Data Analysis of NFTs

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Growing Industry with a Future or Current Sensation?

What are Non-Fungible Tokens (NFTs) and Why we chose this topic?

- NFTs are digital images that are unique(non-fungible) and are sold across the internet.

- NFTs are a fairly new technology and an interesting way for people to create new pieces of art.

- The biggest driver drawing us to NFTs is the sense of ownership it provides to the individual owning it. If you purchase an NFT, you are the sole owner of a unique digital property.

Resources

Data Source: [NFT Art Collection 2021](#)

Software: Jupyter Notebook, Postgres, SQL, Tableau Public 2021.1.1

Main Repository: [GitHub Pages](#)

Summary of Dataset

Original Raw Data	Summary of Dataset	After Clean-up
4,189	Rows	4,175
15	Columns	11
title, name, creator, art_series,price, symbol, type, likes, nsfw, tokens, year, rights, royalty, cid, path_of_work	Column Names	drop "symbol", "cid", "royalty", "path_of_work" filtered "year" and convert to "age"; change column name to "age"
String / Integer / Boolean	Data Type	String / Integer / Boolean

What are we solving for?

01 How does the content (NSFW) of the NFT does in relation to its average price and age?

02 Is there a relationship between an NFT's age and the price of the NFT?

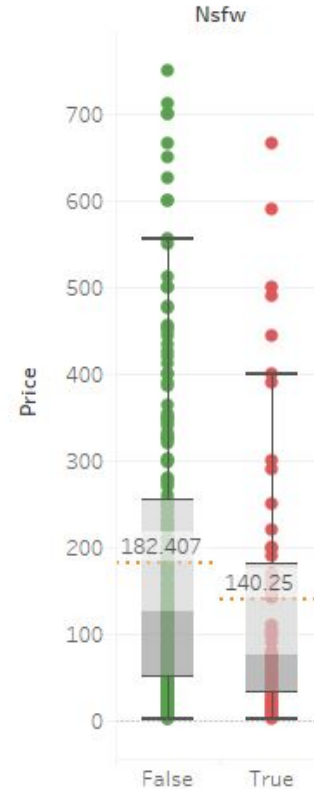**03** How sensitive is the price to the type of NFT (i.e. Photo, GIF, Video)?

04 Is there a relationship between the selling price of the NFT and the price of the blockchain token?

How does the content (NSFW) of the NFT does in relation to its average price?

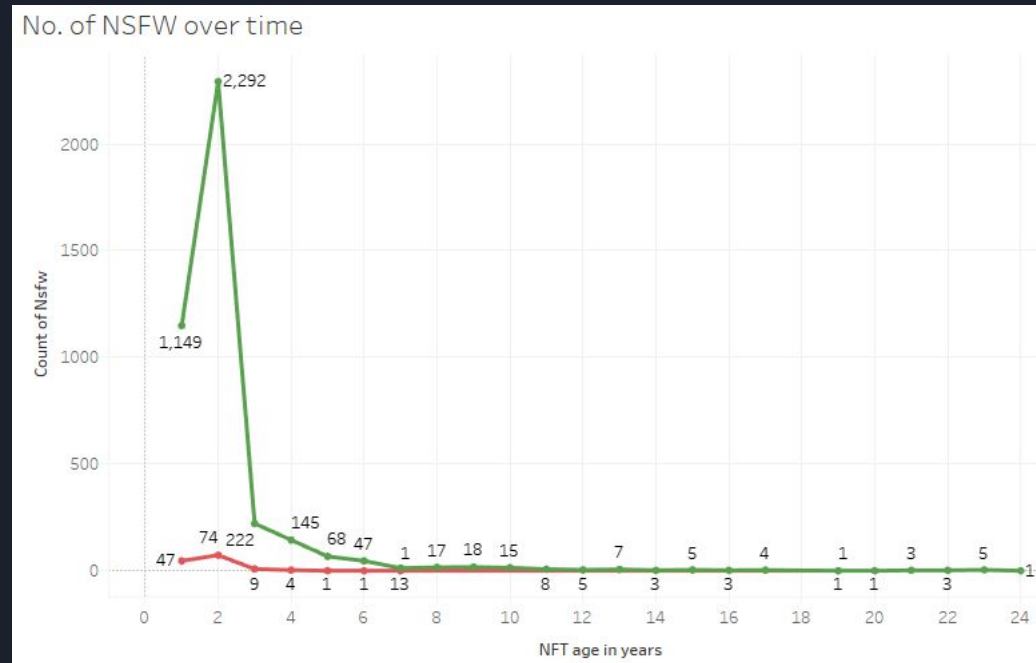Based on the chart, NSFW NFTs' average price is approximately $140 compared to approximately $182 for safe content.

We notice this price does not vary as much especially compared to the quantity of NFTs that are NSFW.

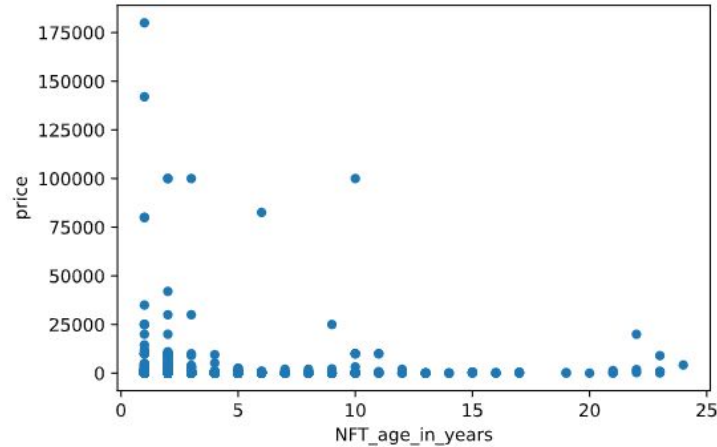Average Price of NFT by Content (NSFW)

How does the content (NSFW) of the NFT does in relation to its age?

NSFW NFTs are not created as much as those marked as safe. However, we noticed that in the past 2 years , an increasing number of NSFW NFTs have been created which leads us to analyse the price.

No. of NSFW over time

Is there a relationship between the age of an NFT and it's price?

Scatter plot shows some extreme values for price, but majority of points are around the same lower price value.

ANOVA test on Price vs Age

```python
mod= ols('price ~ NFT_age_in_years', data=df_new_2).fit()
aov_table= sm.stats.anova_lm(mod)
print(aov_table)
```

	df	sum_sq	mean_sq	F	PR(>F)
NFT_age_in_years	1.0	1.793517e+08	1.793517e+08	6.064378	0.013834
Residual	4171.0	1.233558e+11	2.957463e+07	NaN	NaN

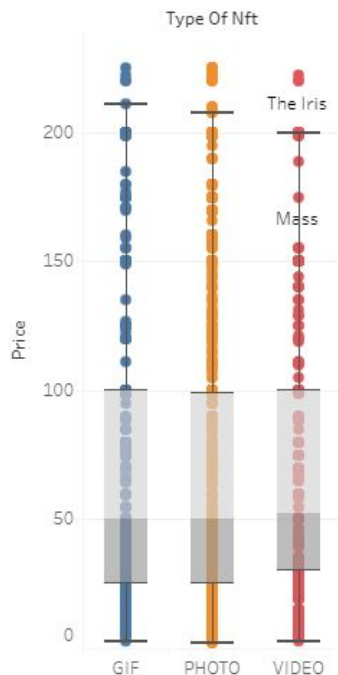## Paired T-Test between ages of NFTs

15/121 (12%) of the paired T-test run showed significance < .05

Data Analysis

Does the Type of NFT affect the price?   Yes

Prices Based on Type of NFT

```
f_oneway(photo2,gif2,video2)

F_onewayResult(statistic=3.5342631145211403, pvalue=0.029284556662338635)
```

```
group_df.describe()
```

	price							
	count	mean	std	min	25%	50%	75%	max
type_of_nft								
GIF	568.0	68.136053	55.833327	3.69	25.0	50.0	100.0	225.0
PHOTO	2599.0	65.466225	53.466905	2.50	25.0	50.0	99.0	225.0
VIDEO	332.0	73.519617	54.298284	3.00	30.0	50.0	100.0	222.0

Machine Learning

1. Our features x were: likes, rights, total units, age, nsfw, type of nft, and creators
2. Our predicting column y was our price log 10
3. 3 different models:
   a. Multiple Linear Regression
   b. Decision Tree Regressor
   c. Random Forest Regressor

Machine Learning

Multiple Linear Regression	Decision Tree Regressor	Random Forest Regressor

```python
model= linear_model.LinearRegression()
model.fit(X_train,y_train)

LinearRegression()
```

```python
model = DecisionTreeRegressor(criterion='mse')
model.fit(X_train_scaled, y_train)

DecisionTreeRegressor()
```

```python
forest= RandomForestRegressor(n_estimators=250, random_state=42)
forest.fit(X_train_scaled, y_train)

RandomForestRegressor(n_estimators=250, random_state=42)
```
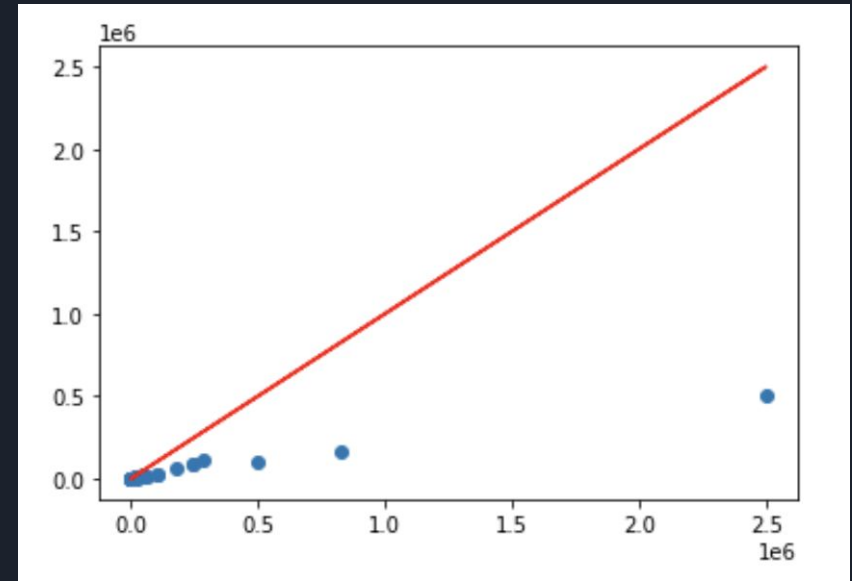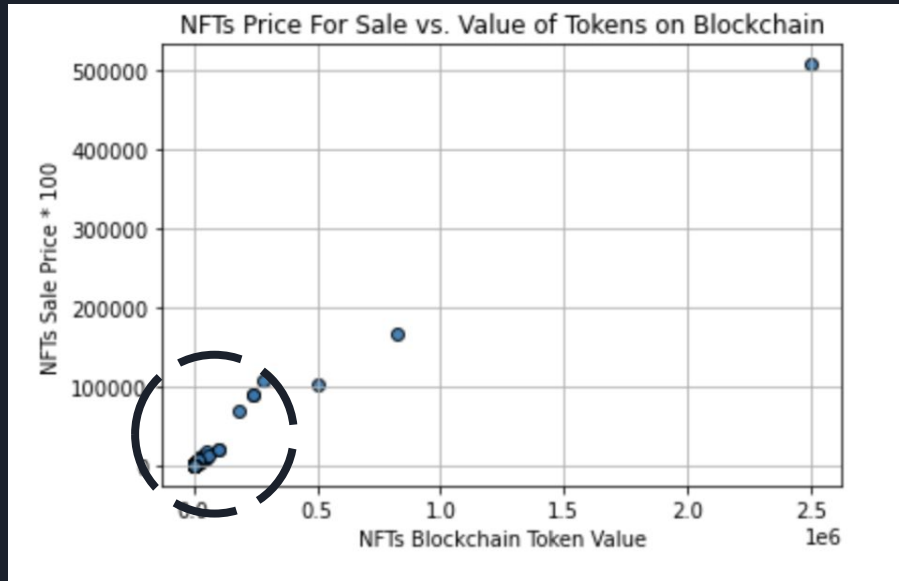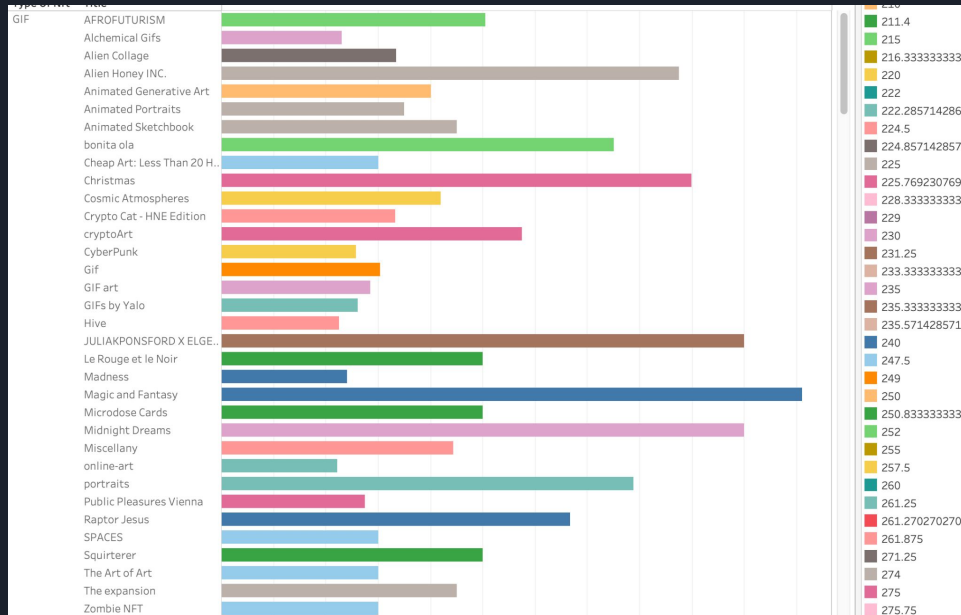
```python
model.score(X_test,y_test)

0.06593668816272902
```

```python
model.score(X_test_scaled, y_test)

0.1020078137592284
```

```python
forest.score(X_test_scaled, y_test)

0.4151476586501288
```

Is there a relationship between the selling price of the NFT and the price of the blockchain token?

Question from last slide continued... and is there a relationship between the two?

This is merely a screenshot taken from the Tableau presentation that shows the different values of artwork against the amount of tokens they are built on. There seems to be a relationship from running def linear_regression():

Possible Future Studies of NFTs

- Many blockchains are now supporting non-fungible tokens.
- New NFTs are introduced every day to different blockchain markets.
- "The industry has grown from 2017 to 2021 by 700%." Jonathan Reichental -- expert in blockchain and professor in blockchain ("https://www.linkedin.com/learning/introduction-to-nfts-non-fungible-tokens/nfts-are-powered-by-blockchain-technology?u=0")
- Studies could include the marketplaces for digital assets on blockchains, the value of the assets on those blockchains, and the possibility of new and emerging blockchain technologies that use non-fungible token coding standards.

Dashboard Blueprint

Further Analysis: [Tableau Story](#)