

```
In [2]: import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns

# Load the dataset
# Replace 'dataset.csv' with the actual path to your dataset
file_path = 'D:/climate_change_indicators.csv'
df = pd.read_csv(file_path)

# Display the first few rows of the dataframe
print(df.head())

# Display basic information about the dataframe
print(df.info())

# Summary statistics of numerical columns
print(df.describe())

# Check for missing values
print(df.isnull().sum())

# Data visualization
# Example: Histogram
plt.figure(figsize=(12, 6))
sns.histplot(df['F1962'], bins=20, kde=True)
plt.title('Histogram of Numerical Column')
plt.xlabel('Values')
plt.ylabel('Frequency')
plt.show()

# Example: Boxplot
plt.figure(figsize=(12, 6))
sns.boxplot(x='F1962', y='F1963', data=df)
plt.title('Boxplot of Numerical Column by Categorical Column')
plt.xlabel('Categorical Column')
plt.ylabel('Numerical Column')
plt.show()

# Example: Scatter plot
plt.figure(figsize=(12, 6))
sns.scatterplot(x='F1962', y='F1963', data=df)
plt.title('Scatter Plot of Numerical Column 1 vs Numerical Column 2')
plt.xlabel('Numerical Column 1')
plt.ylabel('Numerical Column 2')
plt.show()
```

| ObjectID | Country | ISO2 | ISO3 |
|----------|------------------------------|------|------|
| 0 | Afghanistan, Islamic Rep. of | AF | AFG |
| 1 | Albania | AL | ALB |
| 2 | Algeria | DZ | DZA |
| 3 | American Samoa | AS | ASM |
| 4 | Andorra, Principality of | AD | AND |

| | Indicator | Unit |
|---|---|----------------|
| 0 | Temperature change with respect to a baseline ... | Degree Celsius |
| 1 | Temperature change with respect to a baseline ... | Degree Celsius |
| 2 | Temperature change with respect to a baseline ... | Degree Celsius |
| 3 | Temperature change with respect to a baseline ... | Degree Celsius |
| 4 | Temperature change with respect to a baseline ... | Degree Celsius |

| | Source | CTS_Code |
|---|---|----------|
| 0 | Food and Agriculture Organization of the Unite... | ECCS |
| 1 | Food and Agriculture Organization of the Unite... | ECCS |
| 2 | Food and Agriculture Organization of the Unite... | ECCS |
| 3 | Food and Agriculture Organization of the Unite... | ECCS |
| 4 | Food and Agriculture Organization of the Unite... | ECCS |

| | CTS_Name |
|---|----------------------------|
| 0 | Surface Temperature Change |
| 1 | Surface Temperature Change |
| 2 | Surface Temperature Change |
| 3 | Surface Temperature Change |
| 4 | Surface Temperature Change |

| | CTS_Full_Descriptor | F2013 | F2014 |
|---|---|-------|-------|
| 0 | Environment, Climate Change, Climate Indicator... | 1.281 | 0.456 |
| 1 | Environment, Climate Change, Climate Indicator... | 1.333 | 1.198 |
| 2 | Environment, Climate Change, Climate Indicator... | 1.192 | 1.690 |
| 3 | Environment, Climate Change, Climate Indicator... | 1.257 | 1.170 |
| 4 | Environment, Climate Change, Climate Indicator... | 0.831 | 1.946 |

| | F2015 | F2016 | F2017 | F2018 | F2019 | F2020 | F2021 | F2022 |
|---|-------|-------|-------|-------|-------|-------|-------|-------|
| 0 | 1.093 | 1.555 | 1.540 | 1.544 | 0.910 | 0.498 | 1.327 | 2.012 |
| 1 | 1.569 | 1.464 | 1.121 | 2.028 | 1.675 | 1.498 | 1.536 | 1.518 |
| 2 | 1.121 | 1.757 | 1.512 | 1.210 | 1.115 | 1.926 | 2.330 | 1.688 |
| 3 | 1.009 | 1.539 | 1.435 | 1.189 | 1.539 | 1.430 | 1.268 | 1.256 |
| 4 | 1.690 | 1.990 | 1.925 | 1.919 | 1.964 | 2.562 | 1.533 | 3.243 |

