Cryptocurrency Data Analysis

September 28, 2024

0.1 Analysis of Top 50 Live Cryptocurrency Data

[1]:
```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns

file_path = "output.xlsx"
df = pd.read_excel(file_path)

# Display the first few rows of the loaded data

df.head()
```

[1]:

	Name	Symbol	Current Price (USD)	Market Cap (USD)	24-hour Volume (USD)	Price Change (24h, USD)	Price Change (24h, %)	Circulating Supply	All-Time High (USD)	ATH Change %	All-Time Low (USD)	ATL Change %
0	Bitcoin	btc	66064.00	1305286805276	30226750920	738.720000	1.13083	1.975990e+07	73738.00	-10.38502	67.810000	9.735055e+04
1	Ethereum	eth	2698.06	324652587619	16124632062	51.370000	1.94110	1.203643e+08	4878.26	-44.72735	0.432979	6.226426e+05
2	Tether	usdt	1.00	119409203186	53327784229	0.000308	0.03078	1.194128e+11	1.32	-24.37132	0.572521	7.477778e+01
3	BNB	bnb	612.15	89304932024	1390300252	8.310000	1.37601	1.458876e+08	717.48	-14.64765	0.039818	
4	Solana	sol	158.58	74310500625	3284981113	2.340000	1.50071	4.688264e+08	259.96	-39.00703	0.500801	

```
3  1.537865e+06
4  3.156064e+04
```

[2]:
```
print("Top 5 Cryptocurrencies by Market Capitalization")
top_5_market_cap = df.nlargest(5, 'Market Cap (USD)')[['Name', 'Market Cap␣
↪(USD)']]
top_5_market_cap
```

```
Top 5 Cryptocurrencies by Market Capitalization
```

[2]:

	Name	Market Cap (USD)
0	Bitcoin	1305286805276
1	Ethereum	324652587619
2	Tether	119409203186
3	BNB	89304932024
4	Solana	74310500625

[3]:
```
print("Average Price of the Top 50 Cryptocurrencies (in USD)")
float(df['Current Price (USD)'].mean())
```

```
Average Price of the Top 50 Cryptocurrencies (in USD)
```

[3]:
```
2968.7748014478
```

[4]:
```
print("Cryptocurrency with the Highest 24-Hour Percentage Price Change")
df.loc[df['Price Change (24h, %)'].idxmax()]
```

```
Cryptocurrency with the Highest 24-Hour Percentage Price Change
```

[4]:
```
Name                                  Pepe
Symbol                                pepe
Current Price (USD)               0.000011
Market Cap (USD)                4798312909
24-hour Volume (USD)            2797883079
Price Change (24h, USD)           0.000002
Price Change (24h, %)            17.69805
Circulating Supply         420690000000000.0
All-Time High (USD)               0.000017
ATH Change %                       -33.3578
All-Time Low (USD)                      0.0
ATL Change %                   20646.12859
Name: 25, dtype: object
```

[5]:
```
print("Cryptocurrency with the Lowest 24-Hour Percentage Price Change")
df.loc[df['Price Change (24h, %)'].idxmin()]
```

```
Cryptocurrency with the Lowest 24-Hour Percentage Price Change
```

[5]:
```
Name                                 Sui
Symbol                               sui
Current Price (USD)                 1.64
Market Cap (USD)                4393259920
24-hour Volume (USD)             602285065
Price Change (24h, USD)          -0.053831
Price Change (24h, %)             -3.17883
Circulating Supply         2679963749.63389
All-Time High (USD)                 2.17
ATH Change %                      -24.33054
All-Time Low (USD)                 0.364846
ATL Change %                      350.28114
Name: 28, dtype: object
```

[6]:
```
print("Cryptocurrency with the Highest Market Capitalization")
df.loc[df['Market Cap (USD)'].idxmax()]
```

```
Cryptocurrency with the Highest Market Capitalization
```

[6]:
```
Name                              Bitcoin
Symbol                                btc
Current Price (USD)               66064.0
Market Cap (USD)            1305286805276
24-hour Volume (USD)          30226750920
Price Change (24h, USD)            738.72
Price Change (24h, %)             1.13083
Circulating Supply             19759896.0
All-Time High (USD)               73738.0
ATH Change %                    -10.38502
All-Time Low (USD)                  67.81
ATL Change %                    97350.54593
Name: 0, dtype: object
```

[7]:
```
print("Cryptocurrency with the Lowest Market Capitalization")
df.loc[df['Market Cap (USD)'].idxmin()]
```

```
Cryptocurrency with the Lowest Market Capitalization
```

[7]:
```
Name                          Injective
Symbol                              inj
Current Price (USD)               23.84
Market Cap (USD)             2330272647
24-hour Volume (USD)          146008767
Price Change (24h, USD)        0.496121
Price Change (24h, %)           2.12495
Circulating Supply          97727222.33
All-Time High (USD)               52.62
```

```
ATH Change %                  -54.6336
All-Time Low (USD)             0.657401
ATL Change %                3531.2857
Name: 49, dtype: object
```

[8]:
```
print("Total Market Capitalization of the Top 50 Cryptocurrencies (in USD)")
int(df['Market Cap (USD)'].sum())
```

```
Total Market Capitalization of the Top 50 Cryptocurrencies (in USD)
```

[8]:
```
2255484412927
```

[9]:
```
print("Average 24-Hour Trading Volume of Top 50 Cryptocurrencies (in USD)")
float(df['24-hour Volume (USD)'].mean())
```

```
Average 24-Hour Trading Volume of Top 50 Cryptocurrencies (in USD)
```

[9]:
```
2617294098.82
```

[10]:
```
print("Cryptocurrency with the Highest All-Time High Price")
df.loc[df['All-Time High (USD)'].idxmax()]
```

```
Cryptocurrency with the Highest All-Time High Price
```

[10]:
```
Name                          Bitcoin
Symbol                            btc
Current Price (USD)           66064.0
Market Cap (USD)         1305286805276
24-hour Volume (USD)       30226750920
Price Change (24h, USD)         738.72
Price Change (24h, %)          1.13083
Circulating Supply          19759896.0
All-Time High (USD)            73738.0
ATH Change %                  -10.38502
All-Time Low (USD)                67.81
ATL Change %                97350.54593
Name: 0, dtype: object
```

[11]:
```
print("Top 5 Cryptocurrencies by 24-Hour Trading Volume")
df.nlargest(5, '24-hour Volume (USD)')[['Name', '24-hour Volume (USD)']]
```

```
Top 5 Cryptocurrencies by 24-Hour Trading Volume
```

[11]:

	Name	24-hour Volume (USD)
2	Tether	53327784229
0	Bitcoin	30226750920
1	Ethereum	16124632062
5	USDC	6263654424

```
39  First Digital USD            3964444822
```

[12]:
```
print("Cryptocurrency with the Lowest All-Time Low (ATL)")
df.loc[df['All-Time Low (USD)'].idxmin()]
```

```
Cryptocurrency with the Lowest All-Time Low (ATL)
```

[12]:
```
Name                                Shiba Inu
Symbol                                   shib
Current Price (USD)                  0.000021
Market Cap (USD)                 12370970007
24-hour Volume (USD)              2167401417
Price Change (24h, USD)              0.000002
Price Change (24h, %)                10.03047
Circulating Supply         589258593873615.125
All-Time High (USD)                  0.000086
ATH Change %                        -75.61621
All-Time Low (USD)                         0.0
ATL Change %                  37271723.32664
Name: 12, dtype: object
```

[13]:
```
print("Cryptocurrency with the Largest Circulating Supply")
df.loc[df['Circulating Supply'].idxmax()]
```

```
Cryptocurrency with the Largest Circulating Supply
```

[13]:
```
Name                                Shiba Inu
Symbol                                   shib
Current Price (USD)                  0.000021
Market Cap (USD)                 12370970007
24-hour Volume (USD)              2167401417
Price Change (24h, USD)              0.000002
Price Change (24h, %)                10.03047
Circulating Supply         589258593873615.125
All-Time High (USD)                  0.000086
ATH Change %                        -75.61621
All-Time Low (USD)                         0.0
ATL Change %                  37271723.32664
Name: 12, dtype: object
```

[14]:
```
print("Cryptocurrency with the Smallest Circulating Supply")
df.loc[df['Circulating Supply'].idxmin()]
```

```
Cryptocurrency with the Smallest Circulating Supply
```

[14]:
```
Name                          Wrapped Bitcoin
Symbol                                   wbtc
Current Price (USD)                   65994.0
```

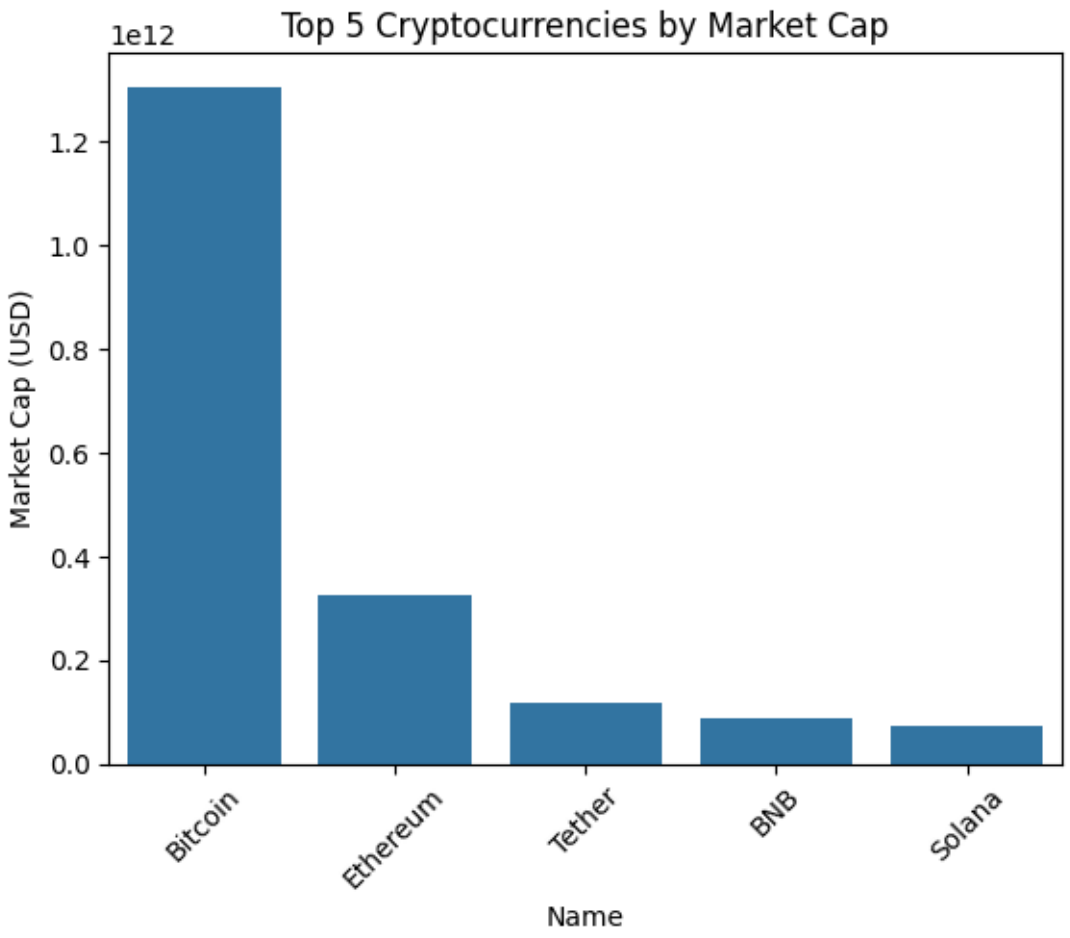
```
Market Cap (USD)               10098949763
24-hour Volume (USD)             141890943
Price Change (24h, USD)             861.13
Price Change (24h, %)                1.3221
Circulating Supply           152886.401696
All-Time High (USD)                73505.0
ATH Change %                     -10.20245
All-Time Low (USD)                  3139.17
ATL Change %                      2002.65981
Name: 15, dtype: object
```

[15]:
```
print("Summary Statistics for Key Metrics")
df[['Current Price (USD)', 'Market Cap (USD)', '24-hour Volume (USD)', 'Price␣
 ↪Change (24h, %)', 'Circulating Supply']].describe()
```

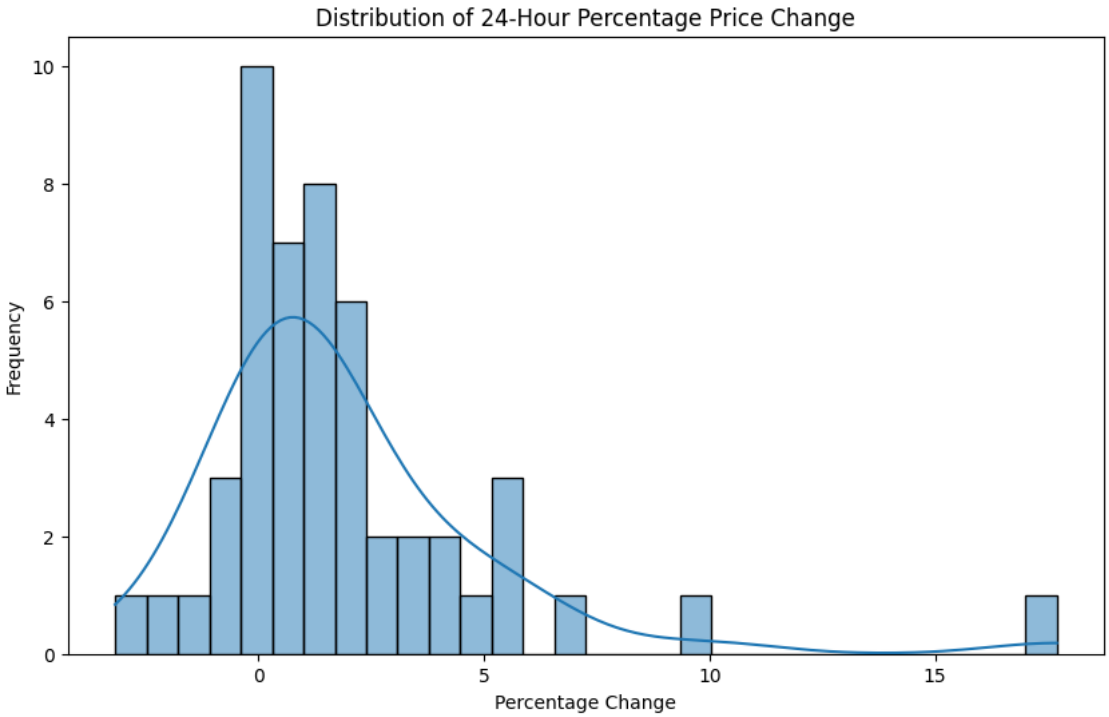
```
Summary Statistics for Key Metrics
```

[15]:
```
       Current Price (USD)  Market Cap (USD)  24-hour Volume (USD)  \
count            50.000000      5.000000e+01          5.000000e+01
mean           2968.774801      4.510969e+10          2.617294e+09
std           13030.440972      1.884671e+11          8.762253e+09
min               0.000011      2.330273e+09          7.996770e+05
25%               0.999398      2.962615e+09          9.304671e+07
50%               5.685000      5.076548e+09          2.382876e+08
75%             136.780000      1.234347e+10          4.736831e+08
max           66064.000000      1.305287e+12          5.332778e+10

       Price Change (24h, %)  Circulating Supply
count              50.000000        5.000000e+01
mean                1.910211        2.021182e+13
std                 3.306767        1.013964e+14
min                -3.178830        1.528864e+05
25%                 0.036382        1.033865e+08
50%                 1.124605        1.016270e+09
75%                 2.635985        6.902084e+09
max                17.698050        5.892586e+14
```

[16]:
```
import matplotlib.pyplot as plt
import seaborn as sns

# Bar plot for top 5 cryptocurrencies by market cap
sns.barplot(x='Name', y='Market Cap (USD)', data=top_5_market_cap)
plt.title('Top 5 Cryptocurrencies by Market Cap')
plt.xticks(rotation=45)
plt.show()
```



[17]:
```
# Distribution of 24-hour percentage price change
plt.figure(figsize=(10,6))
sns.histplot(df['Price Change (24h, %)'], bins=30, kde=True)
plt.title('Distribution of 24-Hour Percentage Price Change')
plt.xlabel('Percentage Change')
plt.ylabel('Frequency')
plt.show()
```


Distribution of 24-Hour Percentage Price Change
Frequency
Percentage Change
0
2
4
6
8
10
0
5
10
15

[ ]: