brief-analysis-of-electoral-bond

March 16, 2024

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

[2]:
```
# companies = pd.read_excel('Electoral Bonds_Companies.xlsx')
# parties = pd.read_excel('Electoral Bonds_Political Parties.xlsx')
companies = pd.read_csv('PurchaseData.csv')
parties = pd.read_csv('EncashmentData.csv')
```

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

[3]:

	Date of Purchase	Purchaser Name	Denomination
0	12-Apr-19	A B C INDIA LIMITED	100000.0
1	12-Apr-19	A B C INDIA LIMITED	100000.0
2	12-Apr-19	A B C INDIA LIMITED	1000000.0
3	12-Apr-19	A B C INDIA LIMITED	1000000.0
4	12-Apr-19	A B C INDIA LIMITED	100000.0

[4]:
```
parties.head()
```

[4]:

	Date of\nEncashment	Name of the Political Party	Denomination
0	12-Apr-19	ALL INDIA ANNA DRAVIDA MUNNETRA KAZHAGAM	1000000.0
1	12-Apr-19	ALL INDIA ANNA DRAVIDA MUNNETRA KAZHAGAM	1000000.0
2	12-Apr-19	ALL INDIA ANNA DRAVIDA MUNNETRA KAZHAGAM	10000000.0
3	12-Apr-19	ALL INDIA ANNA DRAVIDA MUNNETRA KAZHAGAM	1000000.0
4	12-Apr-19	ALL INDIA ANNA DRAVIDA MUNNETRA KAZHAGAM	1000000.0

0.1 Total amount received by each political party

[5]:
```
# parties['Denomination'] = parties['Denomination'].apply(lambda x: x.
 ↪replace(',', '') if isinstance(x, str) and ',' in x else x)
# parties['Denomination'] = pd.to_numeric(parties['Denomination'],␣
 ↪errors='coerce')
```

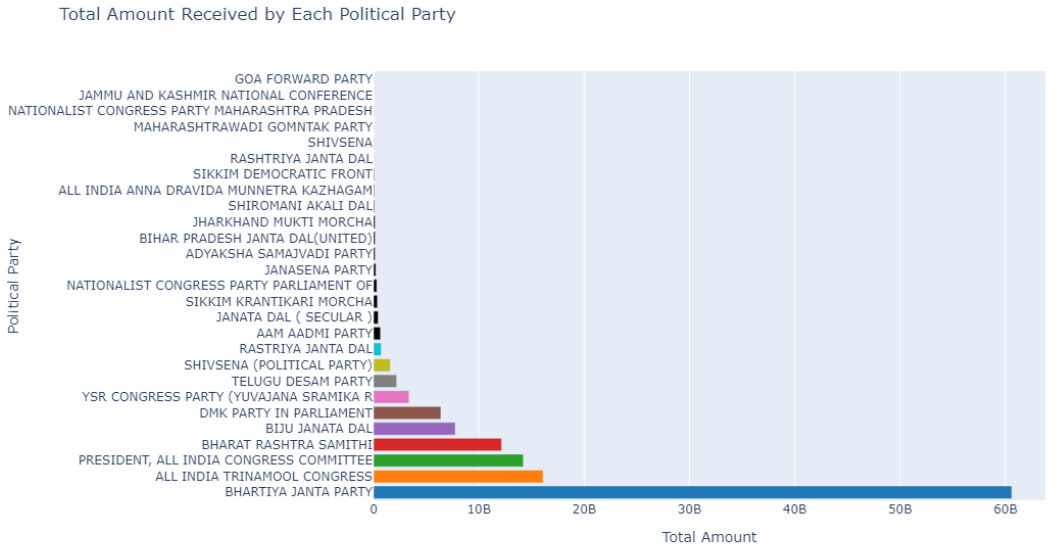
[6]:
```
parties[parties['Denomination'].isnull() == True]
```

[6]:
```
      Date of\nEncashment Name of the Political Party  Denomination
46                    NaN                         NaN           NaN
95                    NaN                         NaN           NaN
144                   NaN                         NaN           NaN
193                   NaN                         NaN           NaN
242                   NaN                         NaN           NaN
…                     …                           …             …
20626                 NaN                         NaN           NaN
20675                 NaN                         NaN           NaN
20724                 NaN                         NaN           NaN
20773                 NaN                         NaN           NaN
20822                 NaN                         NaN           NaN

[425 rows x 3 columns]
```