[5 rows x 72 columns]

<class 'pandas.core.frame.DataFrame'>

RangeIndex: 225 entries, 0 to 224

Data columns (total 72 columns):

| # | Column | Non-Null Count | Dtype |
|----|---------------------|----------------|---------|
| 0 | ObjectID | 225 non-null | int64 |
| 1 | Country | 225 non-null | object |
| 2 | ISO2 | 223 non-null | object |
| 3 | ISO3 | 225 non-null | object |
| 4 | Indicator | 225 non-null | object |
| 5 | Unit | 225 non-null | object |
| 6 | Source | 225 non-null | object |
| 7 | CTS_Code | 225 non-null | object |
| 8 | CTS_Name | 225 non-null | object |
| 9 | CTS_Full_Descriptor | 225 non-null | object |
| 10 | F1961 | 188 non-null | float64 |
| 11 | F1962 | 189 non-null | float64 |

| | | | |
|----|-------|--------------|---------|
| 12 | F1963 | 188 non-null | float64 |
| 13 | F1964 | 188 non-null | float64 |
| 14 | F1965 | 188 non-null | float64 |
| 15 | F1966 | 192 non-null | float64 |
| 16 | F1967 | 191 non-null | float64 |
| 17 | F1968 | 191 non-null | float64 |
| 18 | F1969 | 190 non-null | float64 |
| 19 | F1970 | 189 non-null | float64 |
| 20 | F1971 | 191 non-null | float64 |
| 21 | F1972 | 192 non-null | float64 |
| 22 | F1973 | 193 non-null | float64 |
| 23 | F1974 | 192 non-null | float64 |
| 24 | F1975 | 188 non-null | float64 |
| 25 | F1976 | 189 non-null | float64 |
| 26 | F1977 | 185 non-null | float64 |
| 27 | F1978 | 189 non-null | float64 |
| 28 | F1979 | 189 non-null | float64 |
| 29 | F1980 | 191 non-null | float64 |
| 30 | F1981 | 191 non-null | float64 |
| 31 | F1982 | 192 non-null | float64 |
| 32 | F1983 | 190 non-null | float64 |
| 33 | F1984 | 188 non-null | float64 |
| 34 | F1985 | 188 non-null | float64 |
| 35 | F1986 | 190 non-null | float64 |
| 36 | F1987 | 190 non-null | float64 |
| 37 | F1988 | 190 non-null | float64 |
| 38 | F1989 | 190 non-null | float64 |
| 39 | F1990 | 189 non-null | float64 |
| 40 | F1991 | 188 non-null | float64 |
| 41 | F1992 | 208 non-null | float64 |
| 42 | F1993 | 209 non-null | float64 |
| 43 | F1994 | 208 non-null | float64 |
| 44 | F1995 | 210 non-null | float64 |
| 45 | F1996 | 210 non-null | float64 |
| 46 | F1997 | 207 non-null | float64 |
| 47 | F1998 | 210 non-null | float64 |
| 48 | F1999 | 209 non-null | float64 |
| 49 | F2000 | 209 non-null | float64 |
| 50 | F2001 | 208 non-null | float64 |
| 51 | F2002 | 212 non-null | float64 |
| 52 | F2003 | 214 non-null | float64 |
| 53 | F2004 | 213 non-null | float64 |
| 54 | F2005 | 212 non-null | float64 |
| 55 | F2006 | 215 non-null | float64 |
| 56 | F2007 | 217 non-null | float64 |
| 57 | F2008 | 212 non-null | float64 |
| 58 | F2009 | 212 non-null | float64 |
| 59 | F2010 | 215 non-null | float64 |
| 60 | F2011 | 217 non-null | float64 |
| 61 | F2012 | 215 non-null | float64 |
| 62 | F2013 | 216 non-null | float64 |
| 63 | F2014 | 216 non-null | float64 |
| 64 | F2015 | 216 non-null | float64 |
| 65 | F2016 | 213 non-null | float64 |
| 66 | F2017 | 214 non-null | float64 |
| 67 | F2018 | 213 non-null | float64 |
| 68 | F2019 | 213 non-null | float64 |
| 69 | F2020 | 212 non-null | float64 |
| 70 | F2021 | 213 non-null | float64 |
| 71 | F2022 | 213 non-null | float64 |

dtypes: float64(62), int64(1), object(9)

memory usage: 126.7+ KB

None

| | ObjectId | F1961 | F1962 | F1963 | F1964 | F1965 |
|-------|------------|------------|------------|------------|------------|------------|
| count | 225.000000 | 188.000000 | 189.000000 | 188.000000 | 188.000000 | 188.000000 |
| mean | 113.000000 | 0.163053 | -0.013476 | -0.006043 | -0.070059 | -0.247027 |
| std | 65.096083 | 0.405080 | 0.341812 | 0.387348 | 0.309305 | 0.270734 |
| min | 1.000000 | -0.694000 | -0.908000 | -1.270000 | -0.877000 | -1.064000 |
| 25% | 57.000000 | -0.097000 | -0.164000 | -0.205500 | -0.236500 | -0.392500 |
| 50% | 113.000000 | 0.064500 | -0.056000 | -0.003000 | -0.056000 | -0.230500 |
| 75% | 169.000000 | 0.318500 | 0.114000 | 0.230500 | 0.132500 | -0.091500 |
| max | 225.000000 | 1.892000 | 0.998000 | 1.202000 | 1.097000 | 0.857000 |

| | F1966 | F1967 | F1968 | F1969 | ... | F2013 |
|-------|------------|------------|------------|------------|-----|------------|
| count | 192.000000 | 191.000000 | 191.000000 | 190.000000 | ... | 216.000000 |
| mean | 0.105505 | -0.110832 | -0.199110 | 0.157942 | ... | 0.931199 |
| std | 0.378423 | 0.339484 | 0.270131 | 0.308540 | ... | 0.321595 |
| min | -1.801000 | -1.048000 | -1.634000 | -0.900000 | ... | 0.118000 |
| 25% | -0.035750 | -0.259500 | -0.340000 | -0.009000 | ... | 0.743500 |
| 50% | 0.098000 | -0.146000 | -0.187000 | 0.204000 | ... | 0.897000 |
| 75% | 0.277000 | 0.015000 | -0.067000 | 0.349000 | ... | 1.187500 |
| max | 1.151000 | 1.134000 | 0.476000 | 0.939000 | ... | 1.643000 |

| | F2014 | F2015 | F2016 | F2017 | F2018 | F2019 |
|-------|------------|------------|------------|------------|------------|------------|
| count | 216.000000 | 216.000000 | 213.000000 | 214.000000 | 213.000000 | 213.000000 |
| mean | 1.114815 | 1.269773 | 1.439521 | 1.280785 | 1.302113 | 1.443061 |
| std | 0.564903 | 0.462162 | 0.401091 | 0.393999 | 0.596786 | 0.467510 |
| min | -0.092000 | -0.430000 | 0.250000 | 0.017000 | 0.238000 | 0.050000 |
| 25% | 0.744000 | 1.017750 | 1.147000 | 1.027500 | 0.865000 | 1.169000 |
| 50% | 0.986500 | 1.215000 | 1.446000 | 1.282000 | 1.125000 | 1.412000 |
| 75% | 1.335500 | 1.520500 | 1.714000 | 1.535000 | 1.834000 | 1.698000 |
| max | 2.704000 | 2.613000 | 2.459000 | 2.493000 | 2.772000 | 2.689000 |

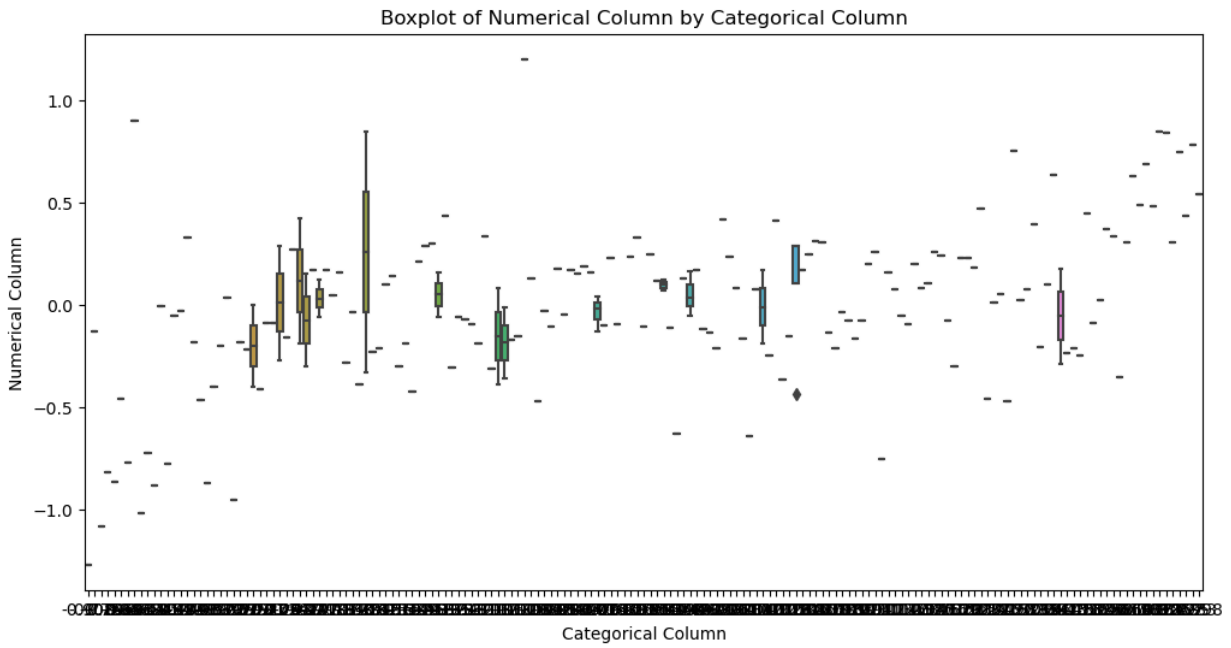
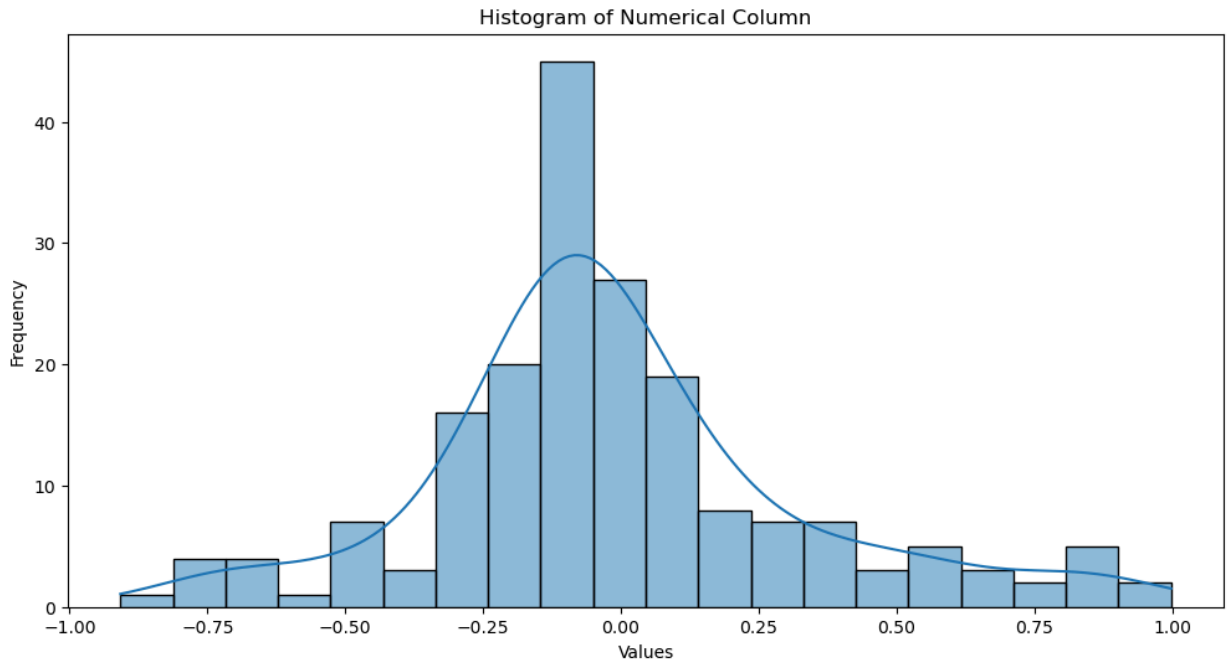
| | F2020 | F2021 | F2022 |
|-------|------------|------------|------------|
| count | 212.000000 | 213.000000 | 213.000000 |
| mean | 1.552038 | 1.343531 | 1.382113 |
| std | 0.621930 | 0.484692 | 0.669279 |
| min | 0.229000 | -0.425000 | -1.305000 |
| 25% | 1.161750 | 1.019000 | 0.878000 |
| 50% | 1.477000 | 1.327000 | 1.315000 |
| 75% | 1.826250 | 1.629000 | 1.918000 |
| max | 3.691000 | 2.676000 | 3.243000 |

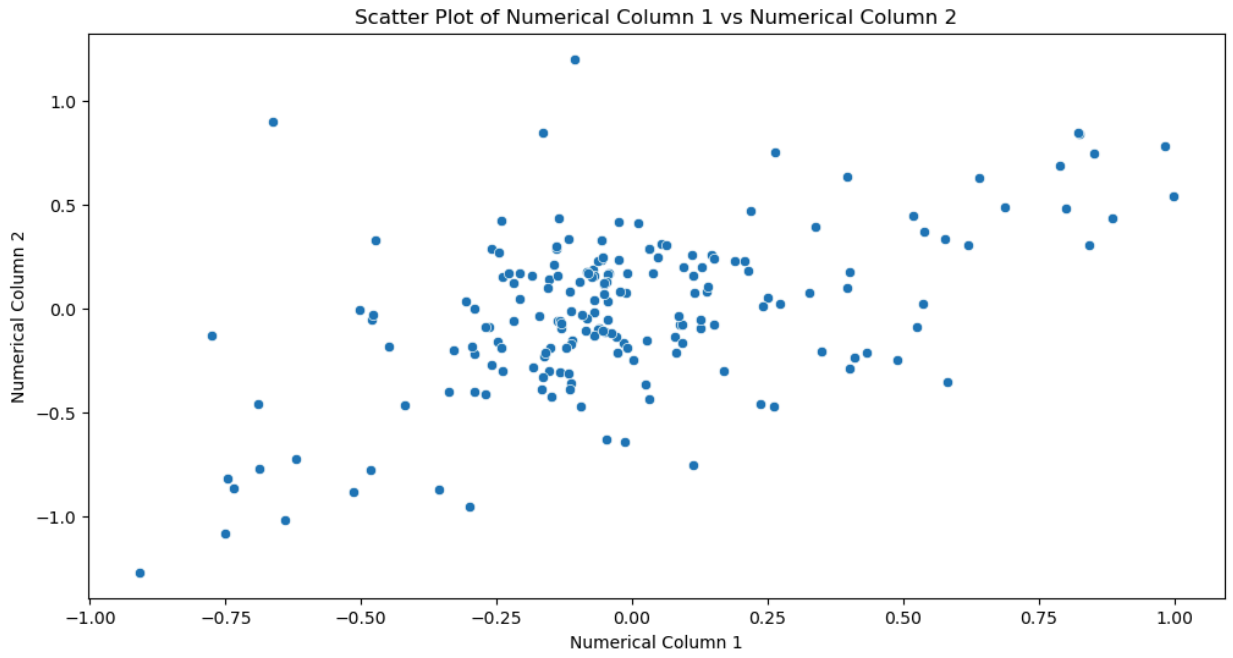
[8 rows x 63 columns]

```

ObjectId      0
Country       0
ISO2          2
ISO3          0
Indicator     0
..
F2018        12
F2019        12
F2020        13
F2021        12
F2022        12
Length: 72, dtype: int64

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In []:

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