In [140…
```
import matplotlib.pyplot as plt
%matplotlib inline
import pandas as pd
import numpy as np
import seaborn as sns
```

ANALYZING GOLD AND USD PRICES FROM 2020-03-22(AROUND THE START OF THE COVID PANDEMIC) TILL 2024-03-03

In [162…
```
file = 'new new new.xlsx'
```

In [163…
```
df = pd.read_excel(file)
```

brief overview of the dataset

In [168…
```
df.head()
```

Out[168]:

	Date	Gold Price($)	USD Price($)	Gold Open($)	USD Open($)	Gold High($)	USD High($)	Gold Low($)	USD Low($)	Gold Vol($)	USD Vol($)	C
0	2024-03-03	2176.25	102.57	2091.6	103.82	2177.85	103.92	2088.15	102.30	1200000	19520	
1	2024-02-25	2095.70	103.80	2033.7	103.89	2097.10	104.24	2025.00	103.54	696850	66010	
2	2024-02-18	2039.40	103.86	2017.7	104.17	2041.50	104.32	2015.50	103.12	4570	53310	
3	2024-02-11	2014.40	104.18	2030.8	103.98	2035.50	104.88	1987.20	103.37	6180	72770	
4	2024-02-04	2028.80	103.99	2047.6	103.91	2051.00	104.47	2021.00	103.81	3340	67950	

In [165…
```
df.dtypes
```

Out[165]:
```
Date              datetime64[ns]
Gold Price($)            float64
USD Price($)             float64
Gold Open($)             float64
USD Open($)              float64
Gold High($)             float64
USD High($)              float64
Gold Low($)              float64
USD Low($)               float64
Gold Vol($)                int64
USD Vol($)                 int64
Gold Change %            float64
USD Change%              float64
dtype: object
```

Description of data statistically in terms of mean, standard deviation et

In [166…
```
df_describe = df.drop(columns = ['Date']).describe()
```

In [167…
```
display(df_describe)
```

	Gold Price($)	USD Price($)	Gold Open($)	USD Open($)	Gold High($)	USD High($)	Gold Low($)	Lo
count	208.000000	208.000000	208.000000	208.000000	208.000000	208.000000	208.000000	208.00
mean	1859.404567	99.141010	1858.260337	99.122067	1887.174519	99.875096	1828.793269	98.36
std	106.391304	5.945086	107.089480	5.940288	107.132408	6.122532	107.035531	5.73
min	1641.300000	89.890000	1509.400000	89.870000	1673.600000	90.230000	1488.000000	89.17
25%	1780.275000	93.300000	1780.250000	93.245000	1810.600000	93.870000	1759.525000	92.71
50%	1844.950000	99.865000	1850.850000	99.780000	1876.300000	100.850000	1816.600000	99.05
75%	1941.700000	103.800000	1943.325000	103.822500	1971.650000	104.342500	1912.775000	103.05
max	2176.250000	113.200000	2091.600000	113.170000	2177.850000	114.750000	2088.150000	112.02

In [12]:
```
df.shape
```

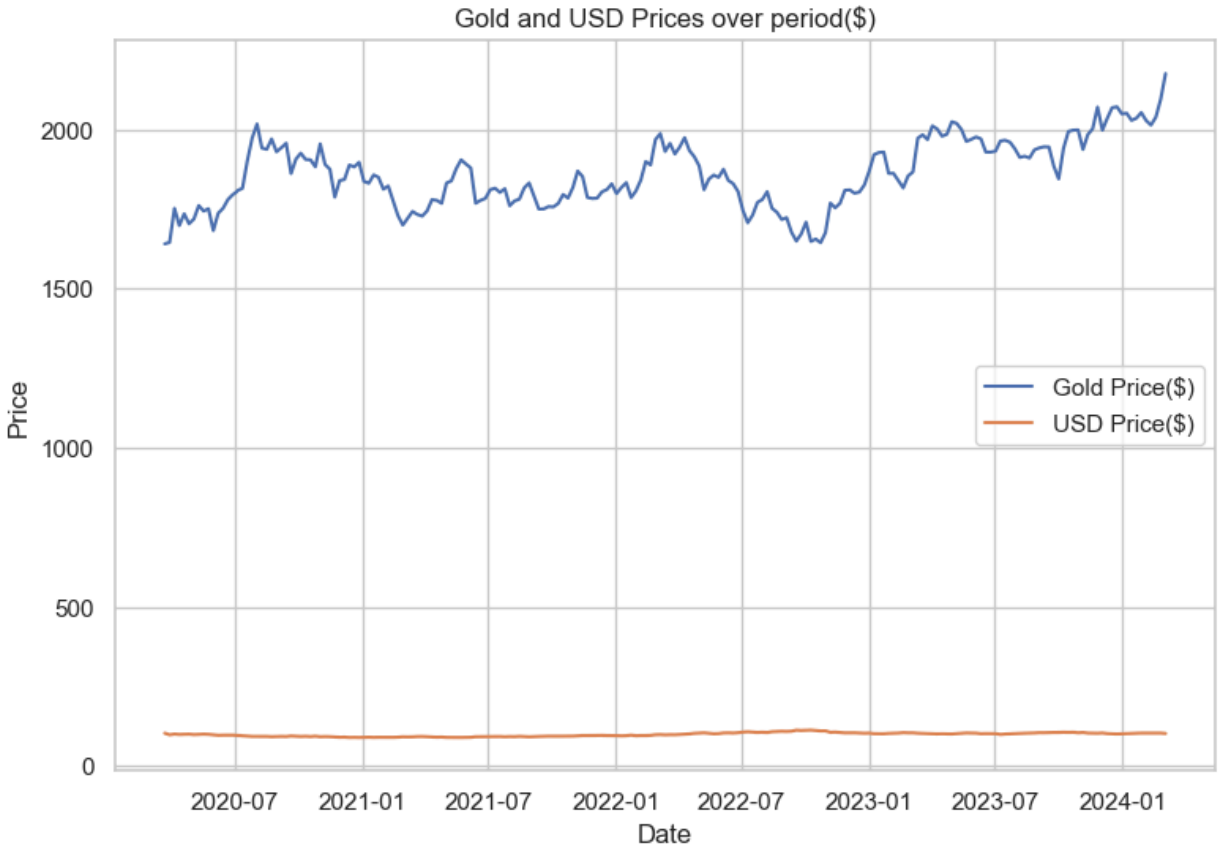
Out[12]:
```
(208, 13)
```

Perfoming a time series analysis so I set the index to date column

In [35]:
```
df.set_index('Date', inplace=True)
```

In [152…
```
plt.figure(figsize=(9,6))
plt.plot(df.index, df['Gold Price($)'], label = 'Gold Price($)')
plt.plot(df.index, df['USD Price($)'], label = 'USD Price($)')
plt.title('Gold and USD Prices over period($)')
plt.xlabel('Date')
plt.ylabel('Price')
```

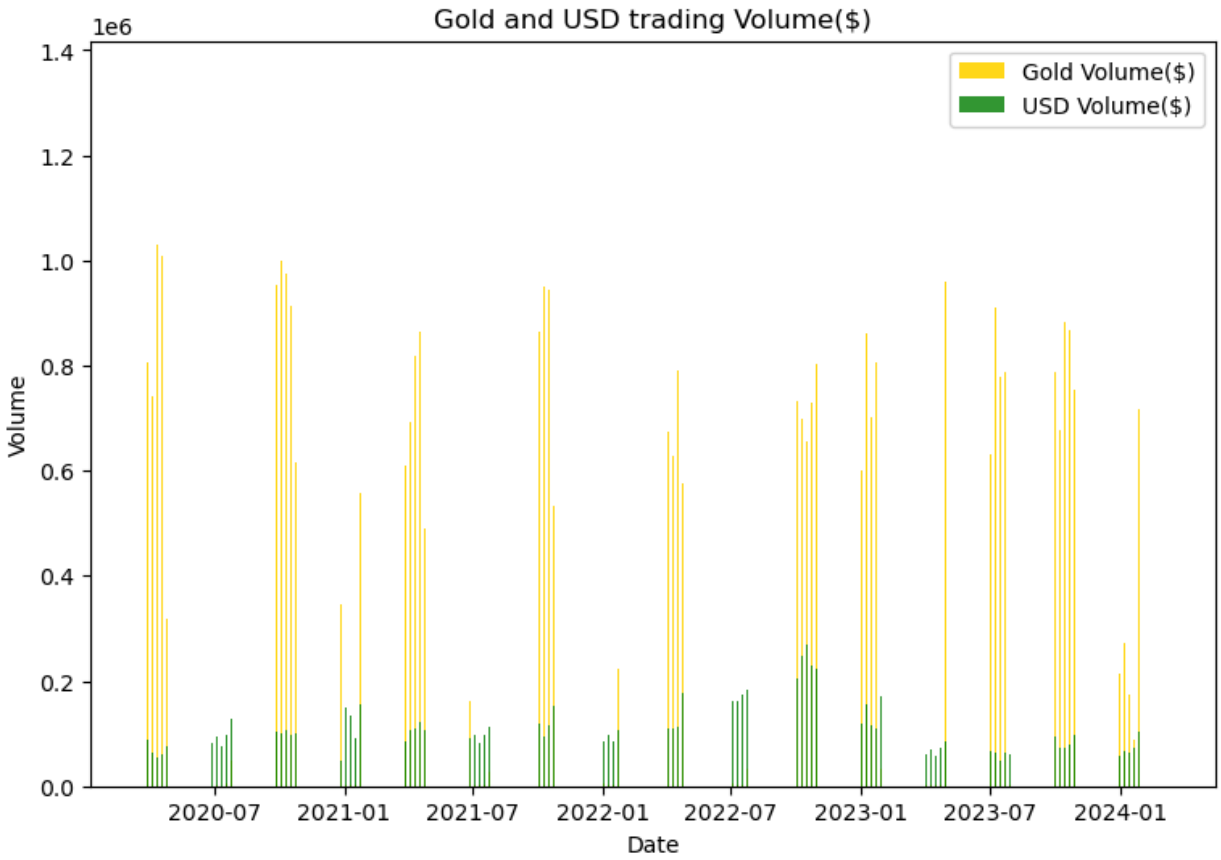
```
plt.legend()
plt.grid(True)
plt.show()
```



The price of Gold is more volatile than the price of USD in this graph over the period showing during COVID, Gold was potentially being traded more than USD possibly due to inlfationary pressure during the pandemic as well as Gold's status as an inflationary hedge/heaven

In [138…

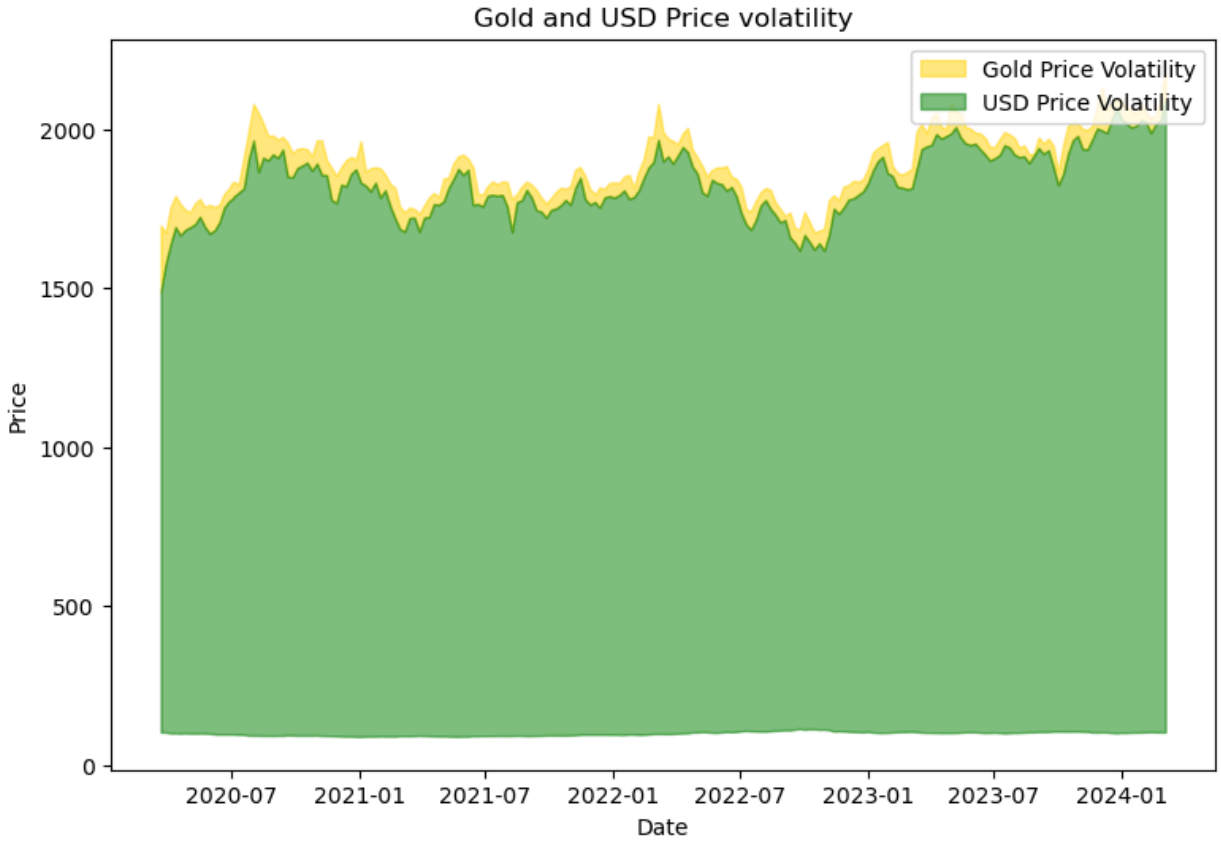
```
plt.figure(figsize = (9,6))
plt.bar(df.index, df['Gold Vol($)'], label = 'Gold Volume($)', color = 'gold', alpha =
plt.bar(df.index, df['USD Vol($)'], label = 'USD Volume($)', color = 'green', alpha =
plt.title('Gold and USD trading Volume($)')
plt.xlabel('Date')
plt.ylabel('Volume')
plt.legend()
plt.show()
```



This confirms that during that period especially from COVID,Gold was traded in more volumes than USD confirming that Investors preferred to have more Gold holdings than USD during this period

In [141…

```
plt.figure(figsize=(9,6))
plt.fill_between(df.index, df['Gold High($)'],df['Gold Low($)'], color = 'gold', alpha
plt.fill_between(df.index, df['USD High($)'],df['Gold Low($)'], color = 'green', alpha
plt.title('Gold and USD Price volatility')
plt.xlabel('Date')
plt.ylabel('Price')
plt.legend()
plt.show()
```

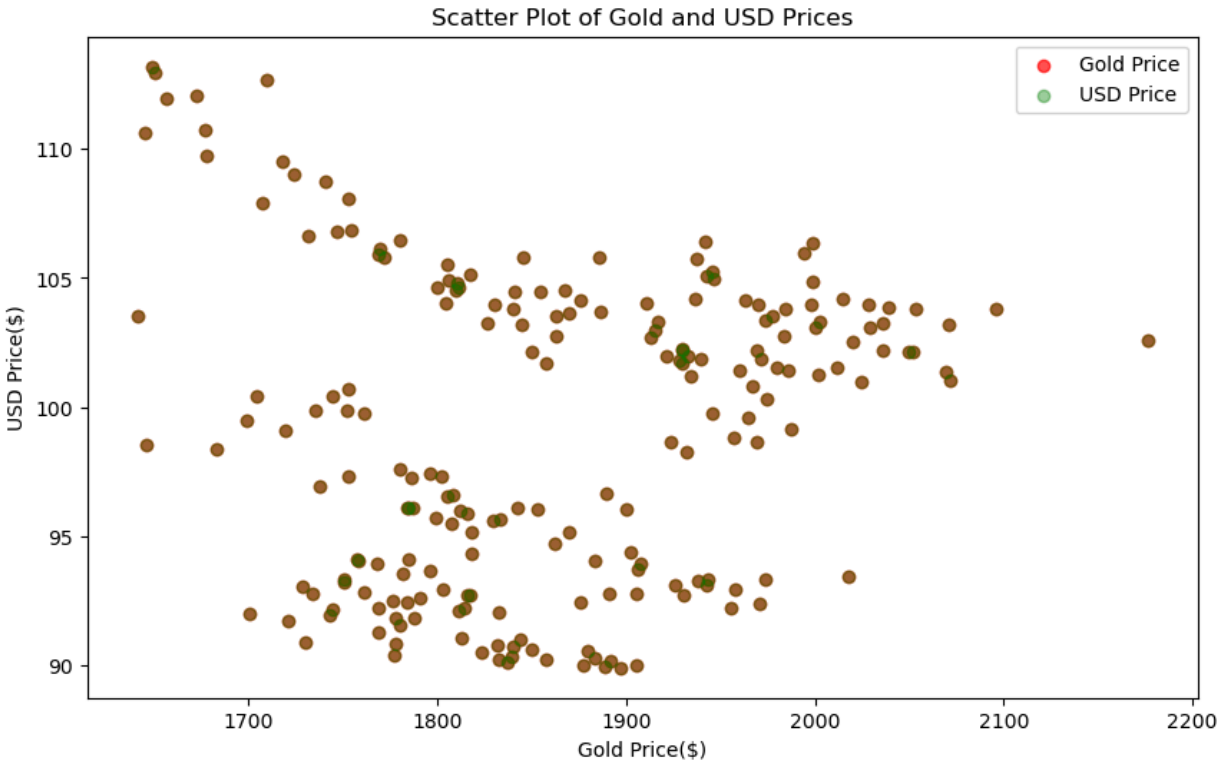


In [137…

```
plt.figure(figsize=(10,6))
plt.scatter(df['Gold Price($)'], df['USD Price($)'], color = 'red', alpha = 0.68, labe
plt.scatter(df['Gold Price($)'], df['USD Price($)'], color = 'green',alpha = 0.38, lab
plt.xlabel('Gold Price($)')
plt.ylabel('USD Price($)')
plt.title('Scatter Plot of Gold and USD Prices')
plt.legend()
```

Out[137]:

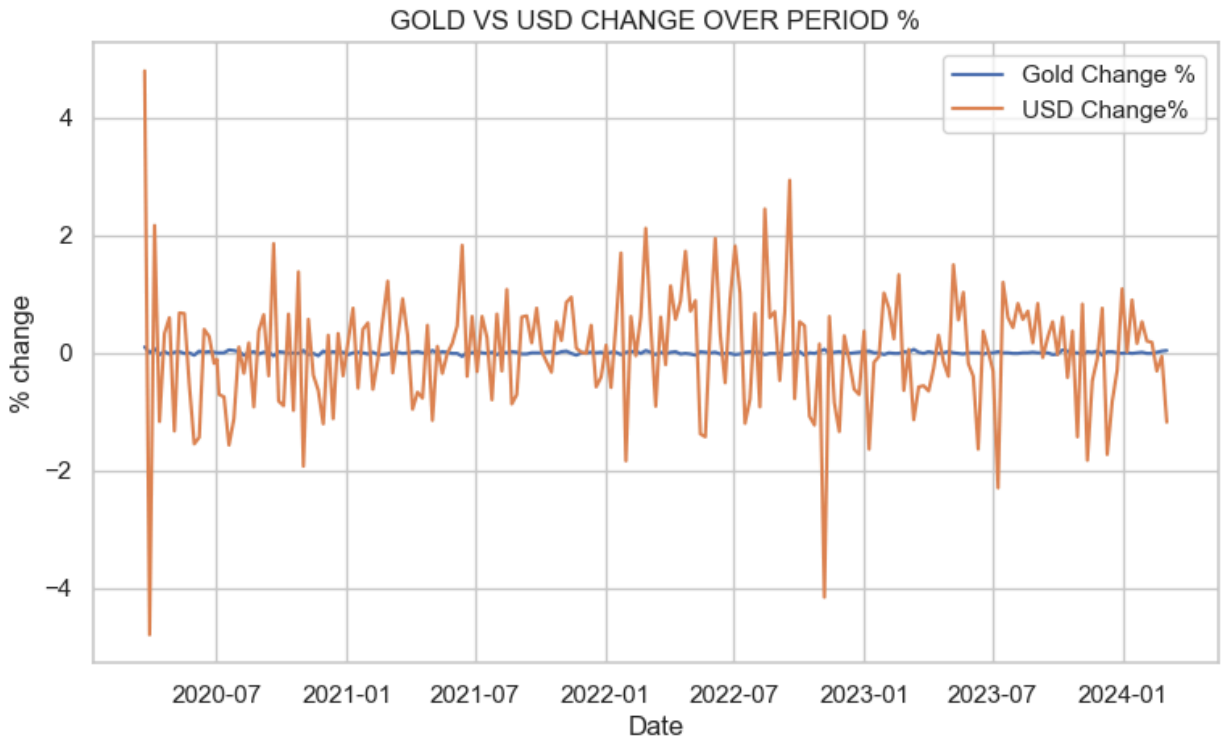
```
<matplotlib.legend.Legend at 0x17f95a22dd0>
```



Scatter plot shows a mostly negative correlation(from top left towards bottom right) between the two assets during this period meaning when Gold rises, USD drops and vice versa

In [155…
```
plt.figure(figsize=(9,5))
sns.lineplot(data=df, x=df.index, y='Gold Change %', label = 'Gold Change %')
sns.lineplot(data=df, x=df.index, y='USD Change%', label = 'USD Change%')
plt.title('GOLD VS USD CHANGE OVER PERIOD %')
plt.xlabel('Date')
plt.ylabel('% change')
plt.legend()
```

