

Iphone_Sales

August 28, 2024

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

```
[2]: df = pd.read_csv("apple_products.csv")
```

```
[3]: df.head()
```

```
[3]:
```

	Product Name \
0	APPLE iPhone 8 Plus (Gold, 64 GB)
1	APPLE iPhone 8 Plus (Space Grey, 256 GB)
2	APPLE iPhone 8 Plus (Silver, 256 GB)
3	APPLE iPhone 8 (Silver, 256 GB)
4	APPLE iPhone 8 (Gold, 256 GB)

	Product URL	Brand	Sale Price \
0	https://www.flipkart.com/apple-iphone-8-plus-g...	Apple	49900
1	https://www.flipkart.com/apple-iphone-8-plus-s...	Apple	84900
2	https://www.flipkart.com/apple-iphone-8-plus-s...	Apple	84900
3	https://www.flipkart.com/apple-iphone-8-silver...	Apple	77000
4	https://www.flipkart.com/apple-iphone-8-gold-2...	Apple	77000

	Mrp	Discount Percentage	Number Of Ratings	Number Of Reviews \
0	49900	0	3431	356
1	84900	0	3431	356
2	84900	0	3431	356
3	77000	0	11202	794
4	77000	0	11202	794

	Upc	Star Rating	Ram
0	MOBEXRGV7EHHTGUH	4.6	2 GB
1	MOBEXRGVAC6TJT4F	4.6	2 GB
2	MOBEXRGVGETABXWZ	4.6	2 GB
3	MOBEXRGVMZWUHCBA	4.5	2 GB
4	MOBEXRGVPK7PFEJZ	4.5	2 GB

```
[4]: df.isnull().sum()
```

```
[4]: 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
```

```
[5]: df.describe()
```

```
[5]:
```

	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

1 Top 10 Higesht rating Iphone on FLipkart in India

```
[7]: highest Rated = df.sort_values(by = "Star Rating", ascending = False)

highest Rated = highest Rated.head(10)
```

```
[8]: highest Rated[["Product Name", "Star Rating"]]
```

```
[8]:
```

	Product Name	Star Rating
20	APPLE iPhone 11 Pro Max (Midnight Green, 64 GB)	4.7
17	APPLE iPhone 11 Pro Max (Space Grey, 64 GB)	4.7
16	APPLE iPhone 11 Pro Max (Midnight Green, 256 GB)	4.7

15	APPLE iPhone 11 Pro Max (Gold, 64 GB)	4.7
14	APPLE iPhone 11 Pro Max (Gold, 256 GB)	4.7
0	APPLE iPhone 8 Plus (Gold, 64 GB)	4.6
29	APPLE iPhone 12 (White, 128 GB)	4.6
32	APPLE iPhone 12 Pro Max (Graphite, 128 GB)	4.6
35	APPLE iPhone 12 (Black, 128 GB)	4.6
36	APPLE iPhone 12 (Blue, 128 GB)	4.6

2 How many ratings do the highest rated Iphones on FLipkart have?

```
[9]: df.head()
```

```
[9]:
```

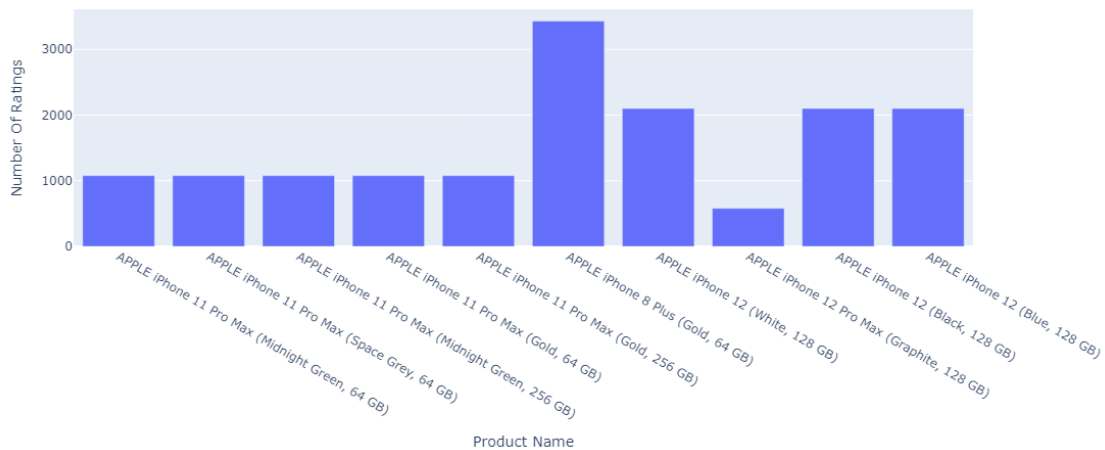
	Product Name \
0	APPLE iPhone 8 Plus (Gold, 64 GB)
1	APPLE iPhone 8 Plus (Space Grey, 256 GB)
2	APPLE iPhone 8 Plus (Silver, 256 GB)
3	APPLE iPhone 8 (Silver, 256 GB)
4	APPLE iPhone 8 (Gold, 256 GB)

	Product URL	Brand	Sale Price \
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1	https://www.flipkart.com/apple-iphone-8-plus-s...	Apple	84900
2	https://www.flipkart.com/apple-iphone-8-plus-s...	Apple	84900
3	https://www.flipkart.com/apple-iphone-8-silver...	Apple	77000
4	https://www.flipkart.com/apple-iphone-8-gold-2...	Apple	77000

	Mrp	Discount Percentage	Number Of Ratings	Number Of Reviews \
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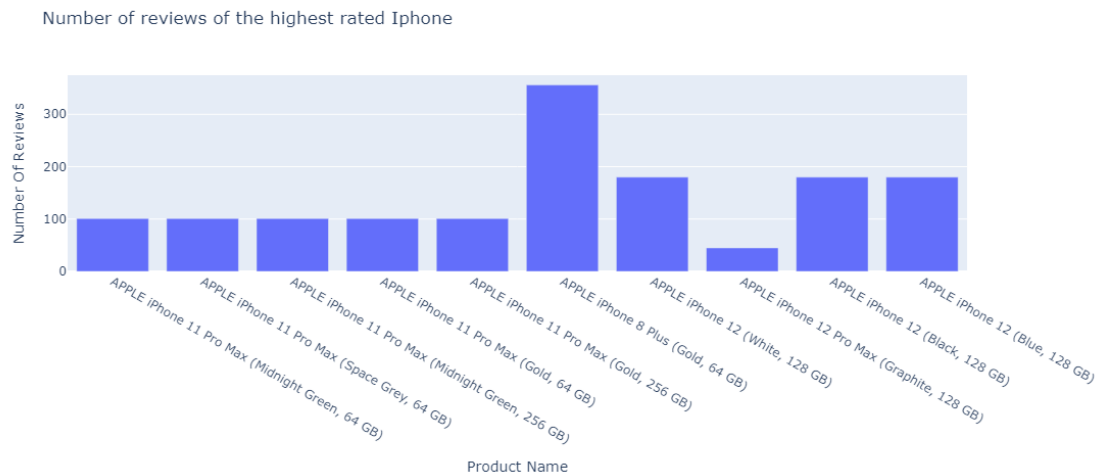
	Upc	Star Rating	Ram
0	MOBEXRGV7EHHTGUH	4.6	2 GB
1	MOBEXRGVAC6TJT4F	4.6	2 GB
2	MOBEXRGVGETABXWZ	4.6	2 GB
3	MOBEXRGVMZWUHCBA	4.5	2 GB
4	MOBEXRGVVK7PFEJZ	4.5	2 GB

```
[10]: x = highest_rated["Product Name"]
y = highest_rated["Number Of Ratings"]
figure = px.bar(highest_rated,x = x, y = y, width = 900, height = 500)
figure.show()
```



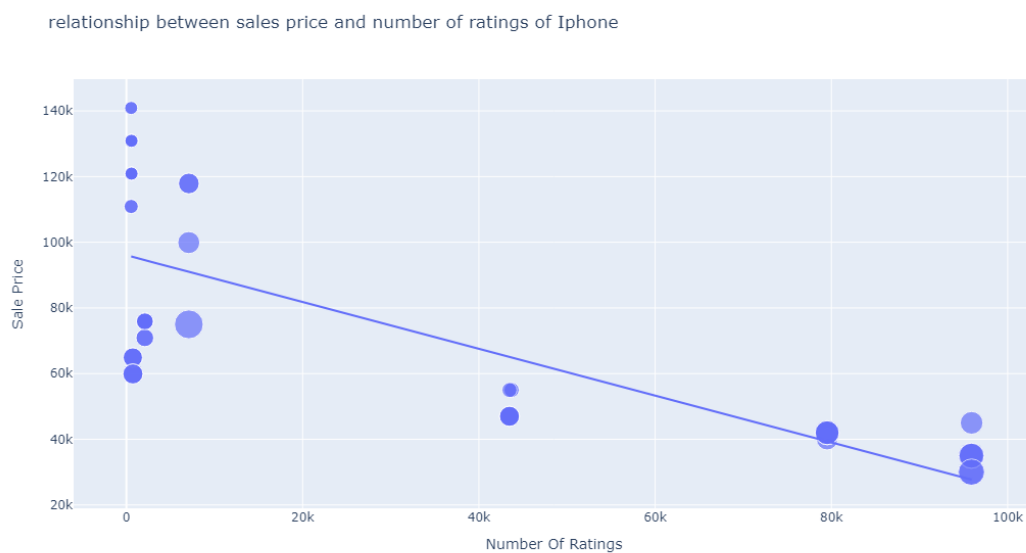
3 Which Iphone has a highest number of Reviews ?

```
[11]: x = highest_rated["Product Name"]
y = highest_rated["Number Of Reviews"]
figure = px.bar(highest_rated,x = x, y = y,title = "Number of reviews of the_
highest rated Iphone", width = 900, height = 500)
figure.show()
```



4 What is the relationship between sales price of the Iphone and the numbers of ratings in Flipkart ?

```
[12]: figure = px.scatter( data_frame= df,
                           x = df["Number Of Ratings"],
                           y = df["Sale Price"],
                           size = df["Discount Percentage"],
                           trendline="ols",
                           height = 600,
                           title = "relationship between sales price and number of_
↳ratings of Iphone")
figure.show()
```



There is a negative linear relationship between the sales price of Iphone and number of ratings. It means Iphone with lower sales prices are sold more in India.

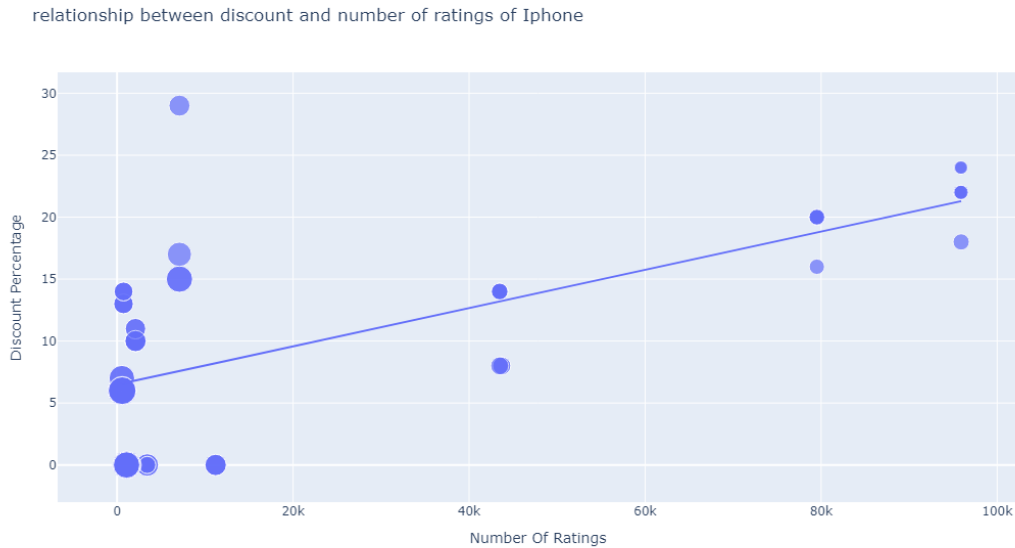
5 What is the relationship between the discount percentage and the number of ratings of Iphone on Flipkart

```
[19]: figure = px.scatter( data_frame= df,
                           x = df["Number Of Ratings"],
                           y = df["Discount Percentage"],
                           size = df["Sale Price"],
                           trendline="ols",
                           height = 600,
```

```

        title = "relationship between discount and number of_
↳ratings of Iphone")
figure.show()

```



6 Most expensive and Least Expensive

7 Least Expensive

```

[34]: least_exp = df[df["Sale Price"] == df["Sale Price"].min()]

# Custom formatted print
for index, row in least_exp.iterrows():
    for col in df.columns:
        print(f"{col}: {row[col]}")
    print("\n" + "=" * 40 + "\n") # Separator line

```

Product Name: APPLE iPhone SE (White, 64 GB)
 Product URL: <https://www.flipkart.com/apple-iphone-se-white-64-gb/p/itma00a19e11c81b?pid=MOBFWQ6BGWDVGF3E>
 Brand: Apple
 Sale Price: 29999
 Mrp: 39900
 Discount Percentage: 24
 Number Of Ratings: 95807
 Number Of Reviews: 8154
 Upc: MOBFWQ6BGWDVGF3E

Star Rating: 4.5
Ram: 2 GB

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Product Name: APPLE iPhone SE (Black, 64 GB)
Product URL: <https://www.flipkart.com/apple-iphone-se-black-64-gb/p/itm4d3d5718a5c95?pid=MOBFWQ6BR3MK7AUG>
Brand: Apple
Sale Price: 29999
Mrp: 39900
Discount Percentage: 24
Number Of Ratings: 95909
Number Of Reviews: 8161
Upc: MOBFWQ6BR3MK7AUG
Star Rating: 4.5
Ram: 4 GB

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8 Most Expensive

```
[36]: least_exp = df[df["Sale Price"] == df["Sale Price"].max()]  
      # Custom formatted print  
      for index, row in least_exp.iterrows():  
          for col in df.columns:  
              print(f"{col}: {row[col]}")  
          print("\n" + "=" * 40 + "\n") # Separator line
```

Product Name: APPLE iPhone 12 Pro (Silver, 512 GB)
Product URL: <https://www.flipkart.com/apple-iphone-12-pro-silver-512-gb/p/itm0ccf9fc219a71?pid=MOBFWBYZ5UY6ZBVA>
Brand: Apple
Sale Price: 140900
Mrp: 149900
Discount Percentage: 6
Number Of Ratings: 542
Number Of Reviews: 42
Upc: MOBFWBYZ5UY6ZBVA
Star Rating: 4.5
Ram: 4 GB

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Product Name: APPLE iPhone 12 Pro (Pacific Blue, 512 GB)
Product URL: <https://www.flipkart.com/apple-iphone-12-pro-pacific->

blue-512-gb/p/itm8a39d6779b04e?pid=MOBFWBYZTHSXKMGW

Brand: Apple

Sale Price: 140900

Mrp: 149900

Discount Percentage: 6

Number Of Ratings: 545

Number Of Reviews: 42

Upc: MOBFWBYZTHSXKMGW

Star Rating: 4.5

Ram: 4 GB

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[]: