```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns

df = pd.read_csv(r"C:\Users\Sarav\OneDrive\Desktop\80 cereals\
cereal.csv")
df
```

```
                         name mfr type  calories  protein  fat  sodium
fiber  \
0                   100% Bran   N    C        70        4    1     130
10.0
1            100% Natural Bran   Q    C       120        3    5      15
2.0
2                    All-Bran   K    C        70        4    1     260
9.0
3   All-Bran with Extra Fiber   K    C        50        4    0     140
14.0
4               Almond Delight   R    C       110        2    2     200
1.0
..                         ...  ..  ...       ...      ...  ...     ...
...
72                    Triples   G    C       110        2    1     250
0.0
73                       Trix   G    C       110        1    1     140
0.0
74                 Wheat Chex   R    C       100        3    1     230
3.0
75                    Wheaties   G    C       100        3    1     200
3.0
76         Wheaties Honey Gold   G    C       110        2    1     200
1.0

    carbo  sugars  potass  vitamins  shelf  weight  cups     rating
0     5.0       6     280        25      3     1.0  0.33  68.402973
1     8.0       8     135         0      3     1.0  1.00  33.983679
2     7.0       5     320        25      3     1.0  0.33  59.425505
3     8.0       0     330        25      3     1.0  0.50  93.704912
4    14.0       8      -1        25      3     1.0  0.75  34.384843
..    ...     ...     ...       ...    ...     ...   ...        ...
72   21.0       3      60        25      3     1.0  0.75  39.106174
73   13.0      12      25        25      2     1.0  1.00  27.753301
74   17.0       3     115        25      1     1.0  0.67  49.787445
75   17.0       3     110        25      1     1.0  1.00  51.592193
76   16.0       8      60        25      1     1.0  0.75  36.187559

[77 rows x 16 columns]
```

```
df.head()
```

```
                        name mfr type  calories  protein  fat  sodium
fiber  \
0                  100% Bran   N    C        70        4    1     130
10.0
1          100% Natural Bran   Q    C       120        3    5      15
2.0
2                   All-Bran   K    C        70        4    1     260
9.0
3  All-Bran with Extra Fiber   K    C        50        4    0     140
14.0
4             Almond Delight   R    C       110        2    2     200
1.0

   carbo  sugars  potass  vitamins  shelf  weight  cups     rating
0    5.0       6     280        25      3     1.0  0.33  68.402973
1    8.0       8     135         0      3     1.0  1.00  33.983679
2    7.0       5     320        25      3     1.0  0.33  59.425505
3    8.0       0     330        25      3     1.0  0.50  93.704912
4   14.0       8      -1        25      3     1.0  0.75  34.384843

df.tail()

                    name mfr type  calories  protein  fat  sodium
fiber  \
72              Triples   G    C       110        2    1     250
0.0
73                 Trix   G    C       110        1    1     140
0.0
74           Wheat Chex   R    C       100        3    1     230
3.0
75             Wheaties   G    C       100        3    1     200
3.0
76  Wheaties Honey Gold   G    C       110        2    1     200
1.0

    carbo  sugars  potass  vitamins  shelf  weight  cups     rating
72   21.0       3      60        25      3     1.0  0.75  39.106174
73   13.0      12      25        25      2     1.0  1.00  27.753301
74   17.0       3     115        25      1     1.0  0.67  49.787445
75   17.0       3     110        25      1     1.0  1.00  51.592193
76   16.0       8      60        25      1     1.0  0.75  36.187559

df.info()

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 77 entries, 0 to 76
Data columns (total 16 columns):
 #   Column    Non-Null Count  Dtype
---  ------    --------------  -----
 0   name      77 non-null     object
```

```
 1   mfr       77 non-null     object
 2   type      77 non-null     object
 3   calories  77 non-null     int64
 4   protein   77 non-null     int64
 5   fat       77 non-null     int64
 6   sodium    77 non-null     int64
 7   fiber     77 non-null     float64
 8   carbo     77 non-null     float64
 9   sugars    77 non-null     int64
 10  potass    77 non-null     int64
 11  vitamins  77 non-null     int64
 12  shelf     77 non-null     int64
 13  weight    77 non-null     float64
 14  cups      77 non-null     float64
 15  rating    77 non-null     float64
dtypes: float64(5), int64(8), object(3)
memory usage: 9.8+ KB

df.describe()

         calories    protein        fat      sodium      fiber
carbo  \
count   77.000000  77.000000  77.000000   77.000000  77.000000
77.000000
mean   106.883117   2.545455   1.012987  159.675325   2.151948
14.597403
std     19.484119   1.094790   1.006473   83.832295   2.383364
4.278956
min     50.000000   1.000000   0.000000    0.000000   0.000000  -
1.000000
25%    100.000000   2.000000   0.000000  130.000000   1.000000
12.000000
50%    110.000000   3.000000   1.000000  180.000000   2.000000
14.000000
75%    110.000000   3.000000   2.000000  210.000000   3.000000
17.000000
max    160.000000   6.000000   5.000000  320.000000  14.000000
23.000000

          sugars      potass    vitamins      shelf     weight
cups  \
count  77.000000   77.000000   77.000000  77.000000  77.000000
77.000000
mean    6.922078   96.077922   28.246753   2.207792   1.029610
0.821039
std     4.444885   71.286813   22.342523   0.832524   0.150477
0.232716
min    -1.000000   -1.000000    0.000000   1.000000   0.500000
0.250000
25%     3.000000   40.000000   25.000000   1.000000   1.000000
```

```
0.670000
50%     7.000000   90.000000   25.000000   2.000000   1.000000
0.750000
75%    11.000000  120.000000   25.000000   3.000000   1.000000
1.000000
max    15.000000  330.000000  100.000000   3.000000   1.500000
1.500000
```

```
          rating
count  77.000000
mean   42.665705
std    14.047289
min    18.042851
25%    33.174094
50%    40.400208
75%    50.828392
max    93.704912
```

```
df.shape
```

```
(77, 16)
```

```
df.isnull().sum()
```

```
name        0
mfr         0
type        0
calories    0
protein     0
fat         0
sodium      0
fiber       0
carbo       0
sugars      0
potass      0
vitamins    0
shelf       0
weight      0
cups        0
rating      0
dtype: int64
```

```
df.duplicated().any()
```

```
np.False_
```

```
df.dtypes
```

```
name         object
mfr          object
type         object
```

```
calories      int64
protein       int64
fat           int64
sodium        int64
fiber       float64
carbo       float64
sugars        int64
potass        int64
vitamins      int64
shelf         int64
weight      float64
cups        float64
rating      float64
dtype: object
```

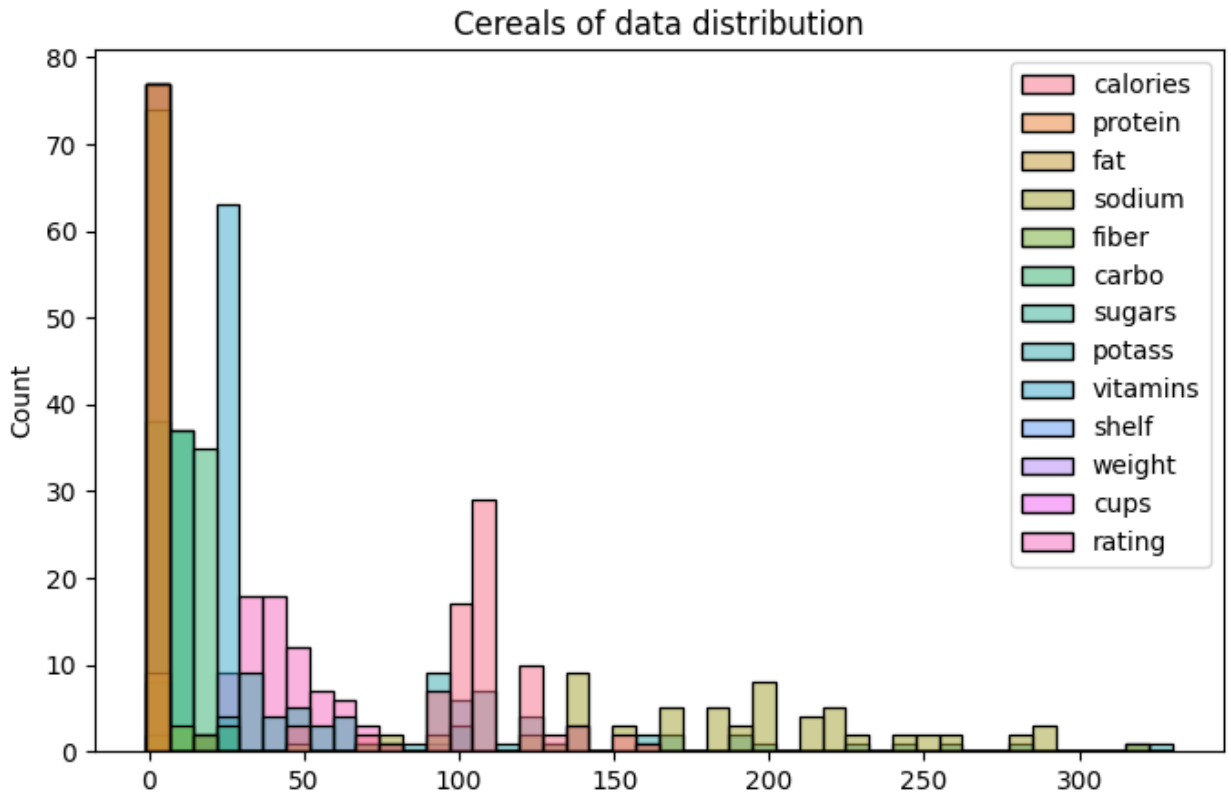
```
df.columns
```

```
Index(['name', 'mfr', 'type', 'calories', 'protein', 'fat', 'sodium',
'fiber',
       'carbo', 'sugars', 'potass', 'vitamins', 'shelf', 'weight',
'cups',
       'rating'],
      dtype='object')
```

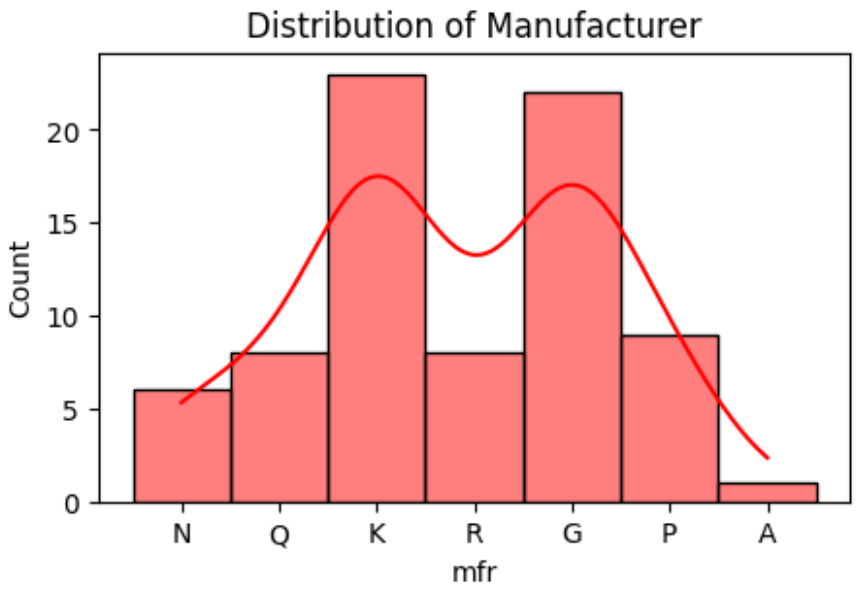
Visualization of 80 Cereals

```
plt.figure(figsize=(8,5))
plt.title("Cereals of data distribution")
sns.histplot(df) # Here fat cereals has a highest distribution among
all others
```

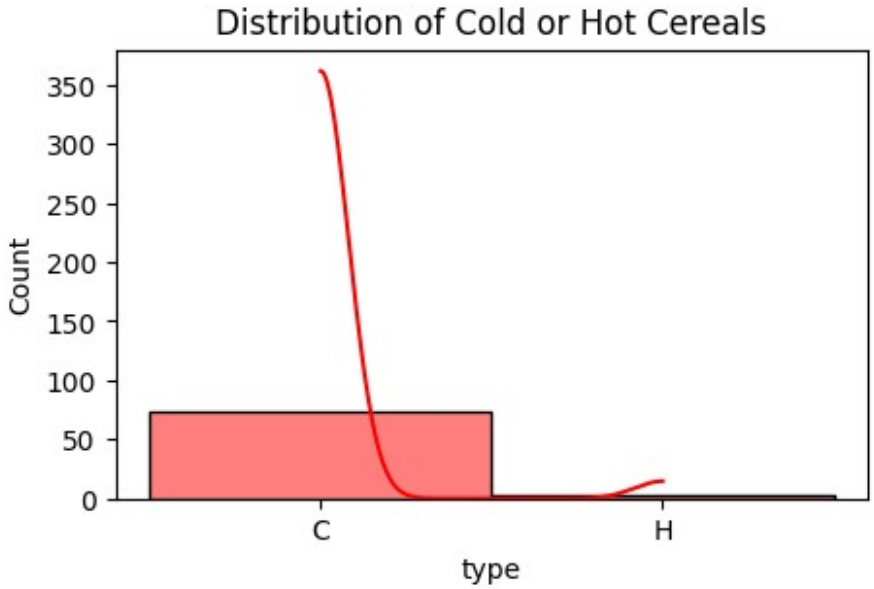
```
<Axes: title={'center': 'Cereals of data distribution'},
ylabel='Count'>
```



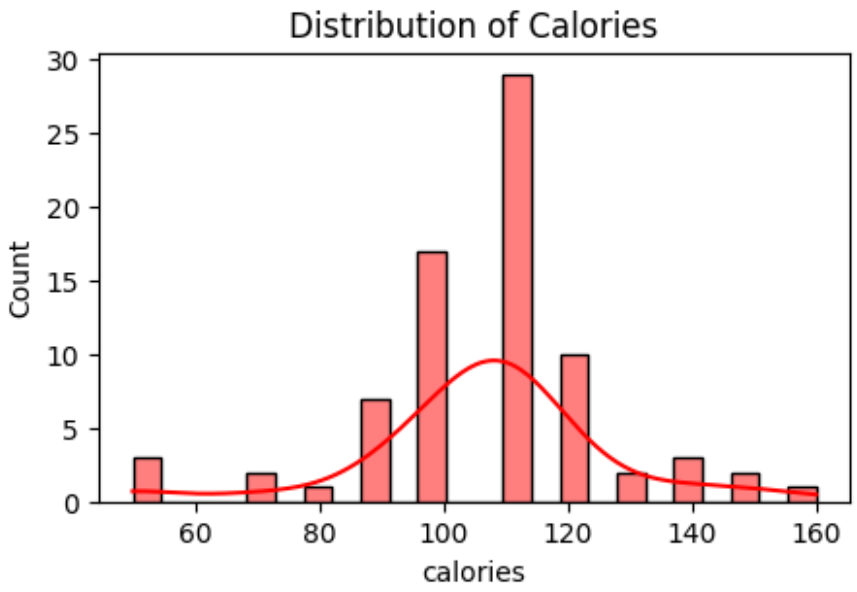

```
def plot_histogram(column_data,column_name,color):
    plt.figure(figsize=(5,3))
    plt.title(f"Distribution of {column_name}")
    sns.histplot(column_data,kde=True,color='red')
    plt.show()

plot_histogram(df['mfr'],'Manufacturer',color='red')
```



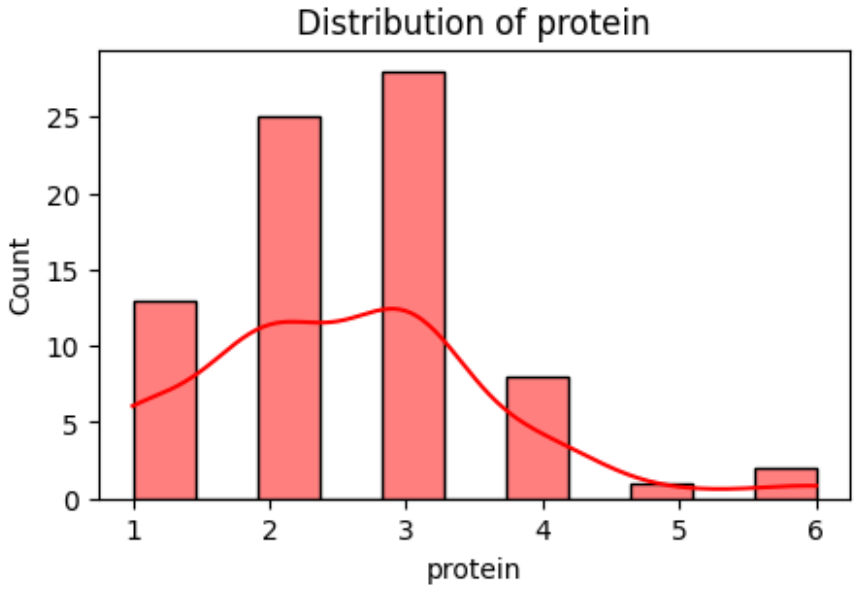

```
plot_histogram(df['type'],'Cold or Hot Cereals',color='red') # HERE
COLD TYPE OF CEREALS HAS A HIGH DISTRIBUTION
```



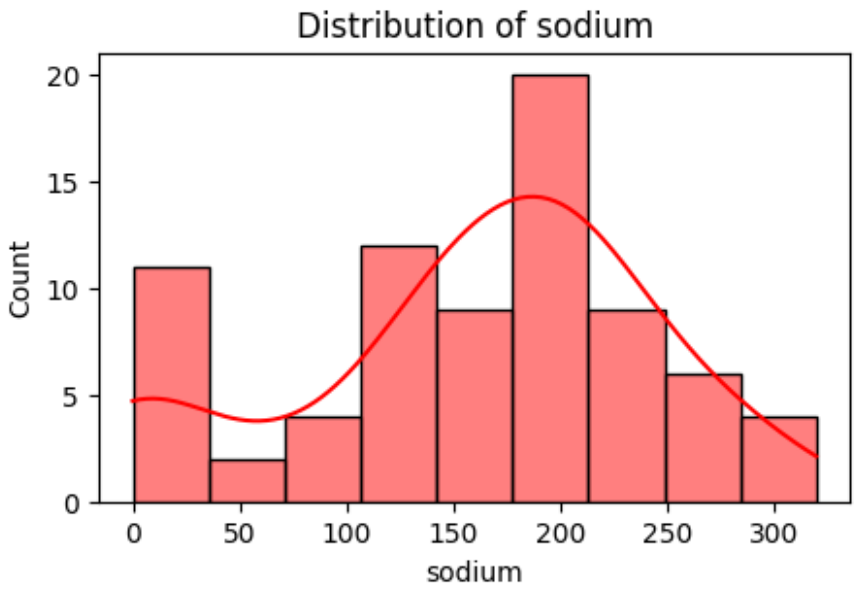

```
plot_histogram(df['calories'],'Calories',color='red') # Here the high
distribution of calories range between 100-120 calories
```



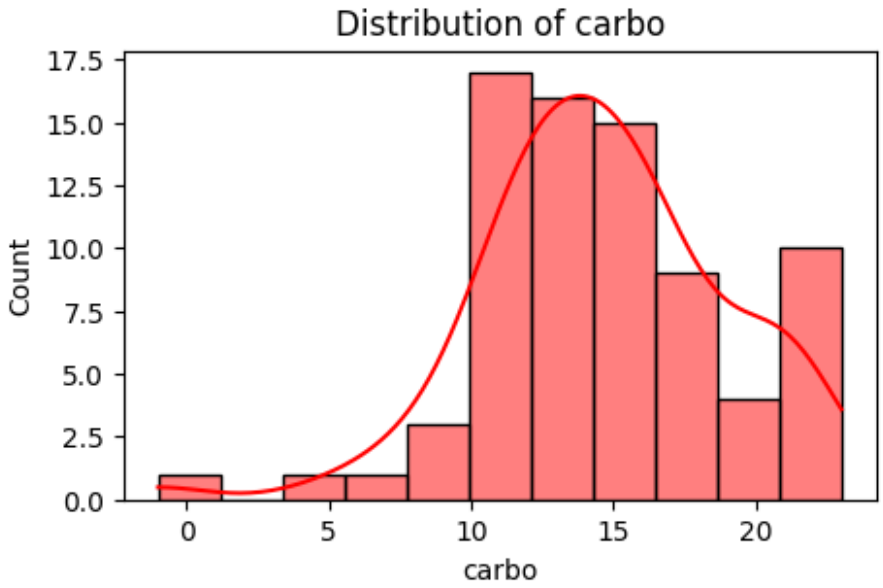

```
plot_histogram(df['protein'],'protein',color='red') # The distribution
of protein falls within the range between falls 2-3 grams on x-axis
```



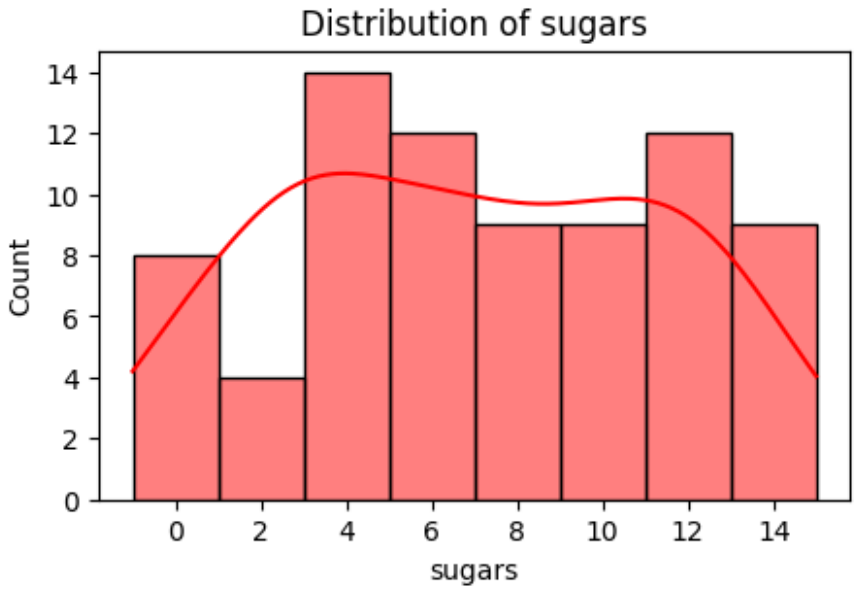

```
plot_histogram(df['sodium'],'sodium',color='red') # We observe that
our standard distribution ranges between 150-250 increases and
slightly decrease in 300
```




```
plot_histogram(df['carbo'],'carbo',color='red') # HERE THE CARBO RATE
OF PROTEINS INCREASES THE CARBO COUNT FROM 15.3 AND SLIGHTLY DECREASES
FROM 13 CARBO COUNTS
```

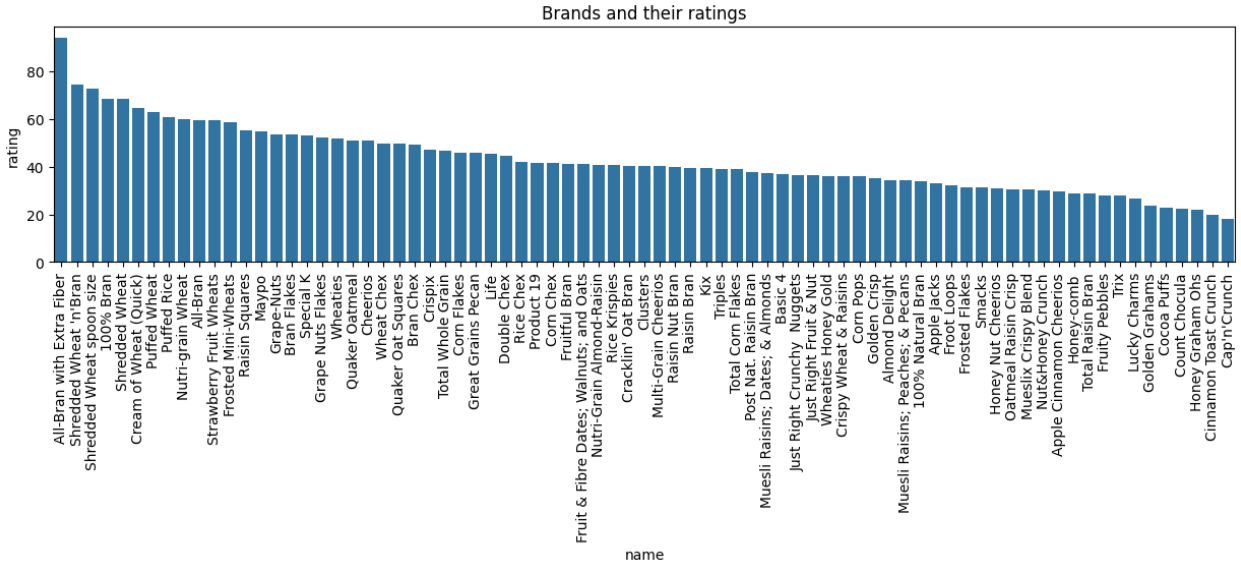



```
plot_histogram(df['sugars'],'sugars',color='red') # here the count of
sugars has 4 which is largest count of 13 among all others
```



WHICH BRAND HAS HIGH RATINGS

```
cereals_sorting = df.sort_values(by='rating',ascending=False)
plt.figure(figsize=(15,3))
plt.title("Brands and their ratings")
plt.xticks(rotation=90)
sns.barplot(data = cereals_sorting, x=cereals_sorting['name'],
y=cereals_sorting['rating'])
plt.show() # ALL BRAN WITH EXTRA FIBER HAS HIGHEST DISTRIBUTION
RATINGS
```



RELATIONSHIP BETWEEN SUGAR AND RATINGS

```
plt.figure(figsize=(10,5))
plt.title("Relationship between sugar and ratings")
sns.scatterplot(data=df,x=df['sugars'],y=df['rating'])
plt.show() # IT HAS LOWER SUGAR CONTENT AND HIGHER RATING IN THE CEREALS
```