```
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_squared_error, r2_score
import matplotlib.pyplot as plt
import seaborn as sns
```

```
df = pd.read_csv('/content/2019.csv')
df.head()
```

	Overall rank	Country or region	Score	GDP per capita	Social support	Healthy life expectancy	Freedom to make life choices	Generosity	Perceptions of corruption
0	1	Finland	7.769	1.340	1.587	0.986	0.596	0.153	0.393
1	2	Denmark	7.600	1.383	1.573	0.996	0.592	0.252	0.410
2	3	Norway	7.554	1.488	1.582	1.028	0.603	0.271	0.341
3	4	Iceland	7.494	1.380	1.624	1.026	0.591	0.354	0.118
4	5	Netherlands	7.488	1.396	1.522	0.999	0.557	0.322	0.298

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

```
# Assuming 'Score' is the target variable and other columns are features
X = df.drop('Score', axis=1)
y = df['Score']
```

```
# Convert non-numeric columns to numerical representations (e.g., one-hot encoding)
X = pd.get_dummies(X, drop_first=True) # Example using one-hot encoding
```

```
# Handle missing values (if any)
X.fillna(X.mean(), inplace=True)
```

```
# Split data into training and testing sets
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)
```

```
# Initialize and train a linear regression model
model = LinearRegression()
model.fit(X_train, y_train)
```

```
LinearRegression()
```

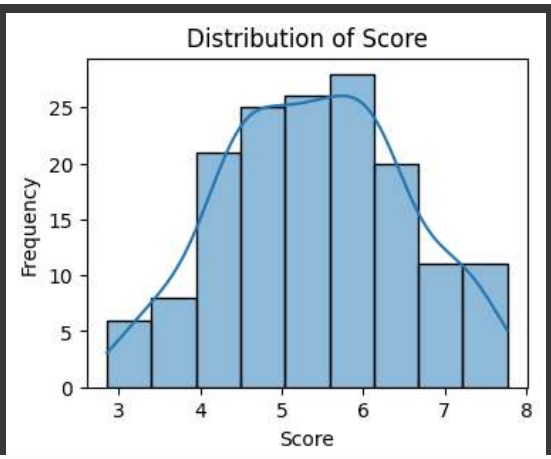
```
# Make predictions on the test set
y_pred = model.predict(X_test)
```

```
# Evaluate the model
mse = mean_squared_error(y_test, y_pred)
r2 = r2_score(y_test, y_pred)
```

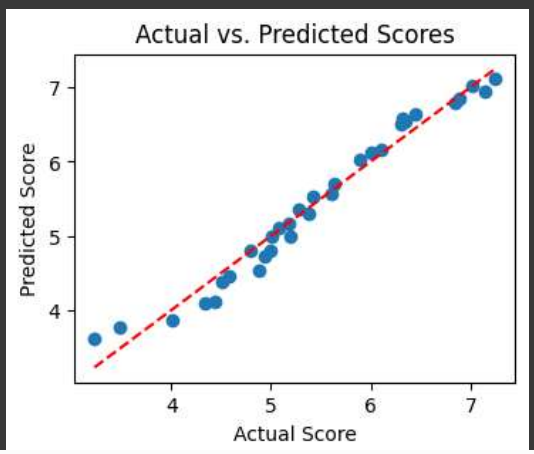
```
print(f"Mean Squared Error: {mse}")
print(f"R-squared: {r2}")
```

```
Mean Squared Error: 0.03150537970580877
R-squared: 0.9697274218465509
```

```
# Visualize the distribution of the target variable
plt.figure(figsize=(4, 3))
sns.histplot(y, kde=True)
plt.title('Distribution of Score')
plt.xlabel('Score')
plt.ylabel('Frequency')
plt.show()
```




```
# Scatter plot of actual vs. predicted values
plt.figure(figsize=(4, 3))
plt.scatter(y_test, y_pred)
plt.xlabel('Actual Score')
plt.ylabel('Predicted Score')
plt.title('Actual vs. Predicted Scores')
plt.plot([min(y_test), max(y_test)], [min(y_test), max(y_test)], color='red', linestyle='--') # Add diagonal line
plt.show()
```




```
# Residual plot
residuals = y_test - y_pred
plt.figure(figsize=(4, 3))
plt.scatter(y_pred, residuals)
plt.xlabel('Predicted Score')
plt.ylabel('Residuals')
plt.title('Residual Plot')
plt.axhline(y=0, color='red', linestyle='--') # Add horizontal line at 0
plt.show()
```