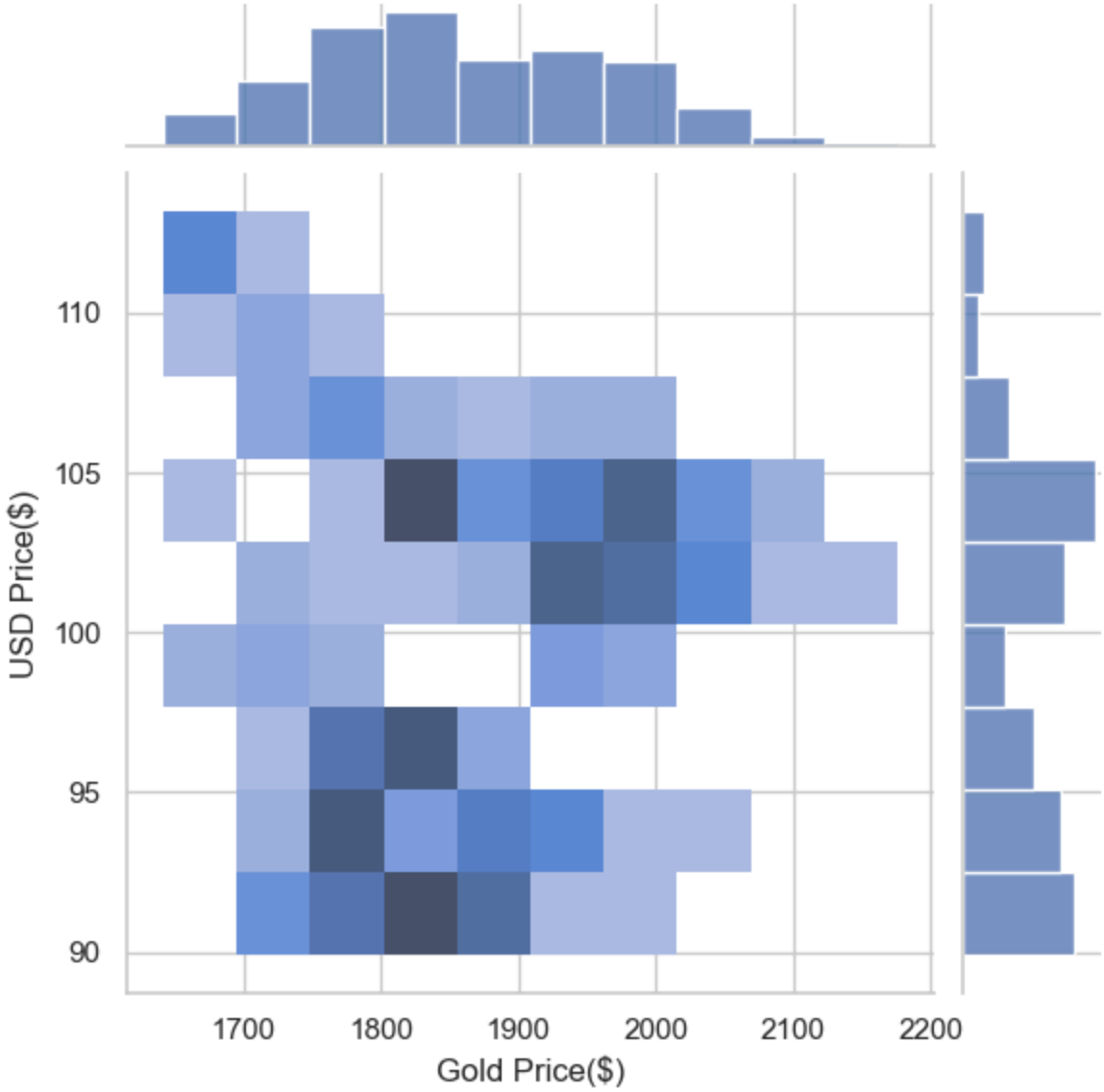
Out[155]:
```
<matplotlib.legend.Legend at 0x17f9a15c850>
```



Gold experienced a lower change% than USD because the USD during this period may have experienced broader economic implications such as inflation and changes in international trade dynamics during this time period

In [160…
```
sns.jointplot(x='Gold Price($)', y='USD Price($)',data= df, kind='hist')
```

Out[160]:
```
<seaborn.axisgrid.JointGrid at 0x17f9430fad0>
```



Heatmap confirms negative correlation with the darker spots indicating instances where Gold and USD prices increased at the same time where as lighter clusters indicate increasing gold prices occuring less frequently with increasing USD prices.

In [ ]: