```
# Import necessary libraries
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns


df = pd.read_csv('tested.csv')


# Display first few rows
df.head()
```

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	Embarked
0	892	0	3	Kelly, Mr. James	male	34.5	0	0	330911	7.8292	NaN	Q
1	893	1	3	Wilkes, Mrs. James (Ellen Needs)	female	47.0	1	0	363272	7.0000	NaN	S
2	894	0	2	Myles, Mr. Thomas Francis	male	62.0	0	0	240276	9.6875	NaN	Q
3	895	0	3	Wirz, Mr. Albert	male	27.0	0	0	315154	8.6625	NaN	S
[illegible]	[illegible]	[illegible]	[illegible]	Hirvonen, Mrs. Alexander (Helga E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Next steps: Generate code with df | View recommended plots | New interactive sheet

```
# Check the data types
print("\nData Types in the Dataset:")
print(df.dtypes)
```

```
Data Types in the Dataset:
PassengerId      int64
Survived         int64
Pclass           int64
Name            object
Sex             object
Age            float64
SibSp            int64
Parch            int64
```

```
Ticket          object
Fare           float64
Cabin           object
Embarked        object
dtype: object
```

```
# Check for missing values
print("\nMissing Values in the Dataset:")
print(df.isnull().sum())
```

```
Missing Values in the Dataset:
PassengerId      0
Survived         0
Pclass           0
Name             0
Sex              0
Age              0
SibSp            0
Parch            0
Ticket           0
Fare             0
Cabin          327
Embarked         0
dtype: int64
```

```
# Add a synthetic datetime column
df['date'] = pd.date_range(start='2023-01-01', periods=len(df), freq='D')

# Set the "date" column as the index
df.set_index('date', inplace=True)

# Confirm the new column
print("\nDataset with Synthetic Datetime Column:")
print(df.head())
```

```
Dataset with Synthetic Datetime Column:
            PassengerId  Survived  Pclass  \
date
2023-01-01          892         0       3
```

```
2023-01-02          893         1       3
2023-01-03          894         0       2
2023-01-04          895         0       3
2023-01-05          896         1       3

                                                    Name     Sex   Age  SibSp  \
date
2023-01-01                              Kelly, Mr. James    male  34.5      0
2023-01-02              Wilkes, Mrs. James (Ellen Needs)  female  47.0      1
2023-01-03                     Myles, Mr. Thomas Francis    male  62.0      0
2023-01-04                              Wirz, Mr. Albert    male  27.0      0
2023-01-05  Hirvonen, Mrs. Alexander (Helga E Lindqvist)  female  22.0      1

            Parch   Ticket     Fare Cabin Embarked
date
2023-01-01      0   330911   7.8292   NaN        Q
2023-01-02      0   363272   7.0000   NaN        S
2023-01-03      0   240276   9.6875   NaN        Q
2023-01-04      0   315154   8.6625   NaN        S
2023-01-05      1  3101298  12.2875   NaN        S
```

```
# Select only numeric columns
numeric_columns = df.select_dtypes(include=['float64', 'int64']).columns

# Display numeric columns
print("\nNumeric Columns:")
print(numeric_columns)
```

```

Numeric Columns:
Index(['PassengerId', 'Survived', 'Pclass', 'Age', 'SibSp', 'Parch', 'Fare'], dtype='object')
```

```
# Fill missing values in numeric columns with the column mean
df[numeric_columns] = df[numeric_columns].fillna(df[numeric_columns].mean())

# Confirm no missing values remain in numeric columns
print("\nMissing Values After Imputation (Numeric Columns):")
print(df[numeric_columns].isnull().sum())
```

```

Missing Values After Imputation (Numeric Columns):
```

```
PassengerId    0
Survived       0
Pclass         0
Age            0
SibSp          0
Parch          0
Fare           0
dtype: int64
```

```
# Resample numeric data to calculate weekly averages
weekly_data = df[numeric_columns].resample('W').mean()

# Display the resampled data
print("\nWeekly Resampled Data:")
print(weekly_data.head())
```

```
Weekly Resampled Data:
            PassengerId  Survived    Pclass        Age     SibSp     Parch  \
date
2023-01-01        892.0  0.000000  3.000000  34.500000  0.000000  0.000000
2023-01-08        896.0  0.428571  2.714286  32.571429  0.428571  0.285714
2023-01-15        903.0  0.428571  2.000000  35.467513  0.714286  0.000000
2023-01-22        910.0  0.428571  2.428571  30.857143  0.428571  0.142857
2023-01-29        917.0  0.428571  1.571429  33.538941  0.285714  0.714286

                 Fare
date
2023-01-01   7.829200
2023-01-08  11.927386
2023-01-15  33.530957
2023-01-22  17.859514
2023-01-29  67.091671
```

```
# Calculate rolling mean and rolling standard deviation for the first numeric column
target_column = numeric_columns[0]
df['rolling_mean'] = df[target_column].rolling(window=7).mean()
df['rolling_std'] = df[target_column].rolling(window=7).std()

# Display rolling statistics
print("\nRolling Statistics:")
print(df[['rolling_mean', 'rolling_std']].head(10))
```

```
Rolling Statistics:
            rolling_mean  rolling_std
date
2023-01-01           NaN          NaN
2023-01-02           NaN          NaN
2023-01-03           NaN          NaN
2023-01-04           NaN          NaN
2023-01-05           NaN          NaN
2023-01-06           NaN          NaN
2023-01-07         895.0     2.160247
2023-01-08         896.0     2.160247
2023-01-09         897.0     2.160247
2023-01-10         898.0     2.160247
```

```
# Create lagged features for the first numeric column
df['lag_1'] = df[target_column].shift(1)
df['lag_7'] = df[target_column].shift(7)

# Display lagged features
print("\nLagged Features:")
print(df[['lag_1', 'lag_7']].head(10))
```

```
Lagged Features:
            lag_1  lag_7
date
2023-01-01    NaN    NaN
2023-01-02  892.0    NaN
2023-01-03  893.0    NaN
2023-01-04  894.0    NaN
2023-01-05  895.0    NaN
2023-01-06  896.0    NaN
2023-01-07  897.0    NaN
2023-01-08  898.0  892.0
2023-01-09  899.0  893.0
2023-01-10  900.0  894.0
```

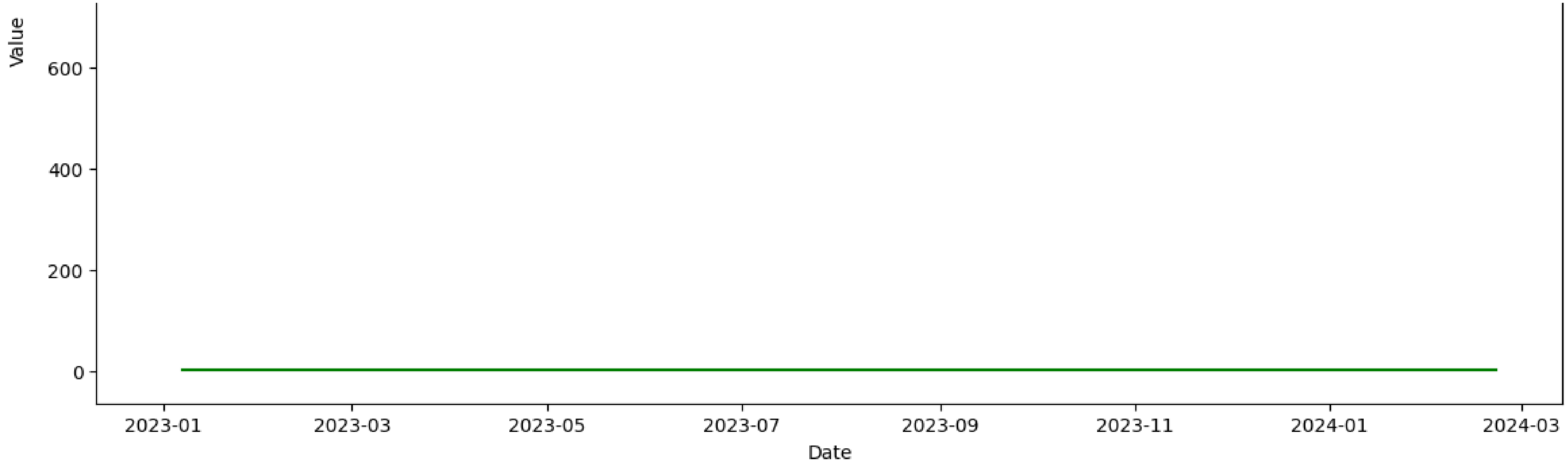
```
import matplotlib.pyplot as plt

# Plot original data, rolling mean, and rolling standard deviation
plt.figure(figsize=(14, 7))
plt.plot(df[target_column], label='Original Data', color='blue')
plt.plot(df['rolling_mean'], label='Rolling Mean (7 days)', color='red')
plt.plot(df['rolling_std'], label='Rolling Std (7 days)', color='green')
plt.legend()
plt.title('Time Series Analysis')
plt.xlabel('Date')
plt.ylabel('Value')
plt.show()
```

```
# Export the final dataset to a CSV file
df.to_csv("processed_time_series.csv", index=True)
print("\nProcessed Dataset Exported as 'processed_time_series.csv'")
```

```
Processed Dataset Exported as 'processed_time_series.csv'
```

Start coding or generate with AI.


Value
Date