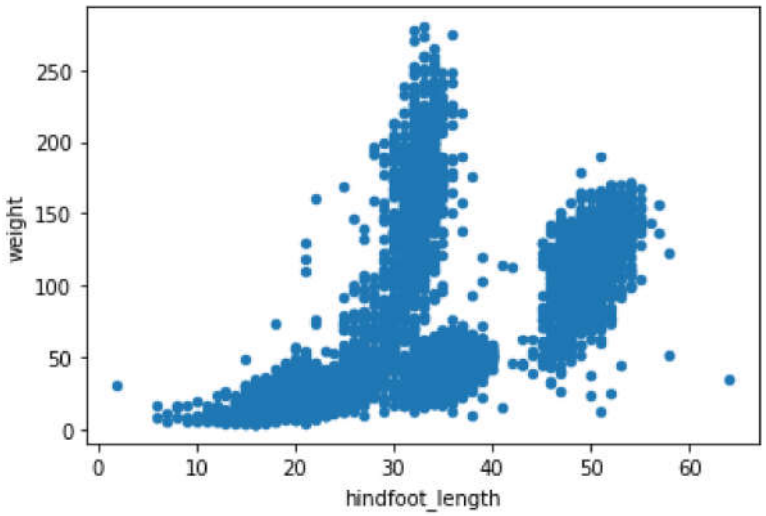
In [1]:
```
import pandas as pd
pd.read_csv?
```

In [2]:
```
df = pd.DataFrame({'1stcolumn':[100,200], '2ndcolumn':[10,20]}) # this just creates a Da
print('With the old column names:\n') # the \n makes a new line, so it's easier to see
print(df)

df.columns = ['FirstColumn', 'SecondColumn'] # rename the columns!
print('\n\nWith the new column names:\n')
print(df)
```

```
With the old column names:

   1stcolumn  2ndcolumn
0        100         10
1        200         20


With the new column names:

   FirstColumn  SecondColumn
0          100            10
1          200            20
```

In [3]:
```
import matplotlib.pyplot as plt
```

In [5]:
```
surveys = pd.read_csv("surveys.csv")
my_plot = surveys.plot("hindfoot_length", "weight", kind="scatter")
plt.show() # not necessary in Jupyter Notebooks
```

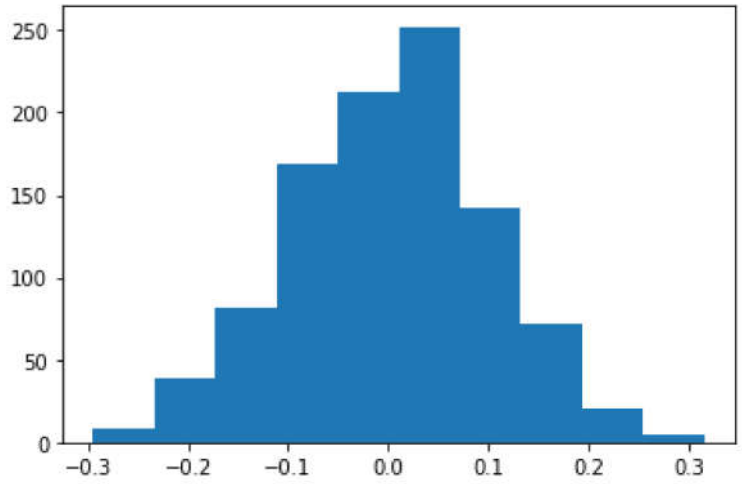


In [6]:
```
%matplotlib inline
```

In [7]:
```
import numpy as np
sample_data = np.random.normal(0, 0.1, 1000)
```

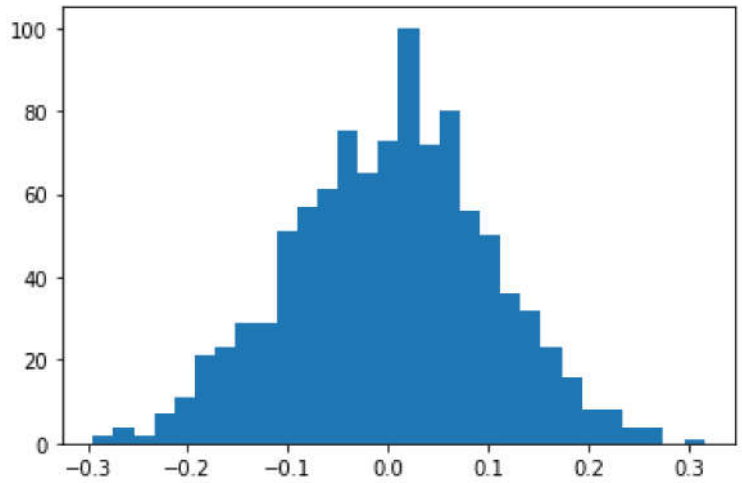
In [8]:
```
plt.hist(sample_data)
```

Out[8]:
```
(array([  8.,  39.,  81., 169., 213., 252., 142.,  71.,  20.,   5.]),
 array([-0.29454121, -0.23351309, -0.17248497, -0.11145685, -0.05042873,
         0.01059939,  0.07162751,  0.13265563,  0.19368374,  0.25471186,
         0.31573998]),
 <BarContainer object of 10 artists>)
```



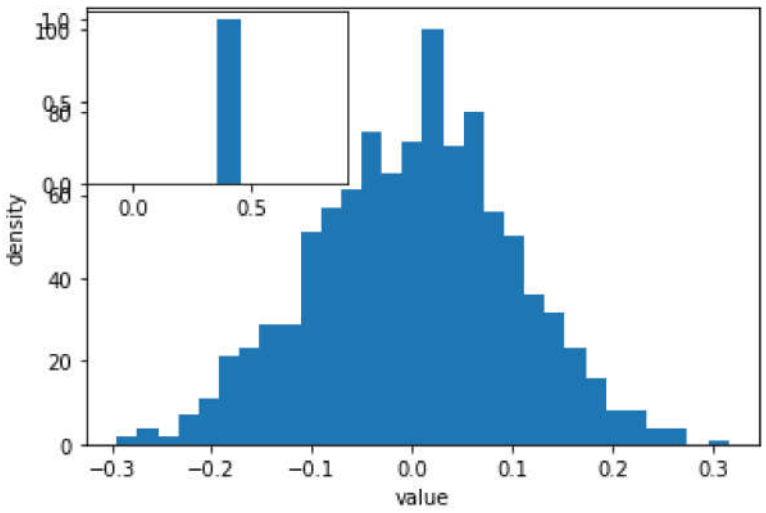
In [9]:
```
fig, ax = plt.subplots()  # initiate an empty figure and axis matplotlib object
ax.hist(sample_data, 30)
```

Out[9]:
```
(array([  2.,   4.,   2.,   7.,  11.,  21.,  23.,  29.,  29.,  51.,  57.,
         61.,  75.,  65.,  73., 100.,  72.,  80.,  56.,  50.,  36.,  32.,
         23.,  16.,   8.,   8.,   4.,   4.,   0.,   1.]),
 array([-0.29454121, -0.2741985 , -0.2538558 , -0.23351309, -0.21317038,
        -0.19282768, -0.17248497, -0.15214226, -0.13179956, -0.11145685,
        -0.09111414, -0.07077144, -0.05042873, -0.03008603, -0.00974332,
         0.01059939,  0.03094209,  0.0512848 ,  0.07162751,  0.09197021,
         0.11231292,  0.13265563,  0.15299833,  0.17334104,  0.19368374,
         0.21402645,  0.23436916,  0.25471186,  0.27505457,  0.29539728,
         0.31573998]),
 <BarContainer object of 30 artists>)
```



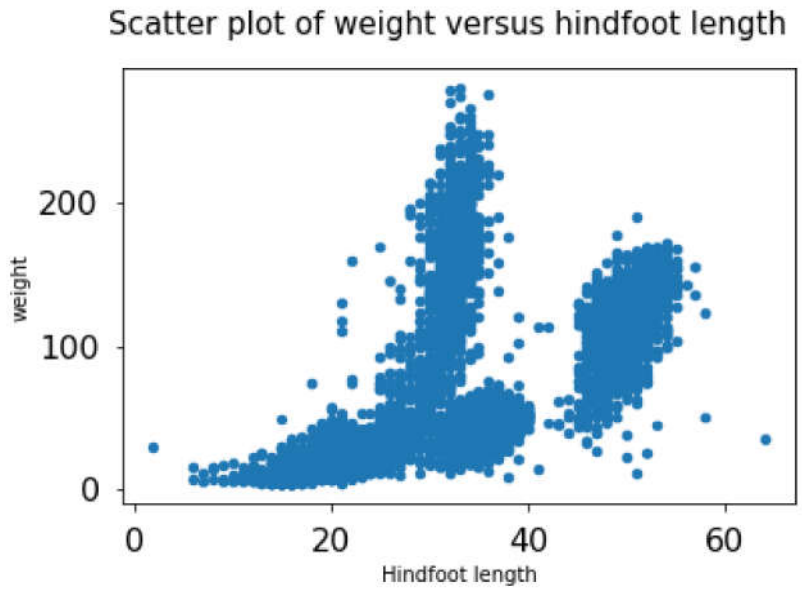
In [10]:
```
# prepare a matplotlib figure
fig, ax1 = plt.subplots()
ax1.hist(sample_data, 30)
# add labels
ax1.set_ylabel('density')
ax1.set_xlabel('value')

# define and sample beta distribution
a = 5
b = 10
beta_draws = np.random.beta(a, b)

# add additional axes to the figure to plot beta distribution
ax2 = fig.add_axes([0.125, 0.575, 0.3, 0.3])  # number coordinates correspond to left,
ax2.hist(beta_draws)
```

Out[10]:
```
(array([0., 0., 0., 0., 0., 1., 0., 0., 0., 0.]),
 array([-0.1487476, -0.0487476,  0.0512524,  0.1512524,  0.2512524,
         0.3512524,  0.4512524,  0.5512524,  0.6512524,  0.7512524,
         0.8512524]),
 <BarContainer object of 10 artists>)
```



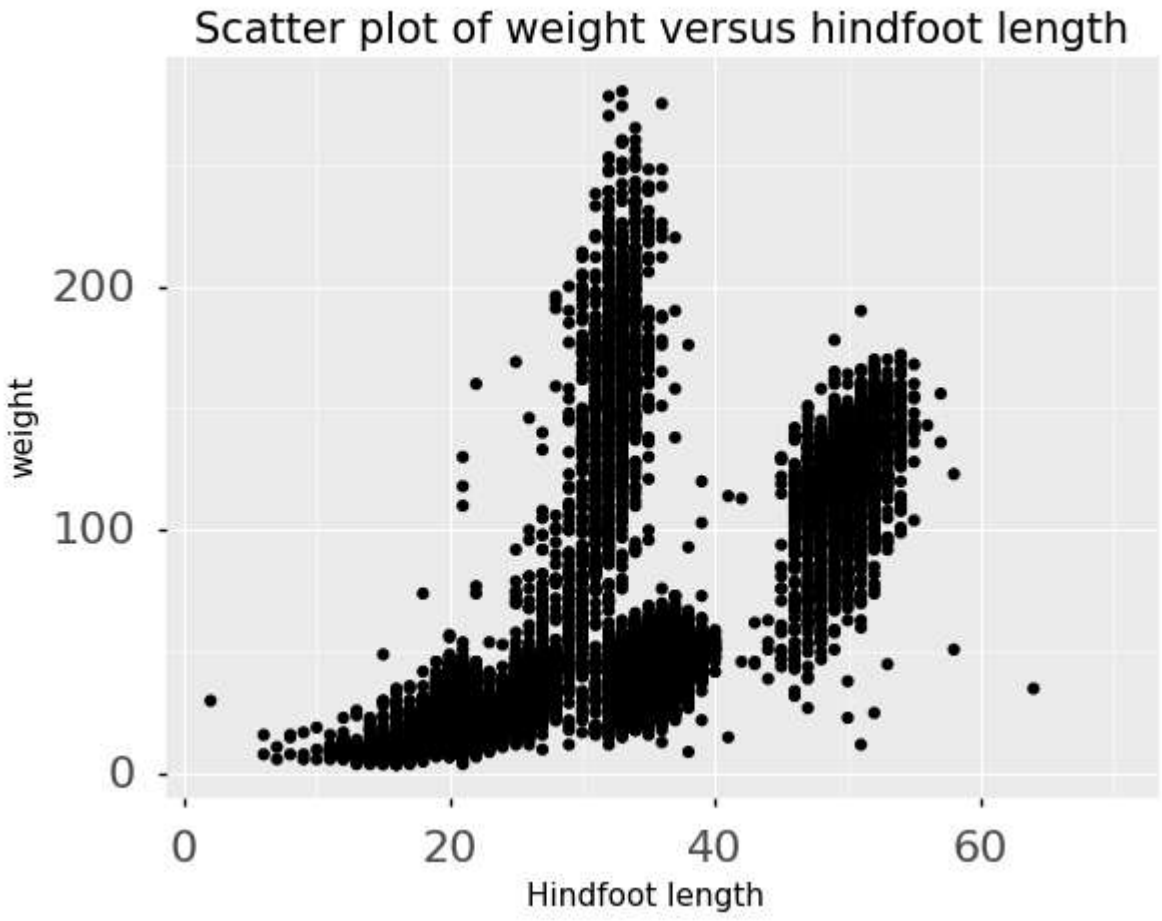
In [11]:
```
fig, ax1 = plt.subplots() # prepare a matplotlib figure

surveys.plot("hindfoot_length", "weight", kind="scatter", ax=ax1)

# Provide further adaptations with matplotlib:
ax1.set_xlabel("Hindfoot length")
ax1.tick_params(labelsize=16, pad=8)
fig.suptitle('Scatter plot of weight versus hindfoot length', fontsize=15)
```

Out[11]: Text(0.5, 0.98, 'Scatter plot of weight versus hindfoot length')



In [12]:
```
import plotnine as p9
myplot = (p9.ggplot(data=surveys,
                    mapping=p9.aes(x='hindfoot_length', y='weight')) +
              p9.geom_point())

# convert output plotnine to a matplotlib object
my_plt_version = myplot.draw()

# Provide further adaptations with matplotlib:
p9_ax = my_plt_version.axes[0] # each subplot is an item in a list
p9_ax.set_xlabel("Hindfoot length")
p9_ax.tick_params(labelsize=16, pad=8)
p9_ax.set_title('Scatter plot of weight versus hindfoot length', fontsize=15)
plt.show() # not necessary in Jupyter Notebooks
```

```
E:\Install\anaconda\lib\site-packages\plotnine\layer.py:401: PlotnineWarning: geom_p
oint : Removed 4811 rows containing missing values.
```



In [13]:
```
fig.savefig("my_plot_name.png")
```

In [ ]:
```

```