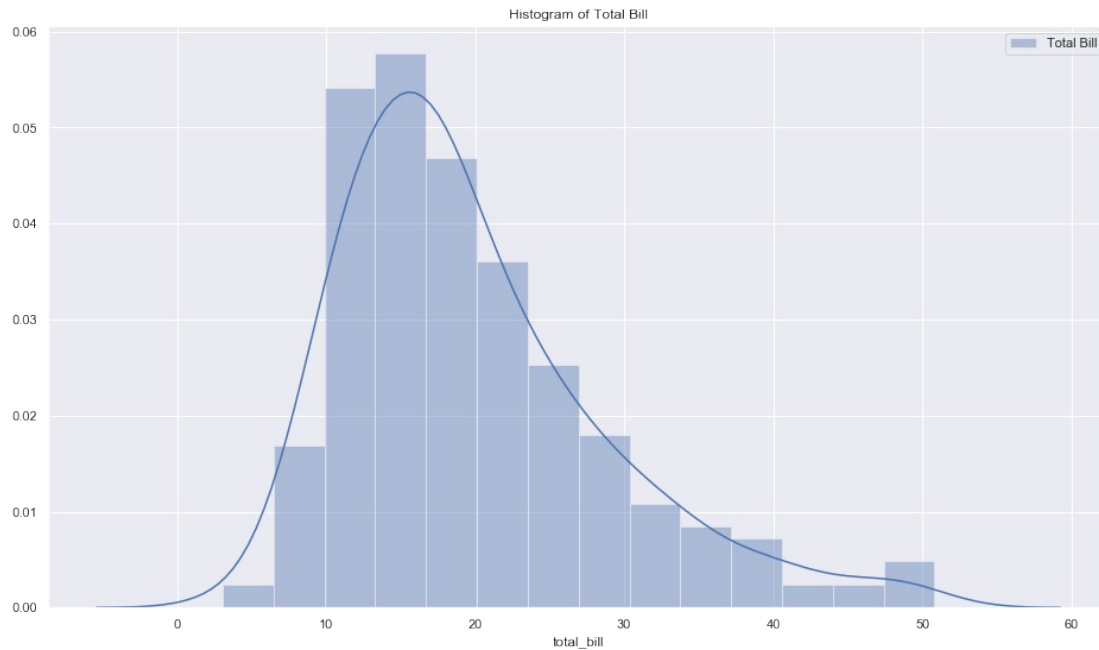


```
# Plot histogram in prper format
plt.figure(figsize=(16,9)) # figure ration 16:9
sns.set() # for style

sns.distplot(tips_df["total_bill"],label="Total Bill",)

plt.title("Histogram of Total Bill") # for histogram title
plt.legend() # for label

<matplotlib.legend.Legend at 0x1d00a54f4e0>
```



```
tips_df.total_bill.sort_values() # to know norder of values
```

```
67      3.07
92      5.75
111     7.25
172     7.25
149     7.51
195     7.56
218     7.74
145     8.35
135     8.51
126     8.52
222     8.58
6       8.77
30      9.55
178     9.60
43      9.68
148     9.78
53      9.94
235    10.07
82      10.07
226     10.09
10      10.27
51      10.29
16      10.33
136     10.33
1       10.34
196     10.34
75      10.51
168     10.59
```

```
169    10.63
117    10.65
...
44     30.40
187    30.46
39     31.27
167    31.71
173    31.85
47     32.40
83     32.68
237    32.83
175    32.90
141    34.30
179    34.63
180    34.65
52     34.81
85     34.83
11     35.26
238    35.83
56     38.01
112    38.07
207    38.73
23     39.42
95     40.17
184    40.55
142    41.19
197    43.11
102    44.30
182    45.35
156    48.17
59     48.27
212    48.33
170    50.81
```

```
Name: total_bill, Length: 244, dtype: float64
```

```
# Modify histogram with bins
```

```
bins = [1,5,10,15,20,25,30,35,40,45,50,55] # list
```

```
plt.figure(figsize=(16,9))
```

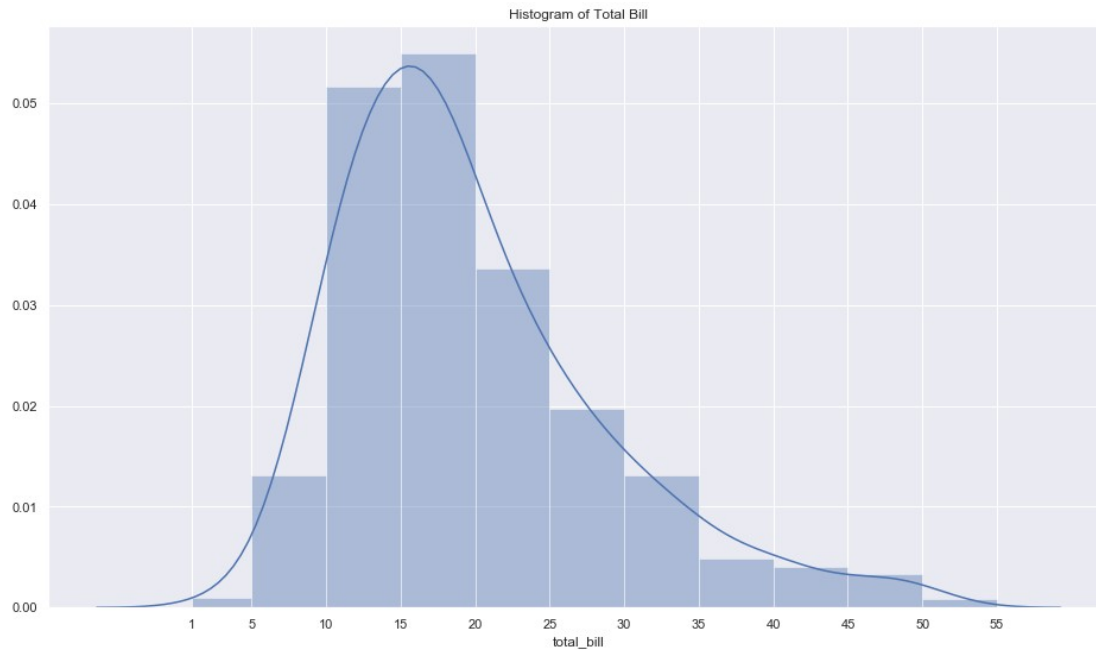
```
sns.set()
```

```
sns.distplot(tips_df["total_bill"], bins = bins)
```

```
plt.xticks(bins) # set bins value
```

```
plt.title("Histogram of Total Bill")
```

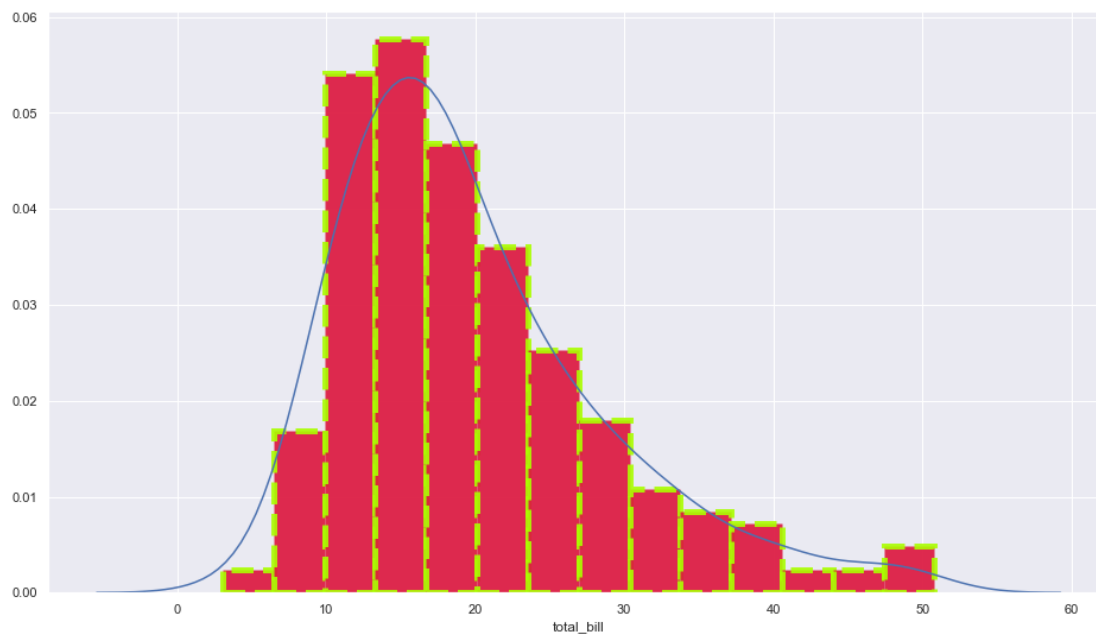
```
plt.show()
```



```
plt.figure(figsize=(16,9))
sns.set()

# hist keyword argument to change hist format
sns.distplot(tips_df["total_bill"],
              hist_kws = {'color':'#DC143C', 'edgecolor':'#aaff00',
                          'linewidth':5, 'linestyle':'--', 'alpha':0.9})
# hist keyword parameter to change hist format

<matplotlib.axes._subplots.AxesSubplot at 0x1d00a514c88>
```

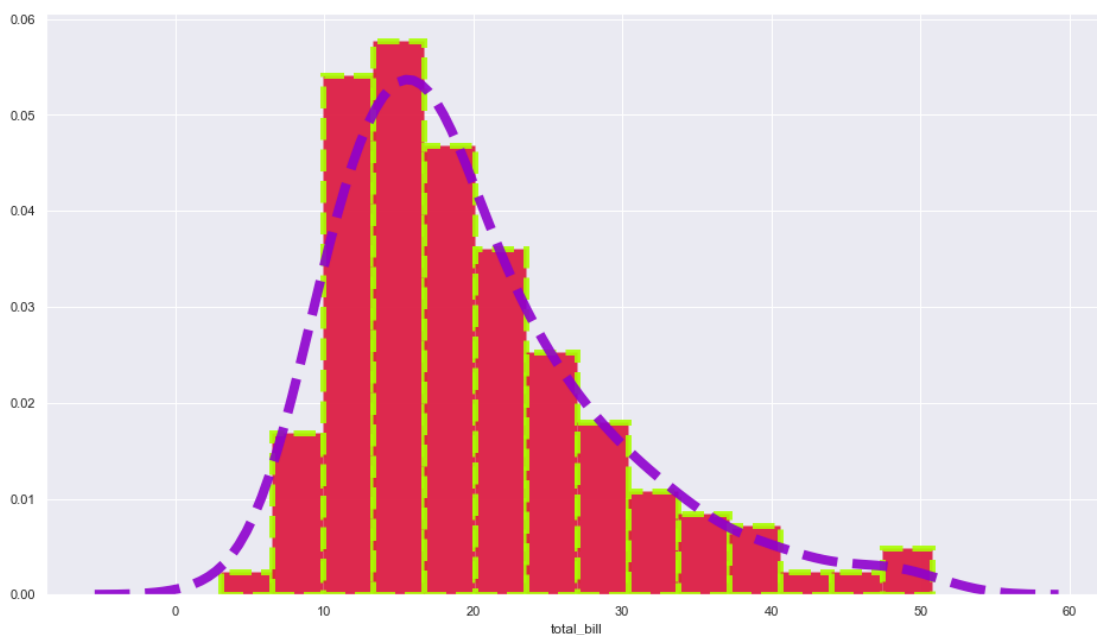


```
plt.figure(figsize=(16,9))
sns.set()

# hist, kde and rug keyword argument to change hist format
sns.distplot(tips_df["total_bill"],
             hist_kws = {'color':'#DC143C', 'edgecolor':'#aaff00',
                        'linewidth':5, 'linestyle':'--', 'alpha':0.9},

             kde_kws = {'color':'#8e00ce',
                        'linewidth':8, 'linestyle':'--', 'alpha':0.9},
             )
```

<matplotlib.axes._subplots.AxesSubplot at 0x1d00adc24e0>

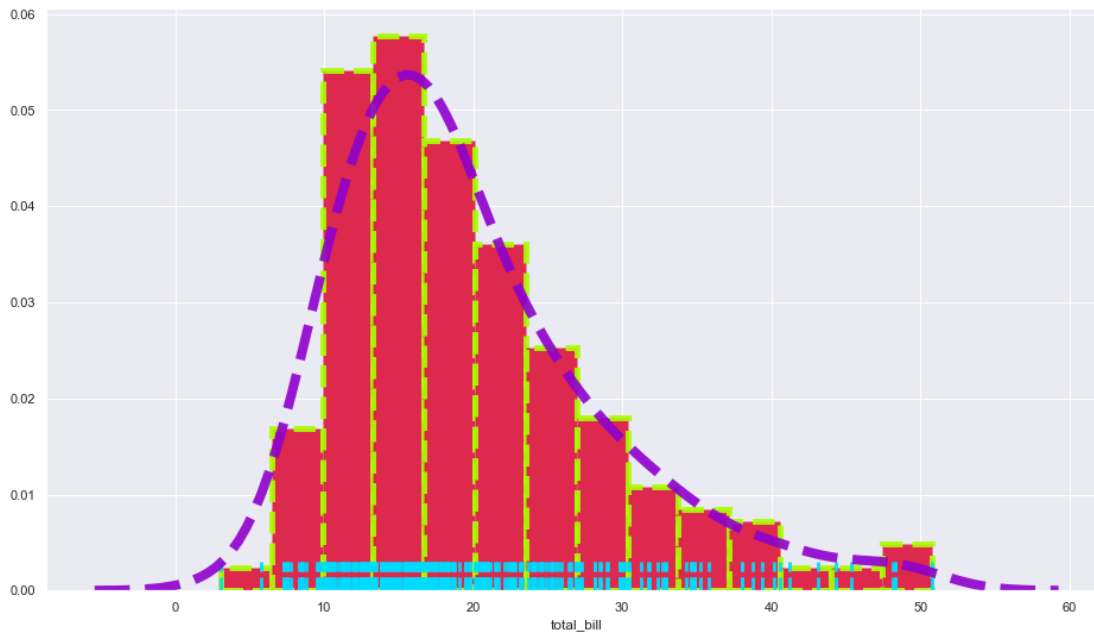


```
plt.figure(figsize=(16,9))
sns.set()

# hist, kde and rug keyword argument to change hist format
sns.distplot(tips_df["total_bill"],
             hist_kws = {'color':'#DC143C', 'edgecolor':'#aaff00',
                        'linewidth':5, 'linestyle':'--', 'alpha':0.9},

             kde_kws = {'color':'#8e00ce',
                        'linewidth':8, 'linestyle':'--', 'alpha':0.9},
             rug = True,
             rug_kws = {'color':'#0426d0', 'edgecolor':'#00dbff',
                        'linewidth':3, 'linestyle':'--', 'alpha':0.9},)
```

<matplotlib.axes._subplots.AxesSubplot at 0x1d00ab0be80>



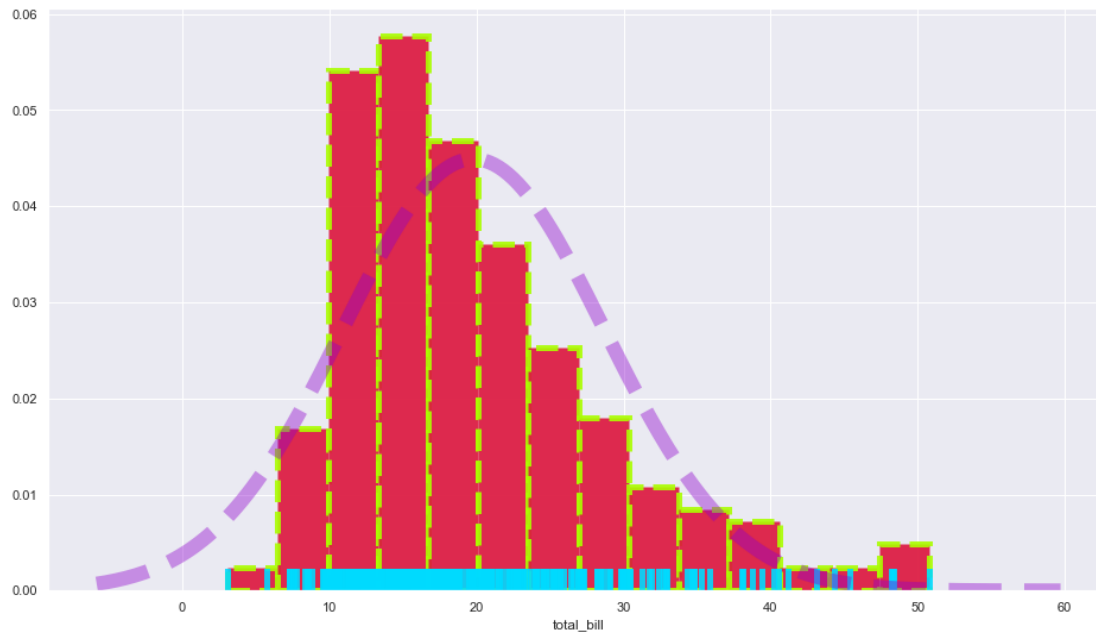
```
plt.figure(figsize=(16,9))
sns.set()

# hist, fit and rug keyword argument to change hist format
sns.distplot(tips_df["total_bill"],
             hist_kws = {'color':'#DC143C', 'edgecolor':'#aaff00',
                        'linewidth':5, 'linestyle':'--', 'alpha':0.9},

             kde=False,
             fit = norm,
             fit_kws = {'color':'#8e00ce',
                        'linewidth':12, 'linestyle':'--', 'alpha':0.4},

             rug = True,
             rug_kws = {'color':'#0426d0', 'edgecolor':'#00dbff',
                        'linewidth':5, 'linestyle':'--', 'alpha':0.9},)

<matplotlib.axes._subplots.AxesSubplot at 0x1d00b308668>
```



#Plot histogram in best format

```
plt.figure(figsize=(16,9))
sns.set()
```

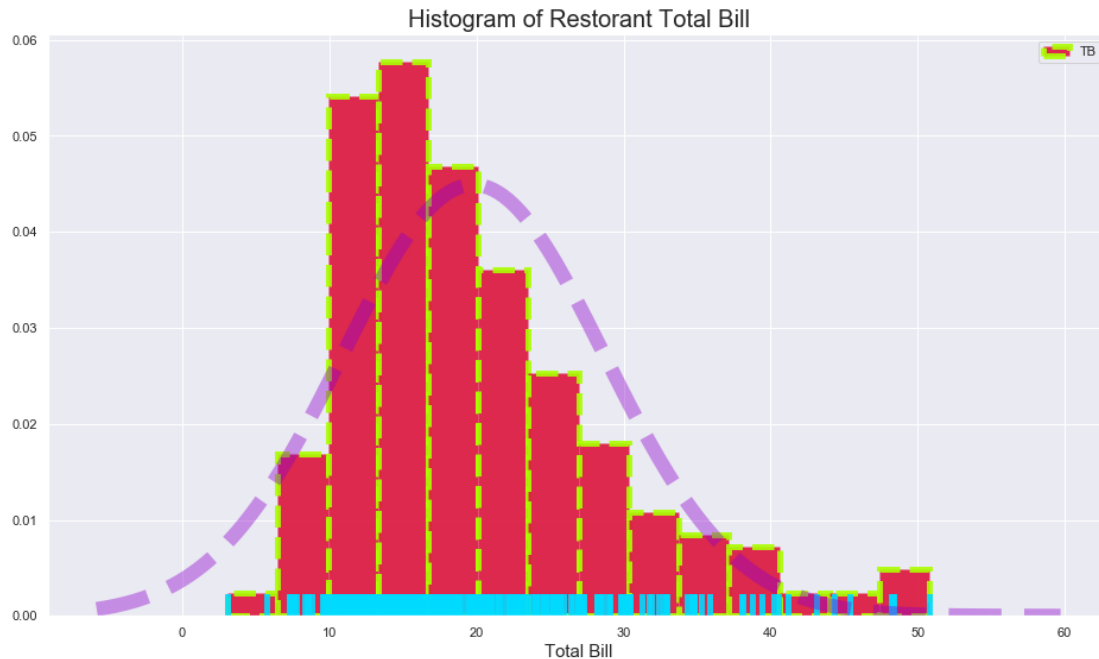
```
sns.distplot(tips_df["total_bill"],
             hist_kws = {'color':'#DC143C', 'edgecolor':'#aaff00',
                        'linewidth':5, 'linestyle':'--', 'alpha':0.9},

             kde=False,
             fit = norm,
             fit_kws = {'color':'#8e00ce',
                        'linewidth':12, 'linestyle':'--', 'alpha':0.4},

             rug = True,
             rug_kws = {'color':'#0426d0', 'edgecolor':'#00dbff',
                        'linewidth':5, 'linestyle':'--', 'alpha':0.9},

             label = "TB")
```

```
plt.title("Histogram of Restorant Total Bill", fontsize = 20)
plt.xlabel("Total Bill", fontsize = 15)
plt.legend()
plt.show()
```

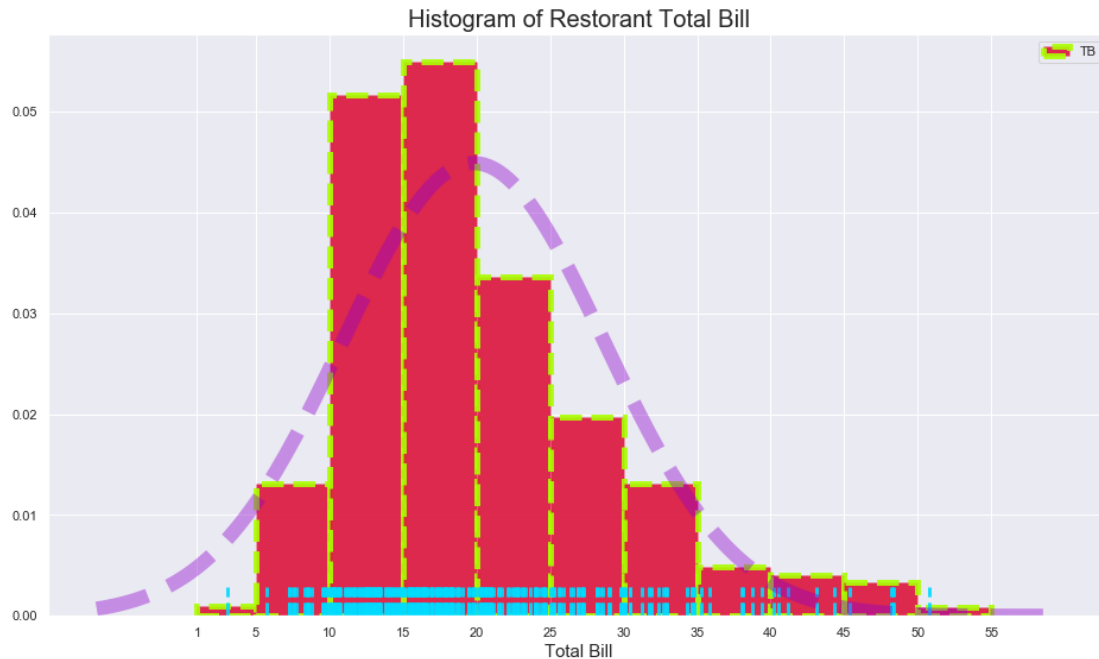


```
#Plot histogram in best format
plt.figure(figsize=(16,9))
sns.set()

bins = [1,5,10,15,20,25,30,35,40,45,50,55]
sns.distplot(tips_df["total_bill"],bins=bins,
             hist_kws = {'color':'#DC143C', 'edgecolor':'#aaff00',
                         'linewidth':5, 'linestyle':'--', 'alpha':0.9},

             kde=False,
             fit = norm,
             fit_kws = {'color':'#8e00ce',
                        'linewidth':12, 'linestyle':'--', 'alpha':0.4},
             rug = True,
             rug_kws = {'color':'#0426d0', 'edgecolor':'#00dbff',
                        'linewidth':3, 'linestyle':'--', 'alpha':0.9},
             label = "TB")

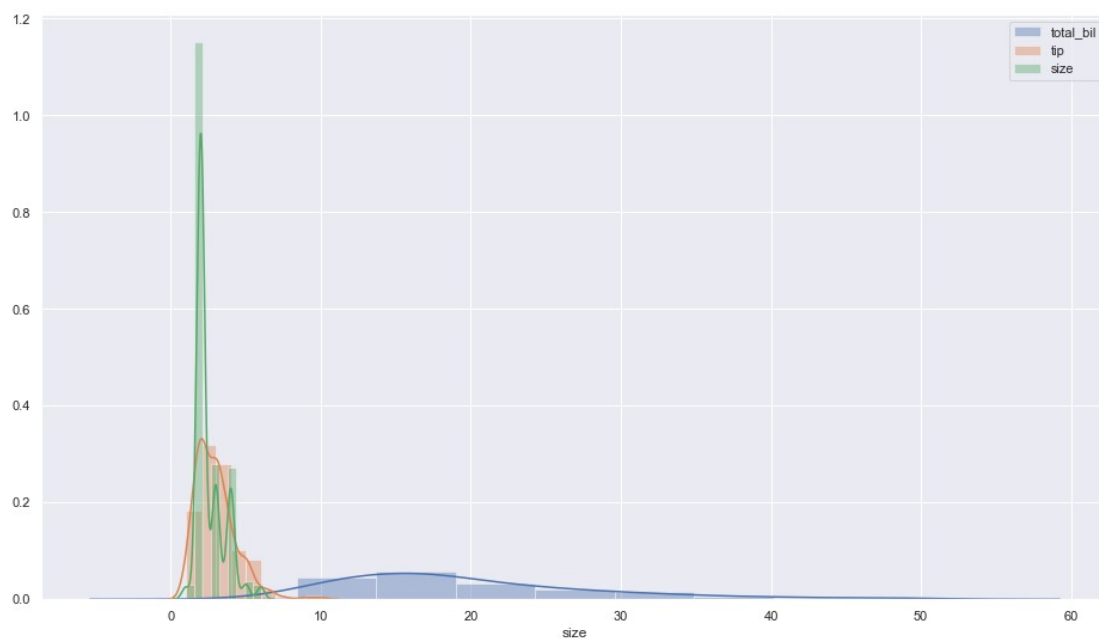
plt.xticks(bins)
plt.title("Histogram of Restorant Total Bill", fontsize = 20)
plt.xlabel("Total Bill", fontsize = 15)
plt.legend()
plt.show()
```



```
# Plot multiple seaborn histogram in single graph
plt.figure(figsize=(16,9))
sns.distplot(tips_df["total_bill"], bins=9, label="total_bill")
sns.distplot(tips_df["tip"], bins=9, label="tip")
sns.distplot(tips_df["size"], bins=9, label = "size")

plt.legend()

<matplotlib.legend.Legend at 0x1d00b5d1e80>
```



```
print("Thank you -:)" )
```

Thank you - :)