

When using plotly in colab and on desktop, create the ipynb file in the desktop first as the colab version will be corrupted if it is copied back to the desktop

```
In [1]: !pip install chart_studio
```

```
Requirement already satisfied: chart_studio in c:\users\iowahawk89\miniconda3\envs\ds_tensorflow\lib\site-packages (1.1.0)
Requirement already satisfied: requests in c:\users\iowahawk89\miniconda3\envs\ds_tensorflow\lib\site-packages (from chart_studio) (2.23.0)
Requirement already satisfied: six in c:\users\iowahawk89\miniconda3\envs\ds_tensorflow\lib\site-packages (from chart_studio) (1.14.0)
Requirement already satisfied: plotly in c:\users\iowahawk89\miniconda3\envs\ds_tensorflow\lib\site-packages (from chart_studio) (4.4.1)
Requirement already satisfied: retrying>=1.3.3 in c:\users\iowahawk89\miniconda3\envs\ds_tensorflow\lib\site-packages (from chart_studio) (1.3.3)
Requirement already satisfied: chardet<4,>=3.0.2 in c:\users\iowahawk89\miniconda3\envs\ds_tensorflow\lib\site-packages (from requests->chart_studio) (3.0.4)
Requirement already satisfied: idna<3,>=2.5 in c:\users\iowahawk89\miniconda3\envs\ds_tensorflow\lib\site-packages (from requests->chart_studio) (2.9)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\iowahawk89\miniconda3\envs\ds_tensorflow\lib\site-packages (from requests->chart_studio) (2020.4.5.1)
Requirement already satisfied: urllib3!=1.25.0,!=1.25.1,<1.26,>=1.21.1 in c:\users\iowahawk89\miniconda3\envs\ds_tensorflow\lib\site-packages (from requests->chart_studio) (1.25.8)
```

```
In [2]: # Standard plotly imports
import chart_studio.plotly as py
import plotly.offline as py
import plotly.graph_objs as go # version of plotly is 4.4.1
# Using plotly in offline mode
py.init_notebook_mode(connected=True)
import pandas as pd
import numpy as np
from sklearn.datasets import load_boston
import os
import sys
import plotly.express as px
import plotly.io as pio
```

```
In [3]: boston = load_boston()
df = pd.DataFrame(boston.data, columns=boston.feature_names)
y = boston.target
#df=pd.read_csv('C:\\DataScience\\boston_house_prices.csv', sep=',', header=[0])
```

```
In [4]: # test environment to see if running in colab or not
colab = os.environ.get('COLAB_GPU', '10')
if (int(colab) == 0):
    renderer_type = "colab"
    pio.renderers.default = "colab"
    print('colab found using render type ', renderer_type)
else:
    renderer_type = "plotly_mimetype+notebook_connected"
    pio.renderers.default = "plotly_mimetype+notebook_connected"
    print('colab not found using render type ', renderer_type)
```

colab not found using render type plotly_mimetype+notebook_connected

```
In [5]: df['RAD_CAT']=df['RAD'].astype(str)
df
```

Out[5]:

	CRIM	ZN	INDUS	CHAS	NOX	RM	AGE	DIS	RAD	TAX	PTRATIO	B	LSTAT	RAD_CAT
0	0.00632	18.0	2.31	0.0	0.538	6.575	65.2	4.0900	1.0	296.0	15.3	396.90	4.98	1.0
1	0.02731	0.0	7.07	0.0	0.469	6.421	78.9	4.9671	2.0	242.0	17.8	396.90	9.14	2.0
2	0.02729	0.0	7.07	0.0	0.469	7.185	61.1	4.9671	2.0	242.0	17.8	392.83	4.03	2.0
3	0.03237	0.0	2.18	0.0	0.458	6.998	45.8	6.0622	3.0	222.0	18.7	394.63	2.94	3.0
4	0.06905	0.0	2.18	0.0	0.458	7.147	54.2	6.0622	3.0	222.0	18.7	396.90	5.33	3.0
...
501	0.06263	0.0	11.93	0.0	0.573	6.593	69.1	2.4786	1.0	273.0	21.0	391.99	9.67	1.0
502	0.04527	0.0	11.93	0.0	0.573	6.120	76.7	2.2875	1.0	273.0	21.0	396.90	9.08	1.0
503	0.06076	0.0	11.93	0.0	0.573	6.976	91.0	2.1675	1.0	273.0	21.0	396.90	5.64	1.0
504	0.10959	0.0	11.93	0.0	0.573	6.794	89.3	2.3889	1.0	273.0	21.0	393.45	6.48	1.0
505	0.04741	0.0	11.93	0.0	0.573	6.030	80.8	2.5050	1.0	273.0	21.0	396.90	7.88	1.0

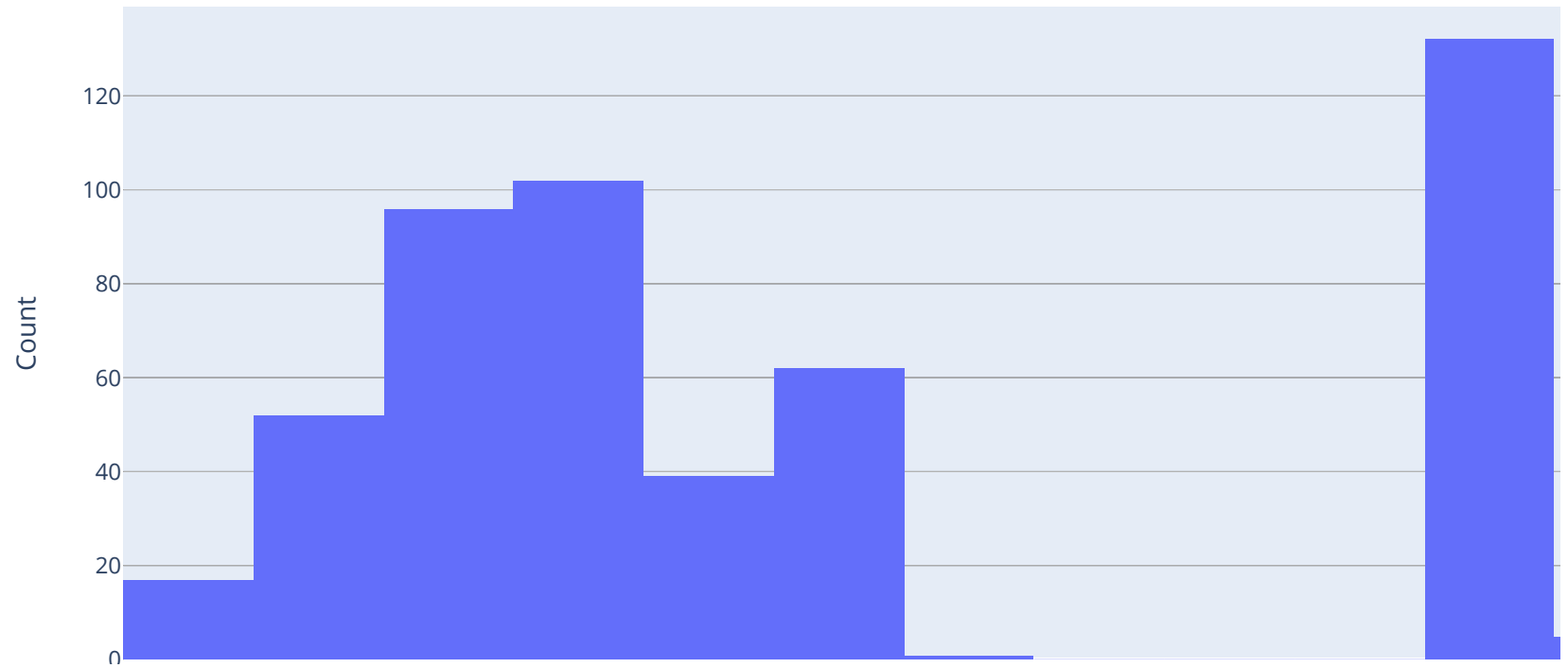
506 rows × 14 columns

```
In [6]: #fig = go.Figure(data=[go.Histogram(x=df['TAX'] )])
hist1 = go.Histogram(x=df['TAX'] )# df['TAX'] is a pandas series

data = [hist1]
layout = go.Layout(
    title='Histogram with Plotly',
    barmode='overlay',
    xaxis=dict(
        title='TAX'
    ),
    yaxis=dict(
        title='Count'
    )
)

#fig.show(renderer=renderer_type) # replace fig.show() with py.iplot([])
fig = go.Figure(data=data,layout=layout)
py.iplot(fig)
```

Histogram with Plotly

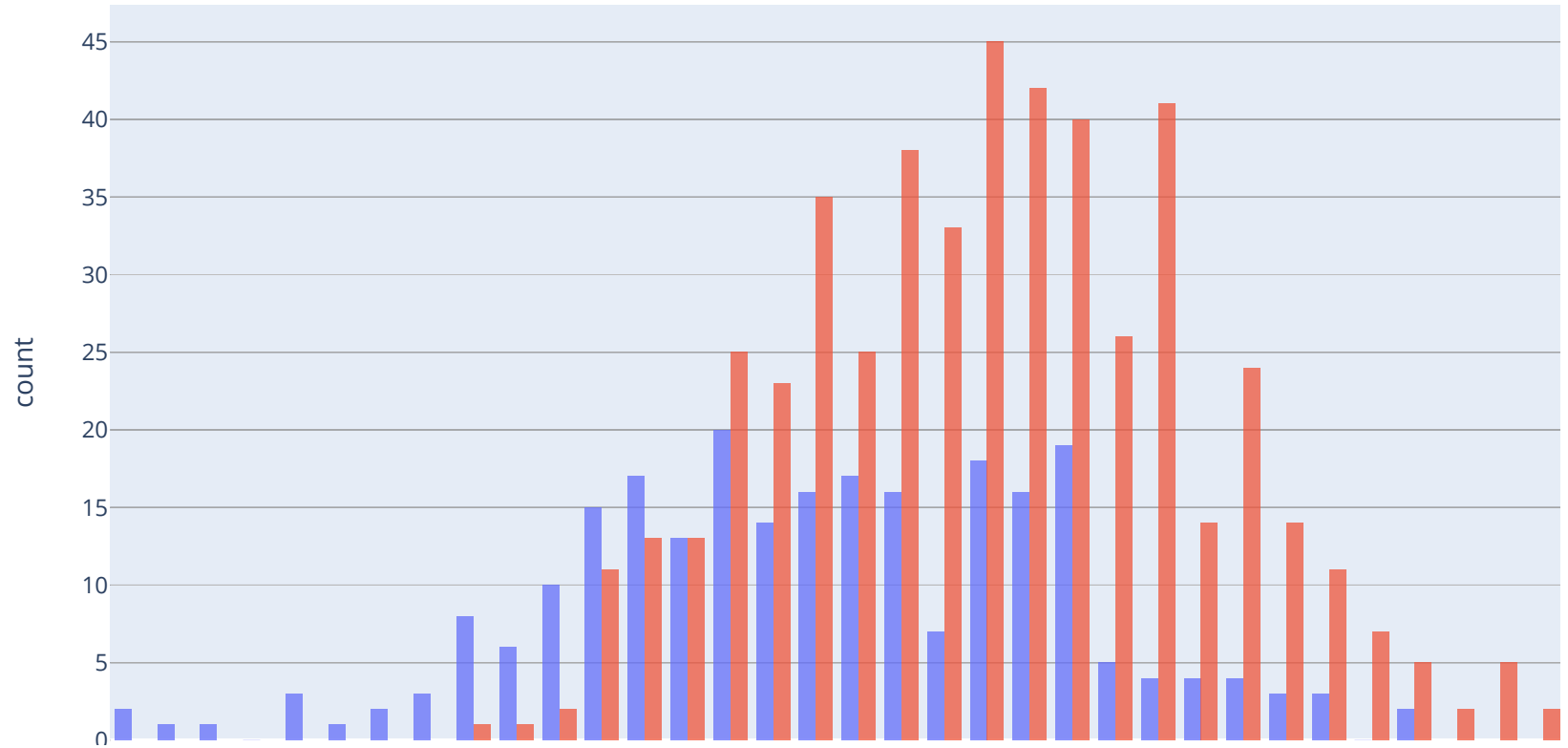


```
In [7]: # overlay using a stacked df example
x0 = np.random.randn(250)
# Add 1 to shift the mean of the Gaussian distribution
x1 = np.random.randn(500) + 1

dfa =pd.DataFrame(dict(
    series=np.concatenate(("a"*len(x0), ["b"*len(x1)]),
    data =np.concatenate((x0,x1))
))
print(dfa)
fig = px.histogram(dfa, x="data", color="series", barmode="group", opacity=0.75, )
fig.show()
```

	series	data
0	a	1.309255
1	a	-1.071536
2	a	0.329635
3	a	1.124811
4	a	1.435424
..
745	b	0.297234
746	b	2.035397
747	b	-0.659953
748	b	1.138383
749	b	1.441479

[750 rows x 2 columns]




```
In [8]: # overlay 2 datasets in one histogram

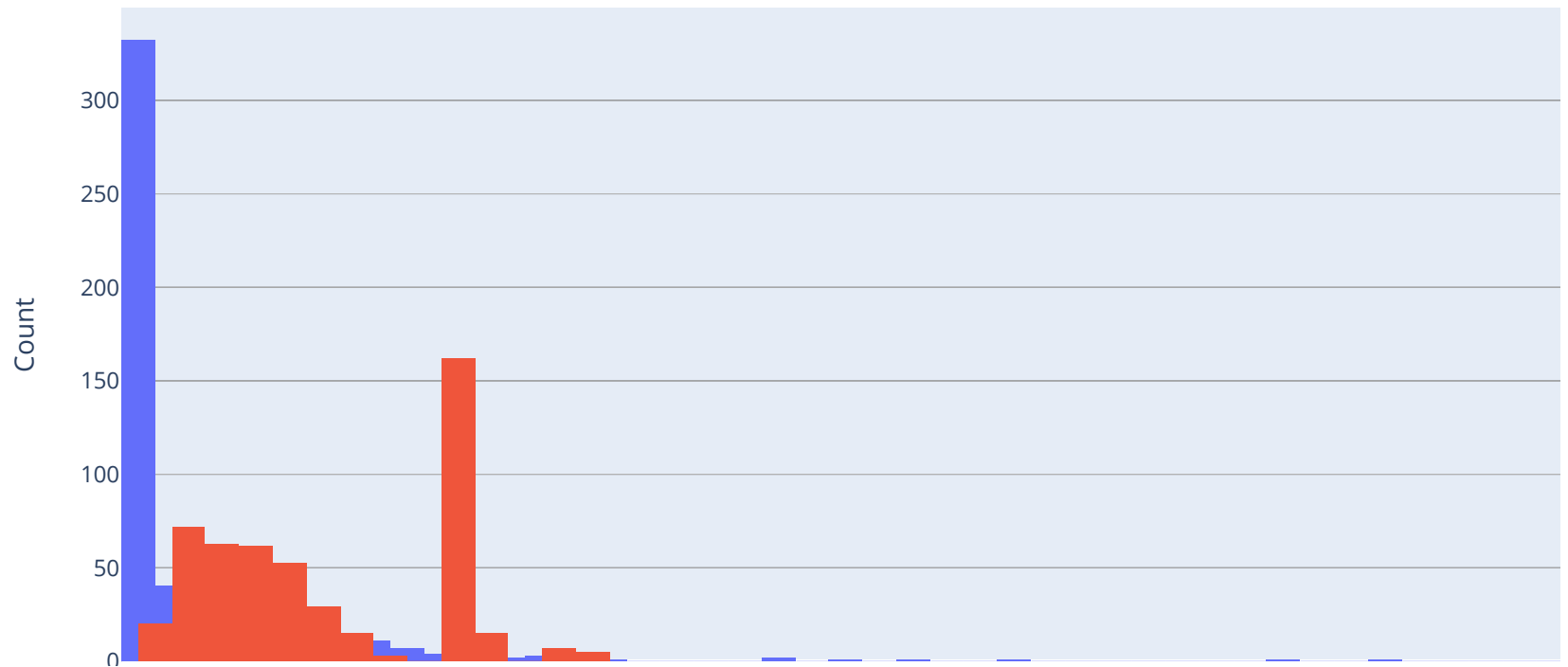
hist1 = go.Histogram(x=df['CRIM'], name='CRIM' )
hist2 = go.Histogram(x=df['INDUS'], name='INDIS' )

data = [hist1, hist2]

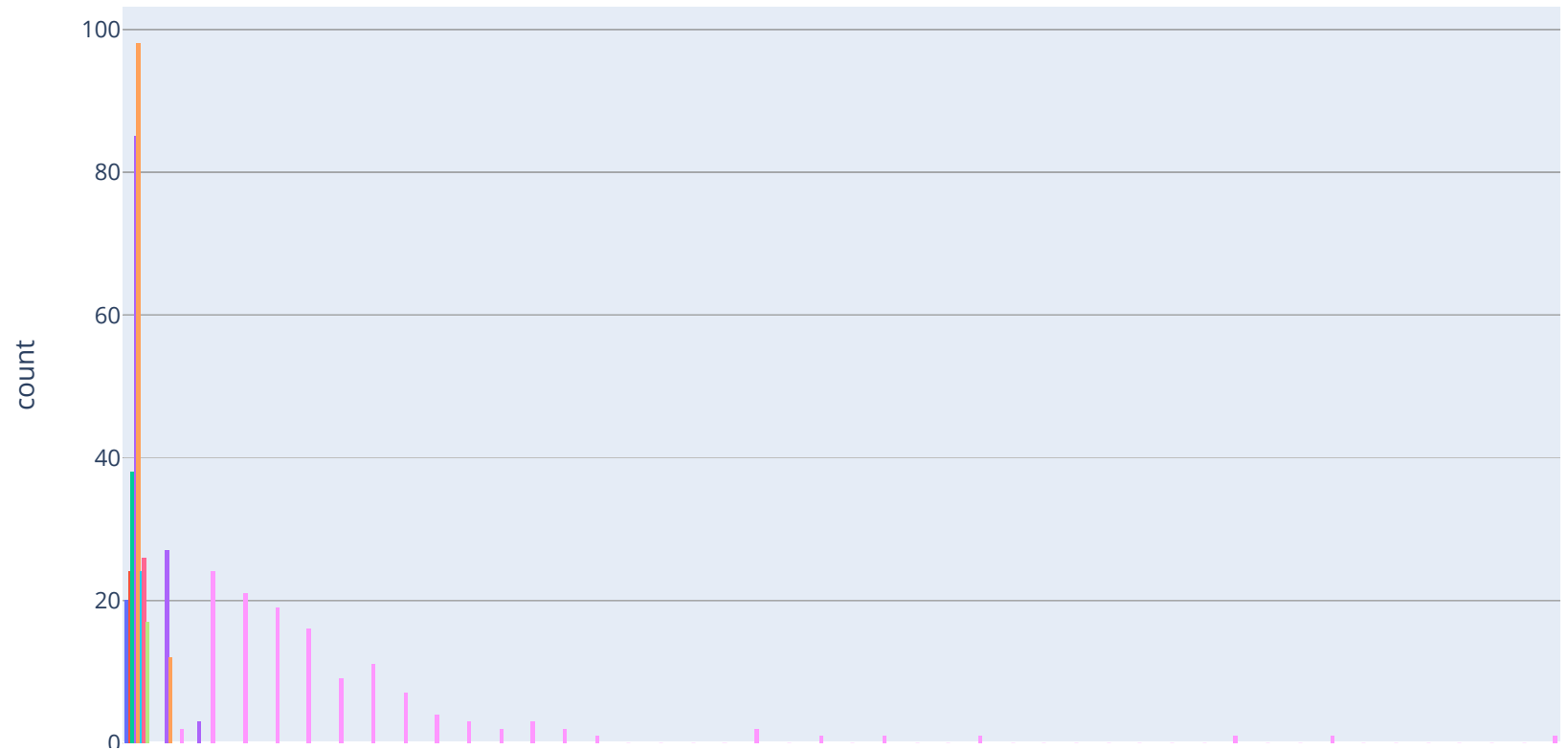
layout = go.Layout(
    title='Comparing CRIM and INDUS',
    barmode='overlay',
    xaxis=dict(
        title='Value'
    ),
    yaxis=dict(
        title='Count'
    ),
    yaxis2=dict(
        title='Count',
        anchor='free',
        overlying='y',
        side='right',
        position=1
    )
)

fig = go.Figure(data=data,layout=layout)
py.iplot(fig)
```

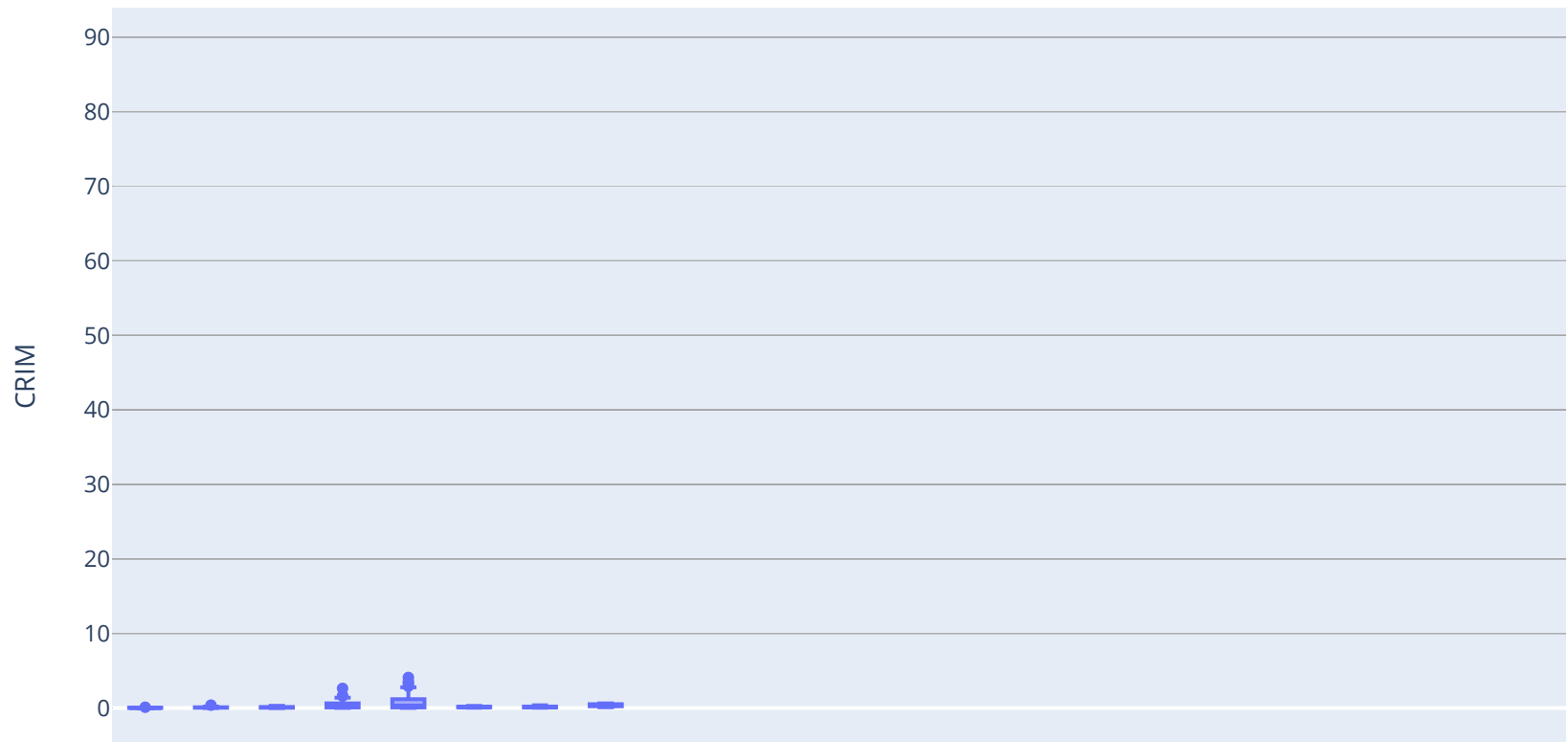
Comparing CRIM and INDUS



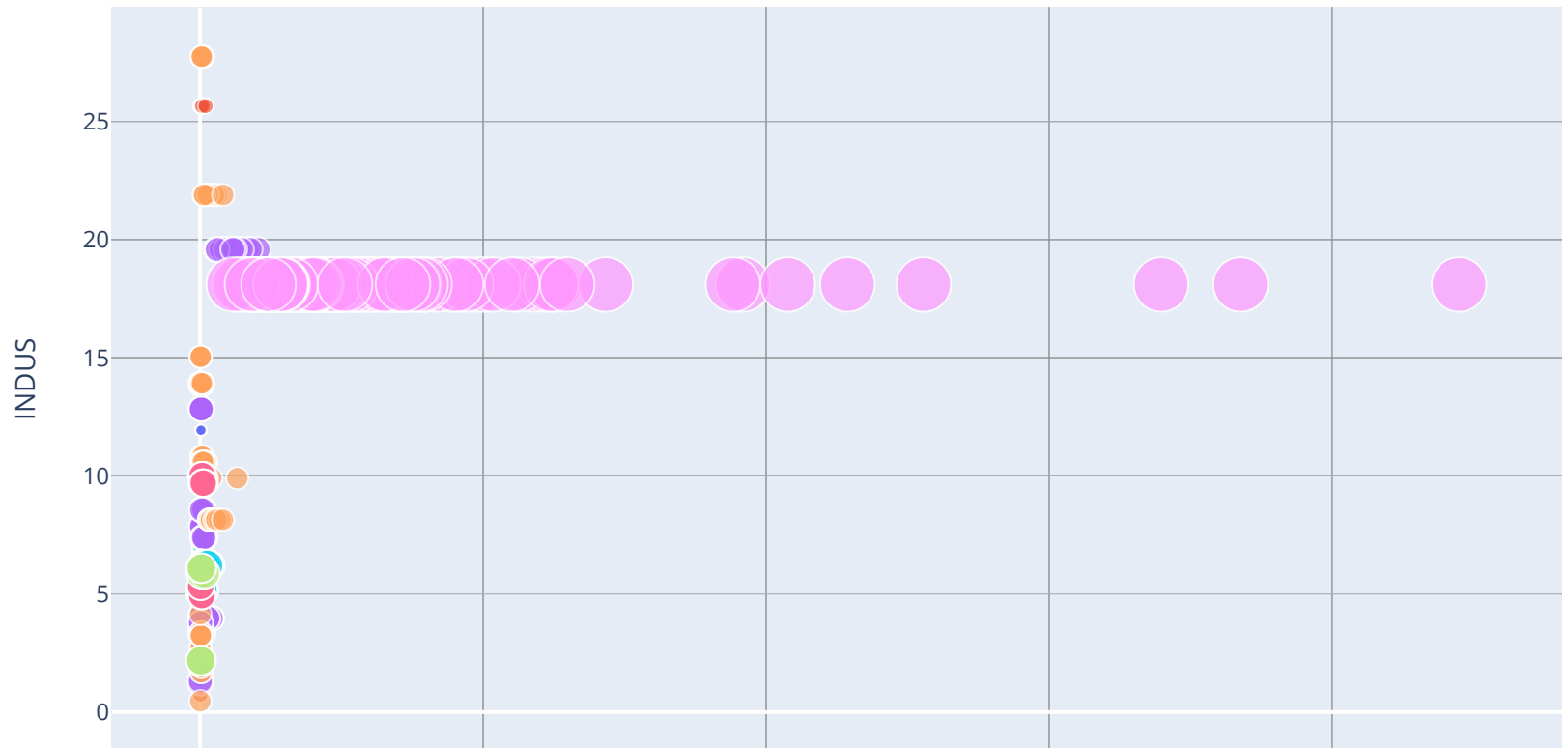
```
In [9]: # express style
fig = px.histogram(df, x="CRIM", color="RAD_CAT", barmode="group")
fig.show()
```



```
In [10]: fig = px.box(df, x="RAD_CAT", y="CRIM")  
fig.show()
```

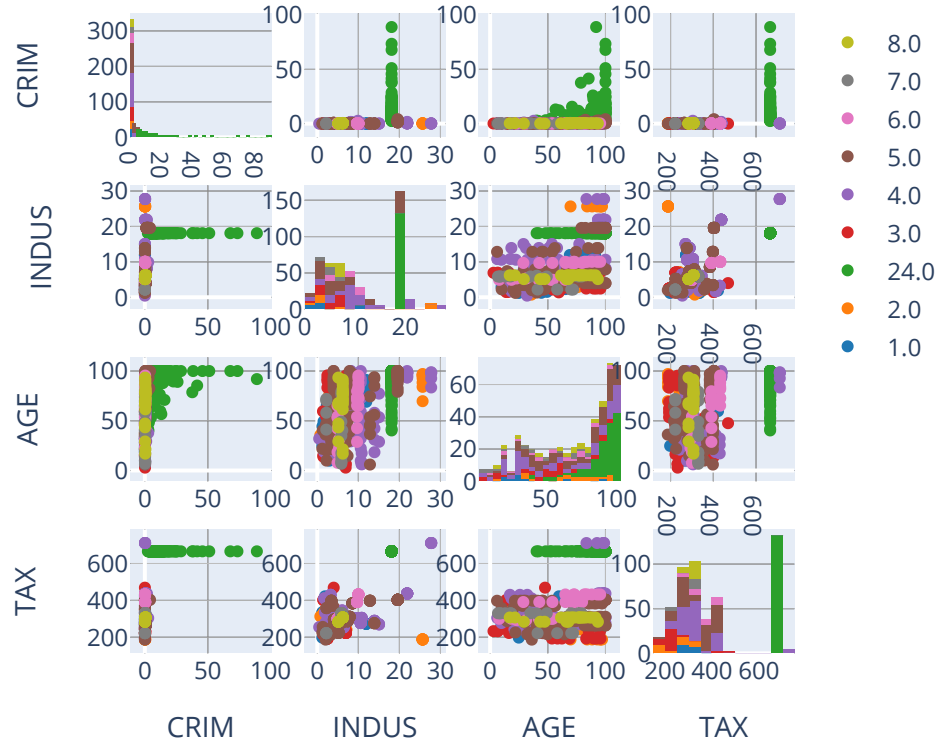


```
In [11]: # scatter plot
fig = px.scatter(df, x='CRIM', y='INDUS', color='RAD_CAT', size='RAD')
fig.show()
```



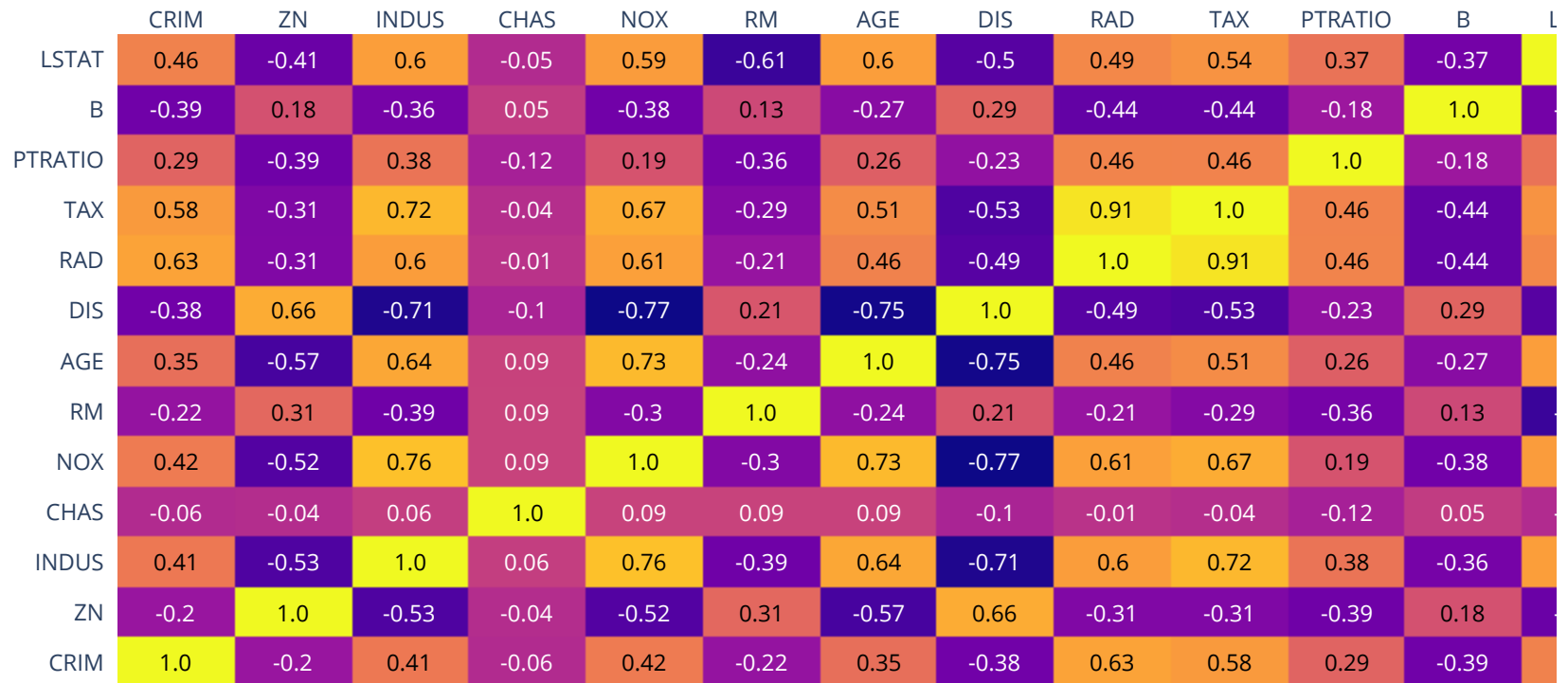
```
In [12]: import plotly.figure_factory as ff
fig = ff.create_scatterplotmatrix(
    df[['CRIM', 'INDUS', 'RAD_CAT',
        'AGE', 'TAX']],
    diag='histogram',
    index='RAD_CAT')
fig.show()
```

Scatterplot Matrix



```
In [13]: corrs = df.corr()
fig = ff.create_annotated_heatmap(
    z=corrs.values,
    x=list(corrs.columns),
    y=list(corrs.index),
    annotation_text=corrs.round(2).values,
    showscale=True)
```

```
In [14]: fig.show()
```



In []: