

I phone sales analysis

```
In [4]: import numpy as np
import pandas as pd
import plotly.express as px
import plotly.graph_objects as go

In [5]: data = pd.read_csv('apple_products.csv')

In [6]: data

Out[6]:
```

	Product Name	Product URL	Brand	Sale Price	Mrp	Discount Percentage	Number Of Ratings	Number Of Reviews	Upc	Star Rating	Ram
0	APPLE iPhone 8 Plus (Gold, 64 GB)	https://www.flipkart.com/apple-iphone-8-plus-g...	Apple	49900	49900	0	3431	356	MOBEXRGV7EHHTGUH	4.6	2 GB
1	APPLE iPhone 8 Plus (Space Grey, 256 GB)	https://www.flipkart.com/apple-iphone-8-plus-s...	Apple	84900	84900	0	3431	356	MOBEXRGVAC6TJT4F	4.6	2 GB
2	APPLE iPhone 8 Plus (Silver, 256 GB)	https://www.flipkart.com/apple-iphone-8-plus-s...	Apple	84900	84900	0	3431	356	MOBEXRGVGETABXWZ	4.6	2 GB
3	APPLE iPhone 8 (Silver, 256 GB)	https://www.flipkart.com/apple-iphone-8-silver...	Apple	77000	77000	0	11202	794	MOBEXRGVMZWUHCBA	4.5	2 GB
4	APPLE iPhone 8 (Gold, 256 GB)	https://www.flipkart.com/apple-iphone-8-gold-2...	Apple	77000	77000	0	11202	794	MOBEXRGVPK7PFEJZ	4.5	2 GB
...
57	APPLE iPhone SE (Black, 64 GB)	https://www.flipkart.com/apple-iphone-se-black...	Apple	29999	39900	24	95909	8161	MOBFWQ6BR3MK7AUG	4.5	4 GB
58	APPLE iPhone 11 (Purple, 64 GB)	https://www.flipkart.com/apple-iphone-11-purpl...	Apple	46999	54900	14	43470	3331	MOBFWQ6BTFFJKGKE	4.6	4 GB
59	APPLE iPhone 11 (White, 64 GB)	https://www.flipkart.com/apple-iphone-11-white...	Apple	46999	54900	14	43470	3331	MOBFWQ6BVVWEH3XE	4.6	4 GB
60	APPLE iPhone 11 (Black, 64 GB)	https://www.flipkart.com/apple-iphone-11-black...	Apple	46999	54900	14	43470	3331	MOBFWQ6BXGJCEYNY	4.6	4 GB
61	APPLE iPhone 11 (Red, 64 GB)	https://www.flipkart.com/apple-iphone-11-red-6...	Apple	46999	54900	14	43470	3331	MOBFWQ6BYYV3FCU7	4.6	4 GB

62 rows × 11 columns

```
In [7]: print(data.isnull().sum())

Product Name      0
Product URL       0
Brand             0
Sale Price        0
Mrp               0
Discount Percentage 0
Number Of Ratings 0
Number Of Reviews 0
Upc               0
Star Rating       0
Ram              0
dtype: int64

In [8]: print(data.describe())

      Sale Price      Mrp  Discount Percentage  Number Of Ratings  \
count      62.000000      62.000000          62.000000          62.000000
mean    80073.887097  88058.064516          9.951613        22420.403226
std     34310.446132  34728.825597          7.608079        33768.589550
min     29999.000000  39900.000000          0.000000         542.000000
25%     49900.000000  54900.000000          6.000000         740.000000
50%     75900.000000  79900.000000         10.000000        2101.000000
75%    117100.000000 120950.000000         14.000000        43470.000000
max    140900.000000 149900.000000         29.000000       95909.000000

      Number Of Reviews  Star Rating
count      62.000000      62.000000
mean     1861.677419      4.575806
std      2855.883830      0.059190
min        42.000000      4.500000
25%        64.000000      4.500000
50%       180.000000      4.600000
75%      3331.000000      4.600000
max       8161.000000      4.700000

Iphone sale analysis in India
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In [9]: highest_rated = data.sort_values(by = ['Star Rating'], ascending = False)
highest_rated = highest_rated.head(10)
print(highest_rated['Product Name'])

20    APPLE iPhone 11 Pro Max (Midnight Green, 64 GB)
17    APPLE iPhone 11 Pro Max (Space Grey, 64 GB)
16    APPLE iPhone 11 Pro Max (Midnight Green, 256 GB)
15    APPLE iPhone 11 Pro Max (Gold, 64 GB)
14    APPLE iPhone 11 Pro Max (Gold, 256 GB)
0     APPLE iPhone 8 Plus (Gold, 64 GB)
29    APPLE iPhone 12 (White, 128 GB)
32    APPLE iPhone 12 Pro Max (Graphite, 128 GB)
35    APPLE iPhone 12 (Black, 128 GB)
36    APPLE iPhone 12 (Blue, 128 GB)
Name: Product Name, dtype: object
```

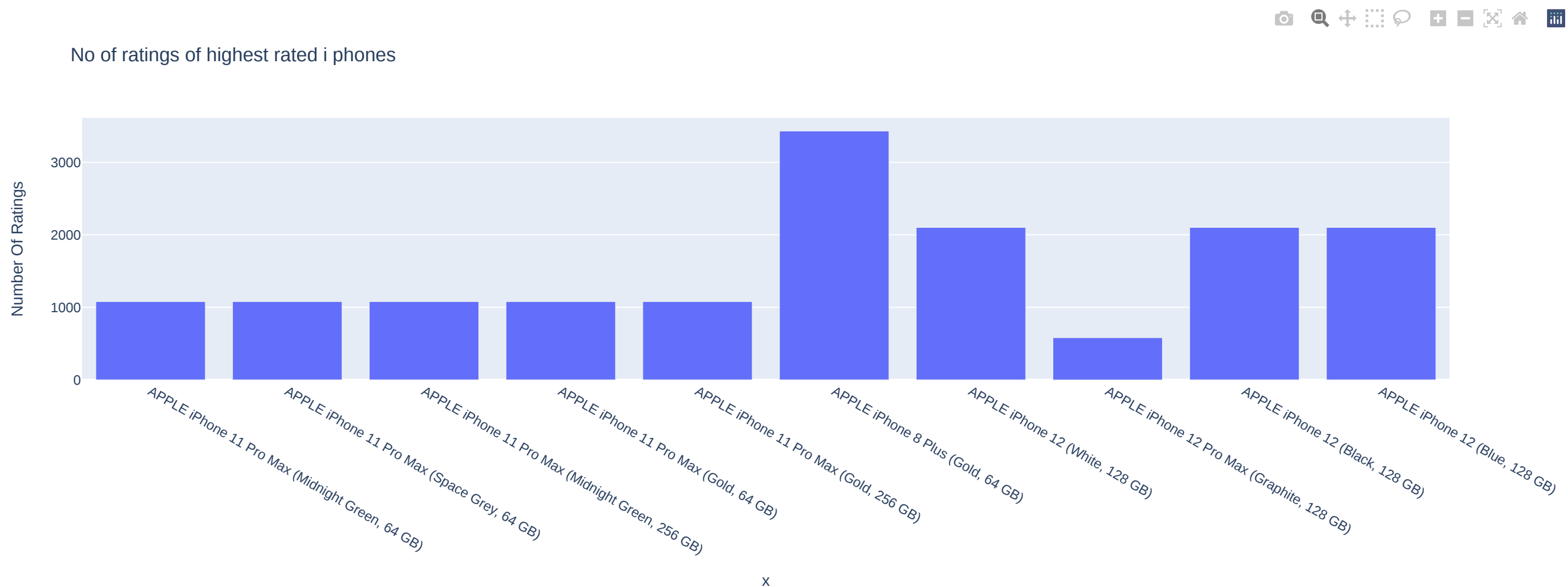
Lets have a lot at the number of ratings of the highest rated iphone on flipkart

```
In [10]: iphones = highest_rated['Product Name'].value_counts()

In [11]: iphones

Out[11]:
APPLE iPhone 11 Pro Max (Midnight Green, 64 GB)    1
APPLE iPhone 11 Pro Max (Space Grey, 64 GB)        1
APPLE iPhone 11 Pro Max (Midnight Green, 256 GB)    1
APPLE iPhone 11 Pro Max (Gold, 64 GB)               1
APPLE iPhone 11 Pro Max (Gold, 256 GB)              1
APPLE iPhone 8 Plus (Gold, 64 GB)                   1
APPLE iPhone 12 (White, 128 GB)                     1
APPLE iPhone 12 Pro Max (Graphite, 128 GB)           1
APPLE iPhone 12 (Black, 128 GB)                     1
APPLE iPhone 12 (Blue, 128 GB)                      1
Name: Product Name, dtype: int64

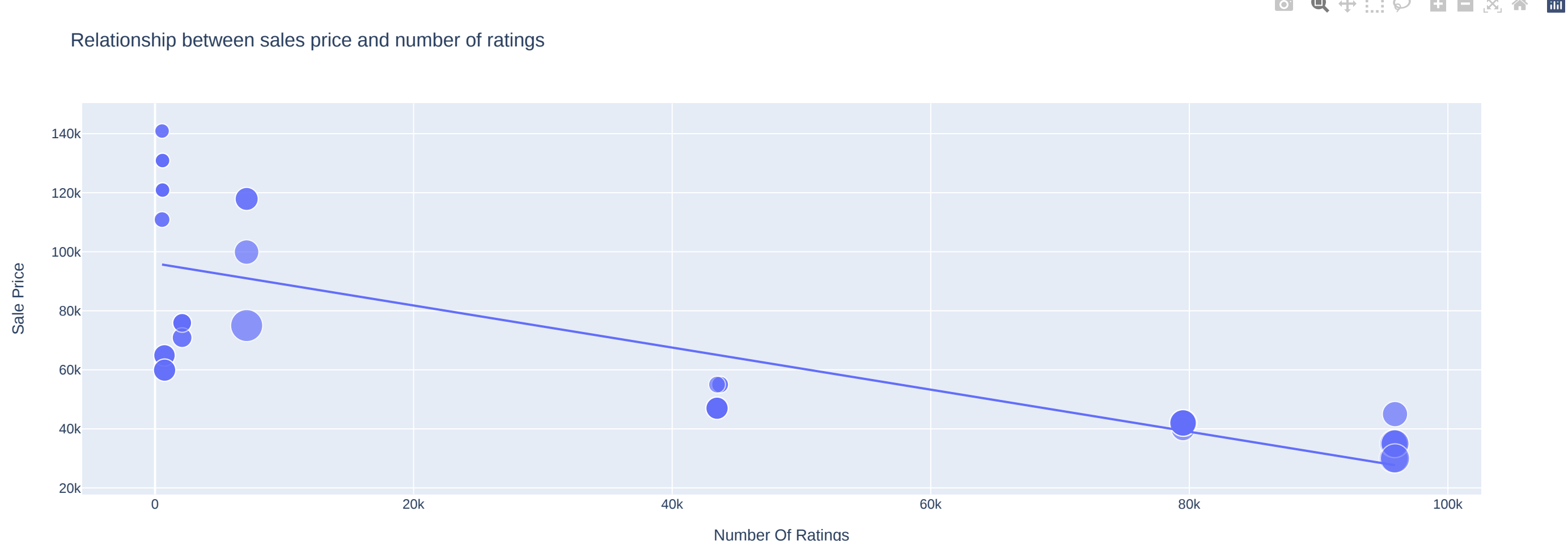
In [12]: labels = iphones.index
counts = highest_rated['Number Of Ratings']
figure = px.bar(highest_rated, x= labels, y= counts,
                title = 'No of ratings of highest rated i phones')
figure.show()
```



```
In [13]: labels = iphones.index
counts = highest_rated['Number Of Reviews']
figure = px.bar(highest_rated, x= labels, y= counts,
                title = 'No of reviews of highest rated i phones')
figure.show()
```



```
In [14]: figure = px.scatter(data_frame = data, x = 'Number Of Ratings',
y = 'Sale Price', size= 'Discount Percentage', trendline= 'ols',
                title='Relationship between sales price and number of ratings')
figure.show()
```



```
In [15]: figure = px.scatter(data_frame = data, x = 'Number Of Ratings',
y = 'Discount Percentage', size= 'Sale Price', trendline= 'ols',
                title='Relationship between discount percentage and number of ratings')
figure.show()
```