[7]:
```
total_amount_by_party = parties.groupby('Name of the Political␣
 ↪Party')['Denomination'].sum().sort_values(ascending=False)
total_amount_by_party.head()
```

[7]:
```
Name of the Political Party
BHARTIYA JANTA PARTY                        6.060511e+10
ALL INDIA TRINAMOOL CONGRESS                1.609531e+10
PRESIDENT, ALL INDIA CONGRESS COMMITTEE     1.421866e+10
BHARAT RASHTRA SAMITHI                      1.214710e+10
BIJU JANATA DAL                             7.755000e+09
Name: Denomination, dtype: float64
```

[8]:
```
trace = go.Bar(
    y=total_amount_by_party.index,
    x=total_amount_by_party.values,
    orientation='h',
    marker=dict(
        color=['rgb(31, 119, 180)', 'rgb(255, 127, 14)', 'rgb(44, 160, 44)',␣
 ↪'rgb(214, 39, 40)', 'rgb(148, 103, 189)',
               'rgb(140, 86, 75)', 'rgb(227, 119, 194)', 'rgb(127, 127, 127)',␣
 ↪'rgb(188, 189, 34)', 'rgb(23, 190, 207)']
    )
)
layout = go.Layout(
    title='Total Amount Received by Each Political Party',
    xaxis=dict(title='Total Amount'),
    yaxis=dict(title='Political Party'),
    width=800,
    height=600
)
fig = go.Figure(data=[trace], layout=layout)
fig.show()
```



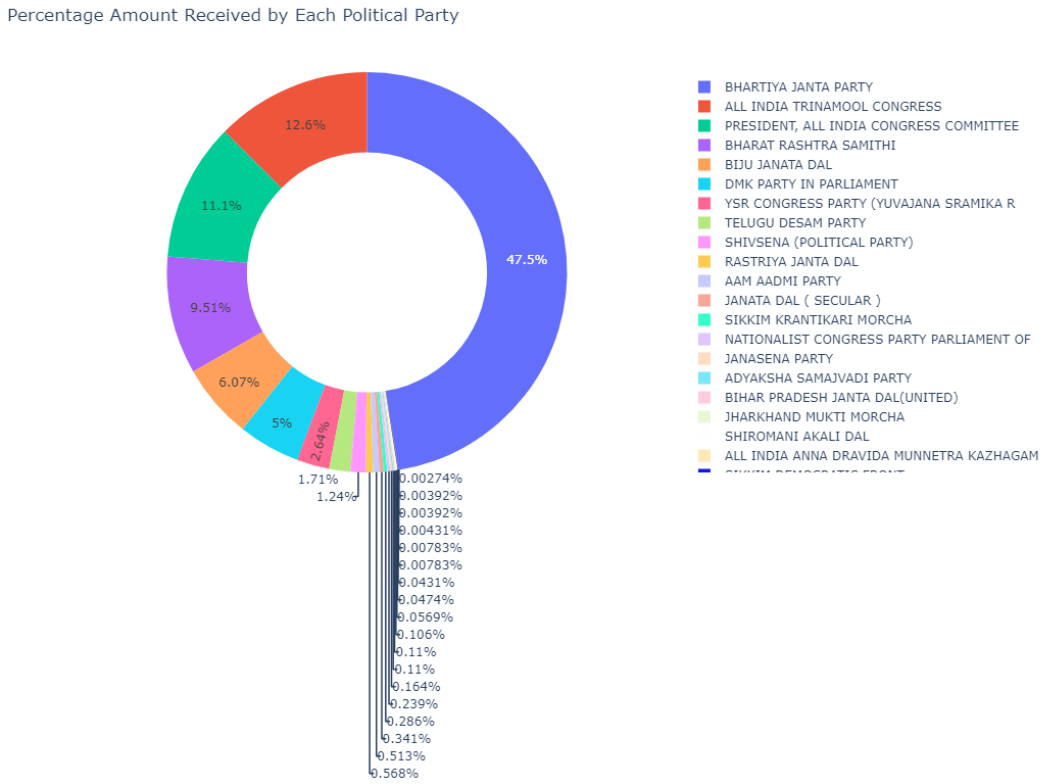
[9]:
```
total_sum = parties['Denomination'].sum()
print(total_sum)
total_sum = total_amount_by_party.sum()
percentage_by_party = (total_amount_by_party / total_sum) * 100
percentage_by_party.head()
```

```
127690893000.0
```

[9]:
```
Name of the Political Party
BHARTIYA JANTA PARTY                          47.462360
ALL INDIA TRINAMOOL CONGRESS                  12.604904
PRESIDENT, ALL INDIA CONGRESS COMMITTEE       11.135215
BHARAT RASHTRA SAMITHI                         9.512894
BIJU JANATA DAL                                6.073260
Name: Denomination, dtype: float64
```

[10]:
```
total_amount_by_party = parties.groupby('Name of the Political␣
↪Party')['Denomination'].sum().reset_index().
↪sort_values(by='Denomination',ascending=False)
top_parties = total_amount_by_party
fig = px.pie(total_amount_by_party, values='Denomination', names='Name of the␣
↪Political Party',
             title='Percentage Amount Received by Each Political Party',
             hover_data=['Denomination'],
             labels={'Denomination': 'Denomination (Crore)'},
             hole=0.6,
             width=800,
```

```
            height=800)

# Show the plot
fig.show()
```



0.2 Top donors companies

[11]:
```
# companies['Denomination'] = companies['Denomination'].apply(lambda x: x.
 ↪replace(',', '') if isinstance(x, str) and ',' in x else x)
# companies['Denomination'] = pd.to_numeric(companies['Denomination'],␣
 ↪errors='coerce')
```

[12]:
```
companies[companies['Denomination'].isnull() == True]
```

[12]:

	Date of Purchase	Purchaser Name	Denomination
55	NaN	NaN	NaN
112	NaN	NaN	NaN
169	NaN	NaN	NaN
226	NaN	NaN	NaN
283	NaN	NaN	NaN
…	…	…	…

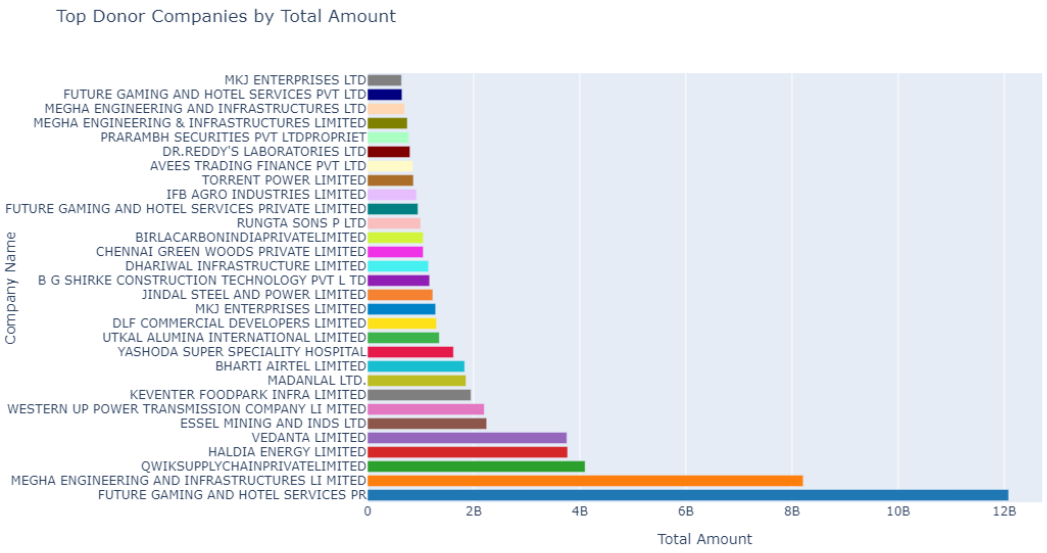
```
18922              NaN            NaN            NaN
18979              NaN            NaN            NaN
19036              NaN            NaN            NaN
19093              NaN            NaN            NaN
19150              NaN            NaN            NaN

[336 rows x 3 columns]
```

[13]:
```
top_donors_companies = companies.groupby('Purchaser Name')['Denomination'].
 ↪sum().sort_values(ascending=False)
top_donors_companies.head()
```

[13]:
```
Purchaser Name
FUTURE GAMING AND HOTEL SERVICES PR                1.208000e+10
MEGHA ENGINEERING AND INFRASTRUCTURES LI MITED     8.210000e+09
QWIKSUPPLYCHAINPRIVATELIMITED                      4.100000e+09
HALDIA ENERGY LIMITED                              3.770000e+09
VEDANTA LIMITED                                    3.756500e+09
Name: Denomination, dtype: float64
```

[14]:
```
top_donors_companies = companies.groupby('Purchaser Name')['Denomination'].
 ↪sum().sort_values(ascending=False).head(30)
trace = go.Bar(
    y=top_donors_companies.index,
    x=top_donors_companies.values,
    orientation='h',
    marker=dict(
    color = [
    'rgb(31, 119, 180)', 'rgb(255, 127, 14)', 'rgb(44, 160, 44)', 'rgb(214, 39,␣
 ↪40)', 'rgb(148, 103, 189)',
    'rgb(140, 86, 75)', 'rgb(227, 119, 194)', 'rgb(127, 127, 127)', 'rgb(188,␣
 ↪189, 34)', 'rgb(23, 190, 207)',
    'rgb(230, 25, 75)', 'rgb(60, 180, 75)', 'rgb(255, 225, 25)', 'rgb(0, 130,␣
 ↪200)', 'rgb(245, 130, 48)',
    'rgb(145, 30, 180)', 'rgb(70, 240, 240)', 'rgb(240, 50, 230)', 'rgb(210,␣
 ↪245, 60)', 'rgb(250, 190, 190)',
    'rgb(0, 128, 128)', 'rgb(230, 190, 255)', 'rgb(170, 110, 40)', 'rgb(255,␣
 ↪250, 200)', 'rgb(128, 0, 0)',
    'rgb(170, 255, 195)', 'rgb(128, 128, 0)', 'rgb(255, 215, 180)', 'rgb(0, 0,␣
 ↪128)', 'rgb(128, 128, 128)'
]
)
)

layout = go.Layout(
    title='Top Donor Companies by Total Amount',
```

```
    xaxis=dict(title='Total Amount'),
    yaxis=dict(title='Company Name'),
    width=800,
    height=600
)

fig = go.Figure(data=[trace], layout=layout)

fig.show()
```

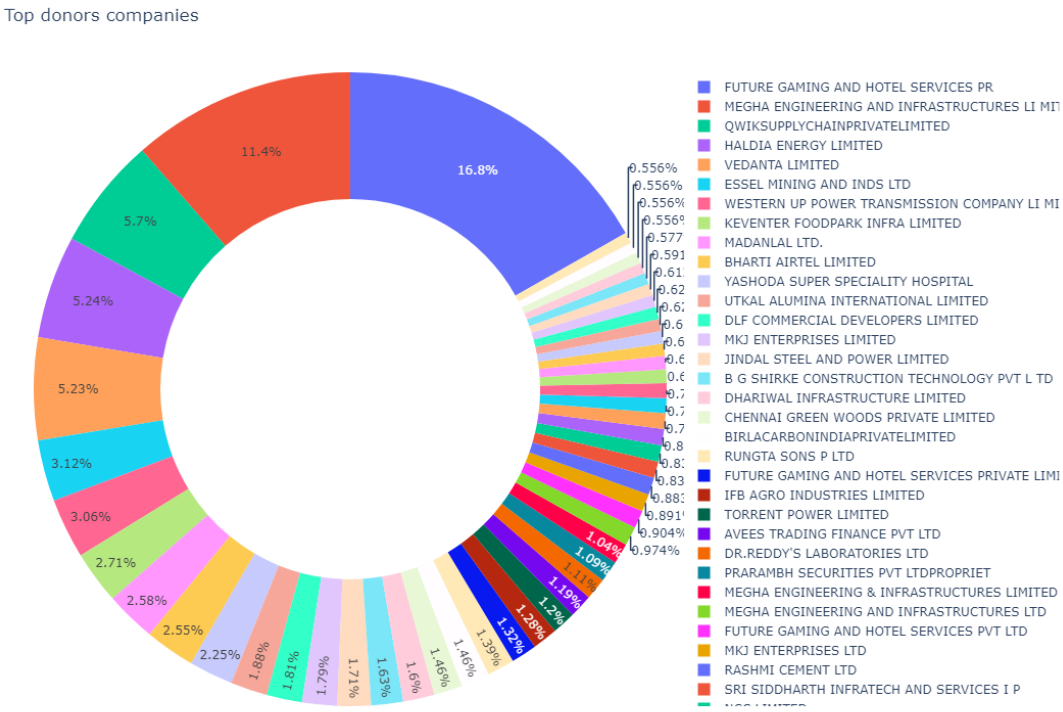


[15]:
```
total_sum_com = companies['Denomination'].sum()
total_sum_com = top_donors_companies.sum()
percentage_by_companies = (top_donors_companies / total_sum) * 100
percentage_by_companies.head()
```

[15]:
```
Purchaser Name
FUTURE GAMING AND HOTEL SERVICES PR                9.460346
MEGHA ENGINEERING AND INFRASTRUCTURES LI MITED     6.429589
QWIKSUPPLYCHAINPRIVATELIMITED                      3.210879
HALDIA ENERGY LIMITED                              2.952442
VEDANTA LIMITED                                    2.941870
Name: Denomination, dtype: float64
```

[16]:
```
top_donors_companies = companies.groupby('Purchaser Name')['Denomination'].
  ↪sum().reset_index().sort_values(by='Denomination',ascending=False)
top_50_com = top_donors_companies.head(50)
fig = px.pie(top_50_com, values='Denomination', names='Purchaser Name',
```

```
            title='Top donors companies',
            hover_data=['Denomination'],
            labels={'Denomination': 'Denomination (Crore)'},
            hole=0.6,
            width=800,
            height=800)

fig.show()
```



0.3 Analysis of Denomination by Year

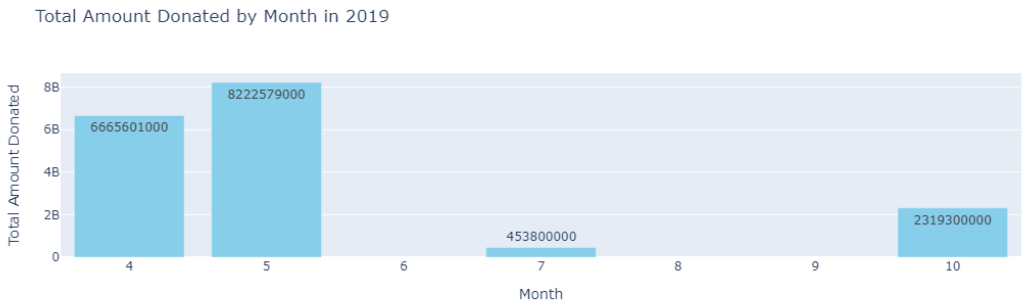
[26]:
```
companies['Date of Purchase'] = pd.to_datetime(companies['Date of Purchase'])
```

[18]:
```
companies['Month'] = companies['Date of Purchase'].dt.month
companies['Year'] = companies['Date of Purchase'].dt.year
```

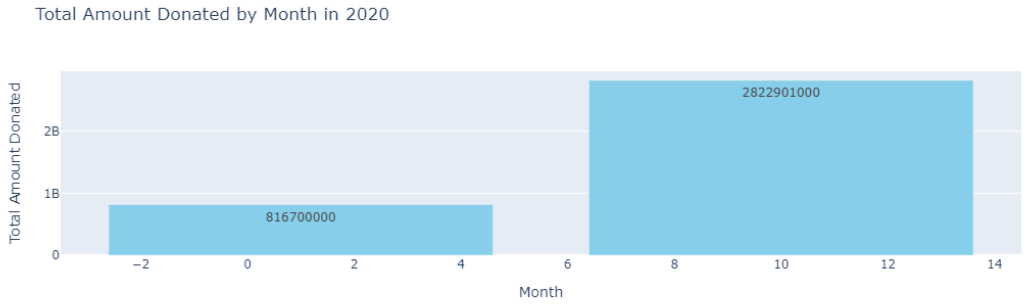
[19]:
```
companies['Date of Purchase'] = pd.to_datetime(companies['Date of Purchase'])

def amount_donated(specific_year):
    filtered_data = companies[companies['Date of Purchase'].dt.year ==␣
 ↪specific_year]
```

```
    amount_by_month = filtered_data.groupby(filtered_data['Date of Purchase'].
↪dt.month)['Denomination'].sum()
    trace = go.Bar(
        x=amount_by_month.index,
        y=amount_by_month.values,
        marker=dict(color='skyblue'),
        text=amount_by_month.values,
        textposition='auto'
    )
    layout = go.Layout(
        title=f'Total Amount Donated by Month in {specific_year}',
        xaxis=dict(title='Month'),
        yaxis=dict(title='Total Amount Donated'),
        bargap=0.2,
        showlegend=False
    )

    fig = go.Figure(data=[trace], layout=layout)

    fig.show()
```

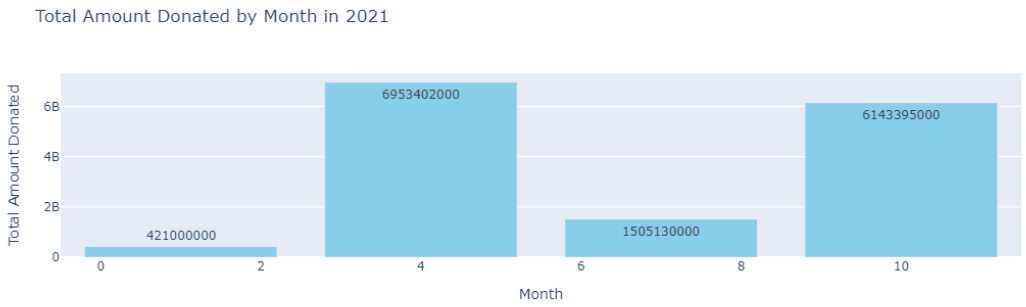
[20]:
```
amount_donated(2019)
```



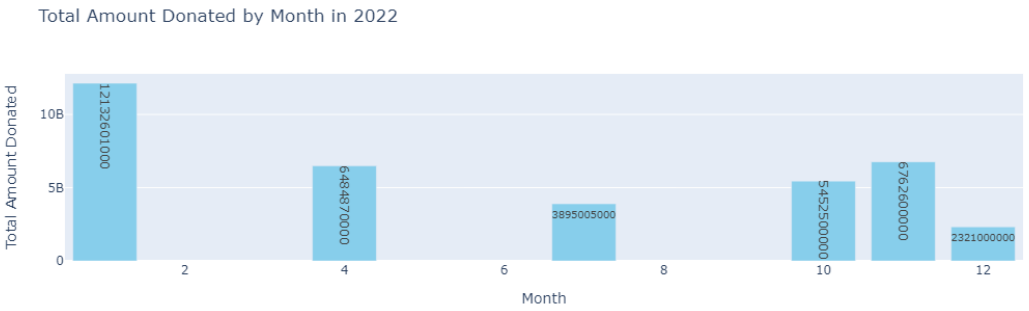
[21]:
```
amount_donated(2020)
```



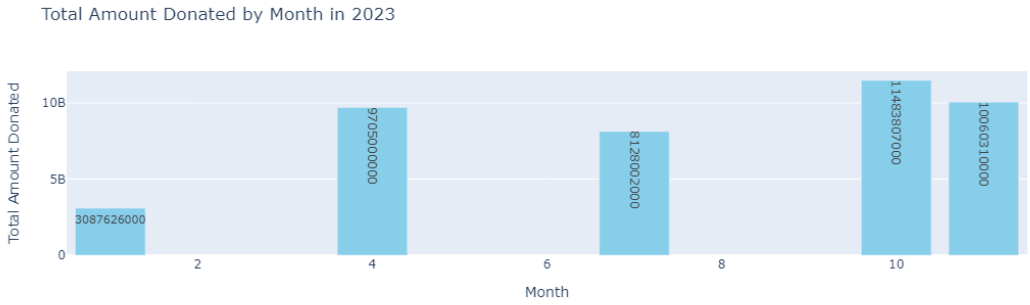
[22]:
```
amount_donated(2021)
```



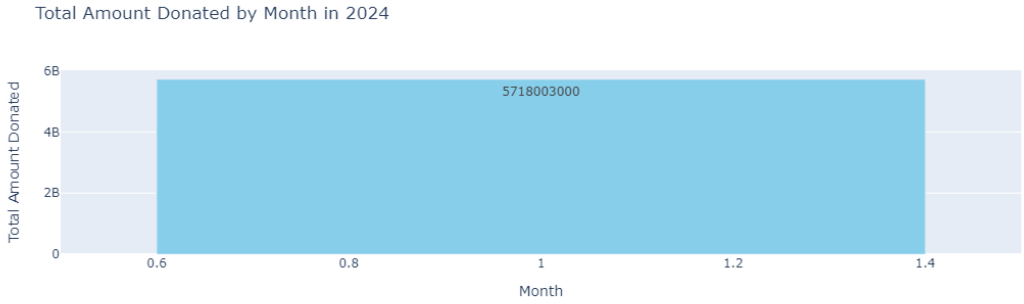
[23]:
```
amount_donated(2022)
```



[24]:
```
amount_donated(2023)
```



[25]:
```
amount_donated(2024)
```



[ ]:

[ ]: