

I-PHONE SALES ANALYSIS

```
In [1]: import pandas as pd
import numpy as np
import plotly.express as px
import plotly.graph_objects as go

In [2]: data=pd.read_csv("apple_products.csv")
data

Out[2]:
```

	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	MOBEXRGVAC6JT4F	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	MOBEXRGVGETA8XWZ	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	MOBFWQ6BVVVEH3XE	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	MOBFWQ6BYVY3FCU7	4.6 4 GB

62 rows × 11 columns

DATA CLEANING STEP

```
In [3]: print(data.isnull().sum()) # ISNULL( ) tells us the empty set exists or not
# .sum() tells that the total number of empty values

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
```

DESCRIPTIVE ANALYSIS

```
In [4]: print(data.describe())

count      62.000000      62.000000      62.000000      62.000000 \
mean      80073.887097      88058.064516      9.951613      22420.403226
std       34310.446132      34728.825937      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

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
```

Sales ANALYSIS

TAKING THE TOP 10 most SALED PHONES BASED ON RATINGS

```
In [5]: #FIRSTLY we are just sorting the data in descending order on the basics of ratings

highest_rated = data.sort_values(by=["Star Rating"], ascending = False)
highest_rated=highest_rated.head(10)
print(highest_rated["Product Name"])

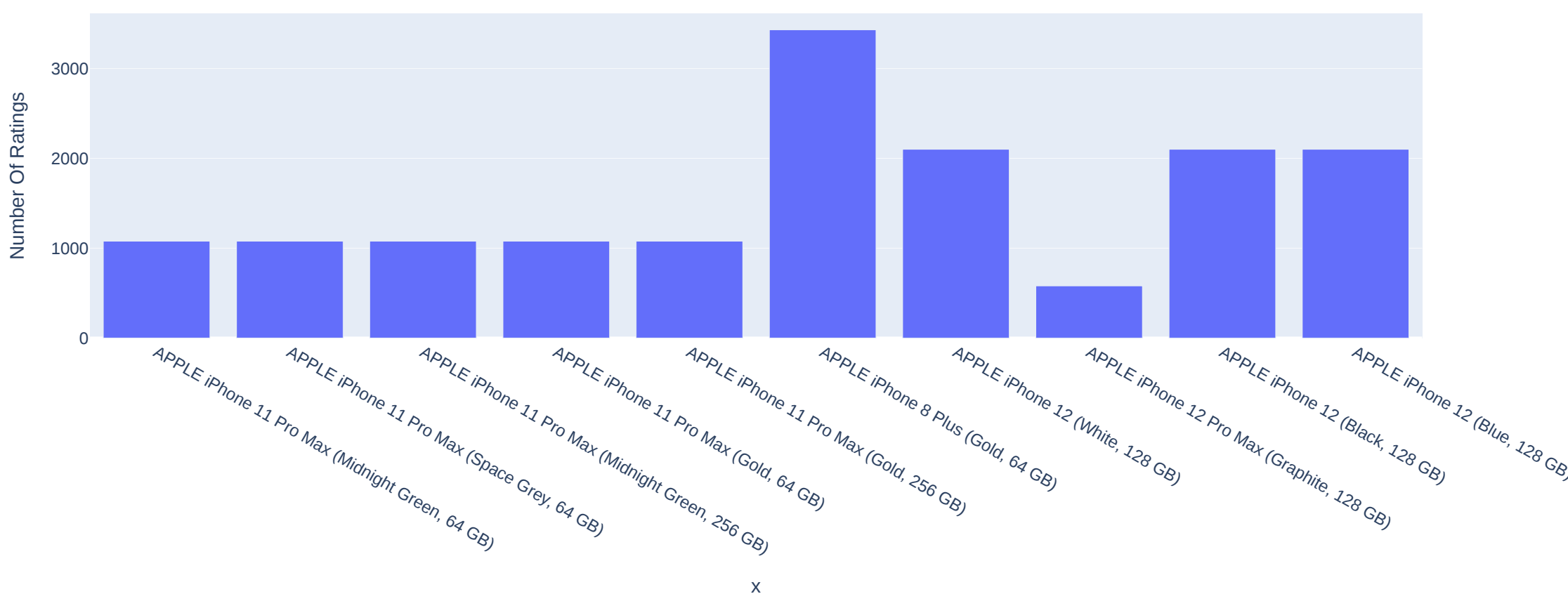
20  APPLE iPhone 11 Pro Max (Midnight Green, 64 GB)
17  APPLE iPhone 11 Pro Max (Space Grey, 64 GB)
16  APPLE iPhone 11 Pro Max (Midnight Green, 256 GB)
15  APPLE iPhone 11 Pro Max (Gold, 64 GB)
14  APPLE iPhone 11 Pro Max (Gold, 256 GB)
0   APPLE iPhone 8 Plus (Gold, 64 GB)
29  APPLE iPhone 12 (White, 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 LOOK at the number of ratings of the highest rated IPHONES on FLIPKART

LETS CRAETE A BAR GRAPH BETWEEN RATING AND PRODUCT

```
In [6]: iphones=highest_rated["Product Name"].value_counts() # this is to checkk that each phone exists once
labels=iphones.index
counts=highest_rated["Number Of Ratings"]
figure=px.bar(highest_rated,x=labels, y=counts, title="NUMBER OF RATINGS OF HIGHEST RATED IPHONES")
figure.show()
```

NUMBER OF RATINGS OF HIGHEST RATED IPHONES



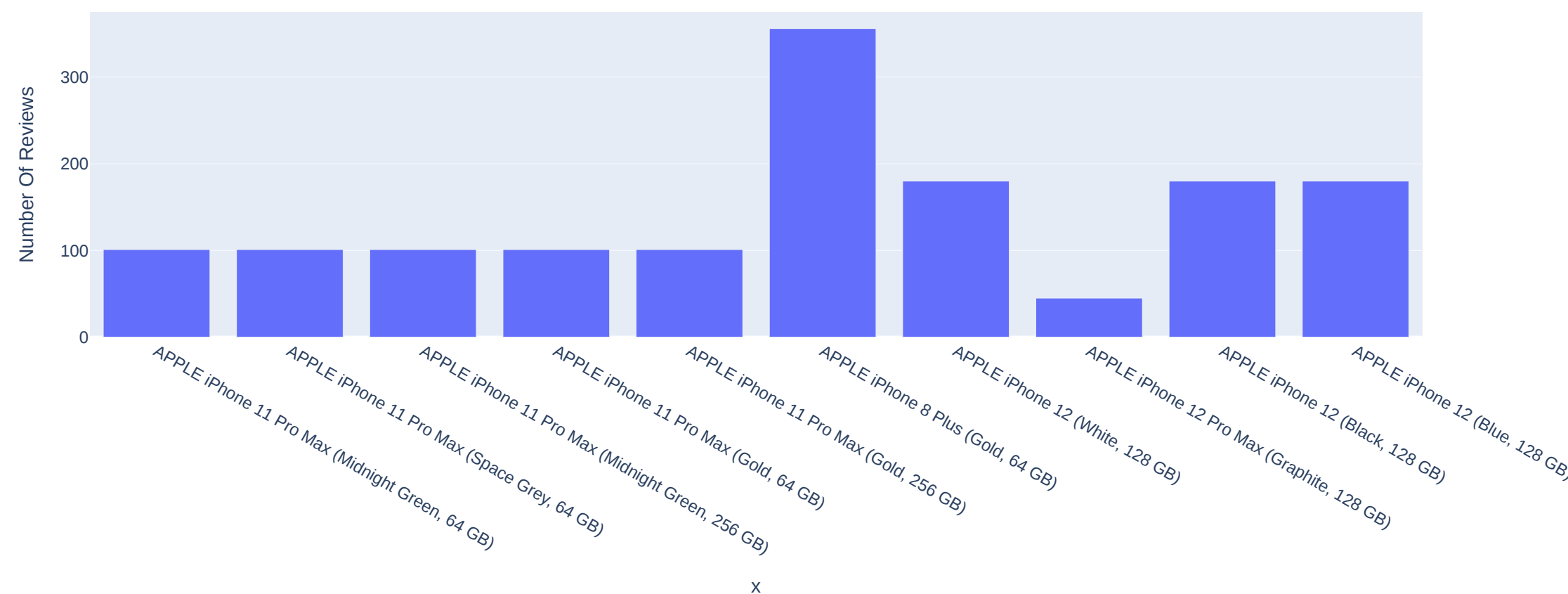
```
In [7]: iphones #its for checking that there is no repetition of phones in the dataset
```

```
Out[7]: Product Name      count
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: count, dtype: int64
```

NOW MAKING THE GPARH USING THE REVIEWS

```
In [8]: iphones=highest_rated["Product Name"].value_counts() # this is to checkk that each phone exists once
labels=iphones.index
counts=highest_rated["Number Of Reviews"]
figure=px.bar(highest_rated,x=labels, y=counts, title="NUMBER OF REVIEWS OF HIGHEST REVIEWED IPHONES")
figure.show()
```

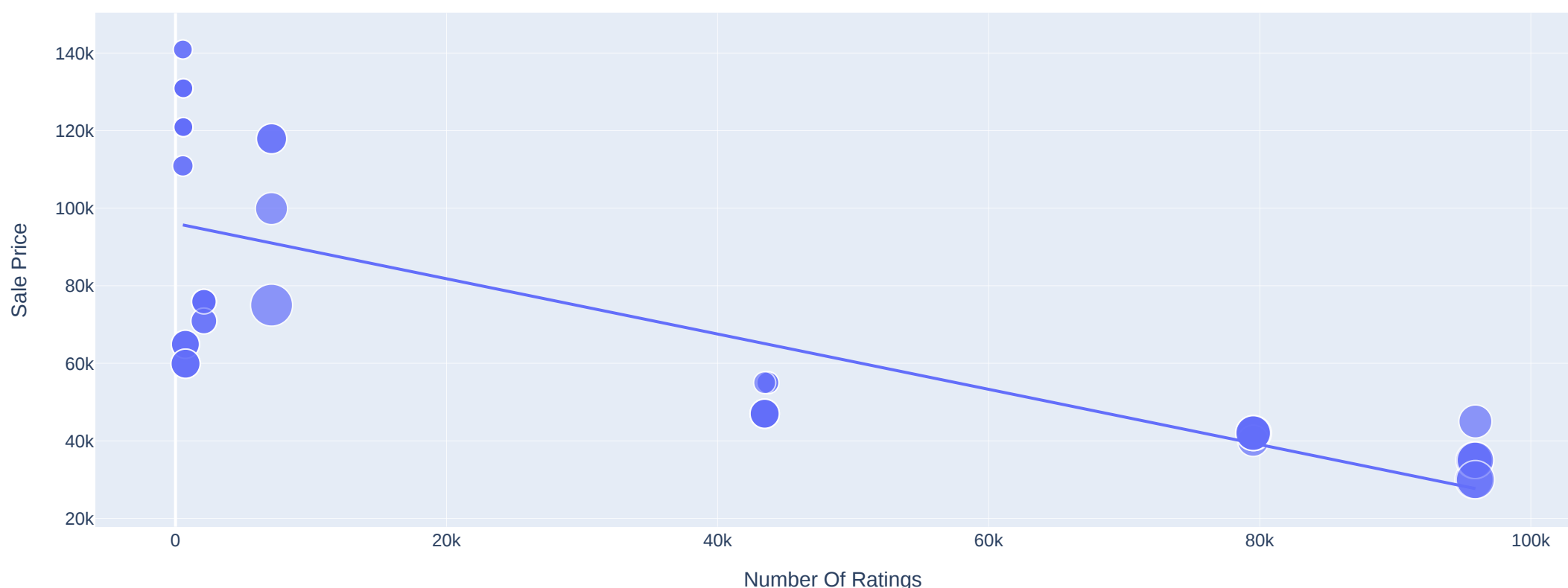
NUMBER OF REVIEWS OF HIGHEST REVIEWED IPHONES



NOW MAKING THE GRAPH BETWEEN SALES PRICE AND NO OF RATINGS

```
In [9]: fig=px.scatter(data_frame=data, x="Number Of Ratings", y="Sale Price", size="Discount Percentage",
trendline="ols",title="GRAPH BETWEEN SALES AND RATINGS")
fig.show()
```

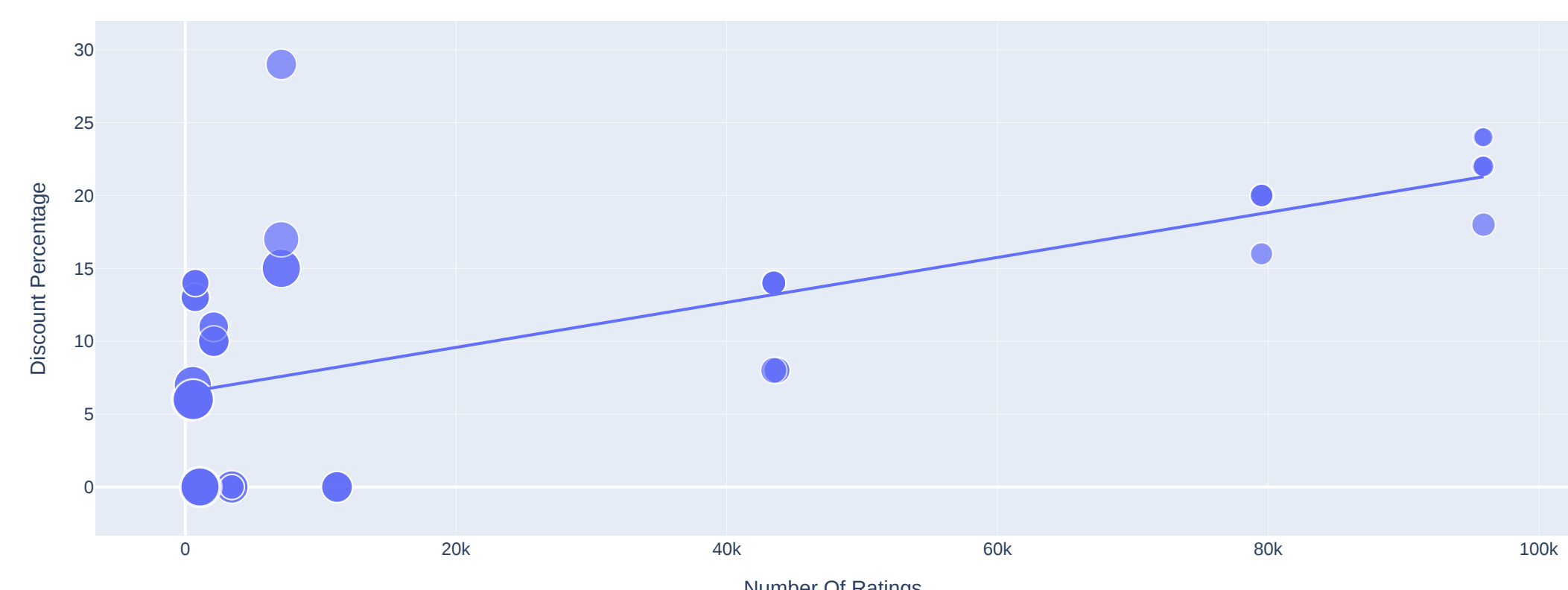
GRAPH BETWEEN SALES AND RATINGS



GRAPH BETWEEN DISCOUNT PERCENTAGE AND NUMBER OF RATINGS

```
In [10]: fig=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")
fig.show()
```

RELATIONSHIP BETWEEN DISCOUNT PERCENTAGE AND NUMBER OF RATINGS



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In [ ]:
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In [ ]:
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