```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

```
df = pd.read_csv('/content/Bird Strikes data.csv')
```

```
df.head(2)
```

	Record ID	Aircraft: Type	Airport: Name	Altitude bin	Aircraft: Make/Model	Wildlife: Number struck	Wildlife: Number Struck Actual	Effect: Impact to flight	FlightDate	Effect: Indicated Damage	...	Remains of wildlife sent to Smithsonian	Re
0	202152	Airplane	LAGUARDIA NY	> 1000 ft	B-737-400	Over 100	859	Engine Shut Down	11/23/00 0:00	Caused damage	...	False	FL F REF HUNI BIRD UNk
1	208159	Airplane	DALLAS/FORT WORTH INTL ARPT	< 1000 ft	MD-80	Over 100	424	NaN	7/25/01 0:00	Caused damage	...	False	CARCA FOU LDG L ON N GE

2 rows × 26 columns

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 25558 entries, 0 to 25557
Data columns (total 26 columns):
 #   Column                                 Non-Null Count  Dtype
---  ------                                 --------------  -----
 0   Record ID                              25558 non-null  int64
 1   Aircraft: Type                         25429 non-null  object
 2   Airport: Name                          25429 non-null  object
 3   Altitude bin                           25429 non-null  object
 4   Aircraft: Make/Model                   25558 non-null  object
 5   Wildlife: Number struck                25429 non-null  object
 6   Wildlife: Number Struck Actual         25558 non-null  int64
 7   Effect: Impact to flight               2078 non-null   object
 8   FlightDate                             25429 non-null  object
 9   Effect: Indicated Damage               25558 non-null  object
 10  Aircraft: Number of engines?           25291 non-null  object
 11  Aircraft: Airline/Operator             25429 non-null  object
 12  Origin State                           25109 non-null  object
 13  When: Phase of flight                  25429 non-null  object
 14  Conditions: Precipitation              2015 non-null   object
 15  Remains of wildlife collected?         25558 non-null  bool
 16  Remains of wildlife sent to Smithsonian  25558 non-null  bool
 17  Remarks                                20787 non-null  object
 18  Wildlife: Size                         25429 non-null  object
 19  Conditions: Sky                        25558 non-null  object
 20  Wildlife: Species                      25558 non-null  object
 21  Pilot warned of birds or wildlife?     25429 non-null  object
 22  Cost: Total $                          25558 non-null  object
 23  Feet above ground                      25429 non-null  object
 24  Number of people injured               25558 non-null  int64
 25  Is Aircraft Large?                     25429 non-null  object
dtypes: bool(2), int64(3), object(21)
memory usage: 4.7+ MB
```

```
#Convert data Column
df['Incident Year'] = pd.to_datetime(df['FlightDate']).dt.year
```

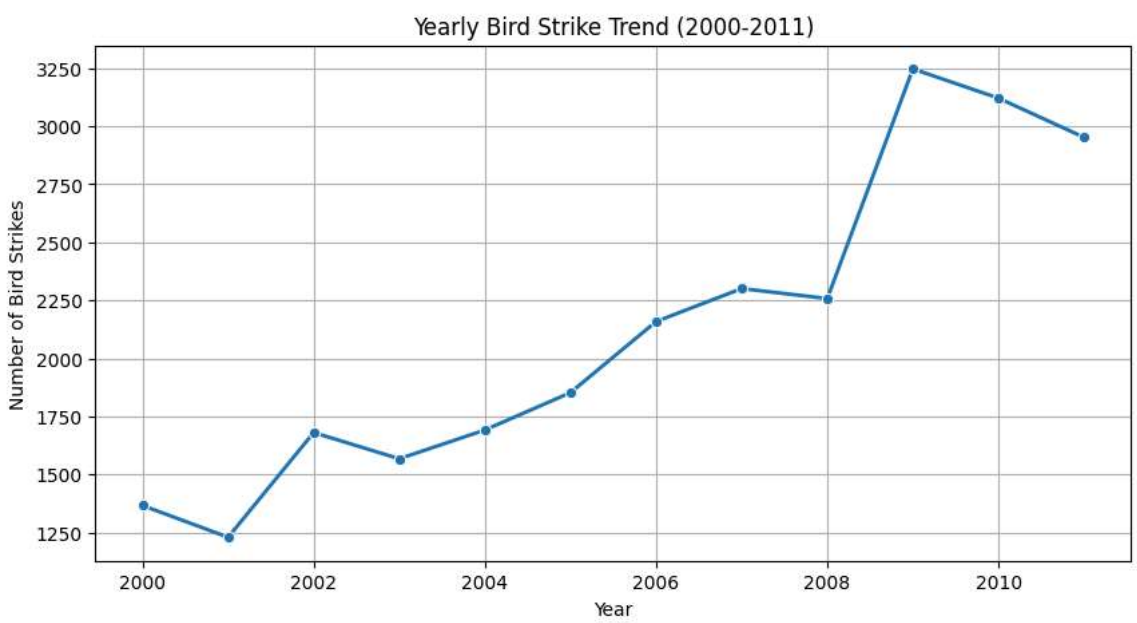
```
<ipython-input-8-6573e4587be8>:2: UserWarning: Could not infer format, so each element will be parsed individually, falling back to `dat
  df['Incident Year'] = pd.to_datetime(df['FlightDate']).dt.year
```

```
#Drop unnecessary columns
df = df[['Incident Year', 'Airport: Name', 'Aircraft: Airline/Operator', 'Cost: Total $', 'When: Phase of flight', 'Feet above ground', 'Pil
```

```
df.dropna(inplace=True)  # Remove missing values
```

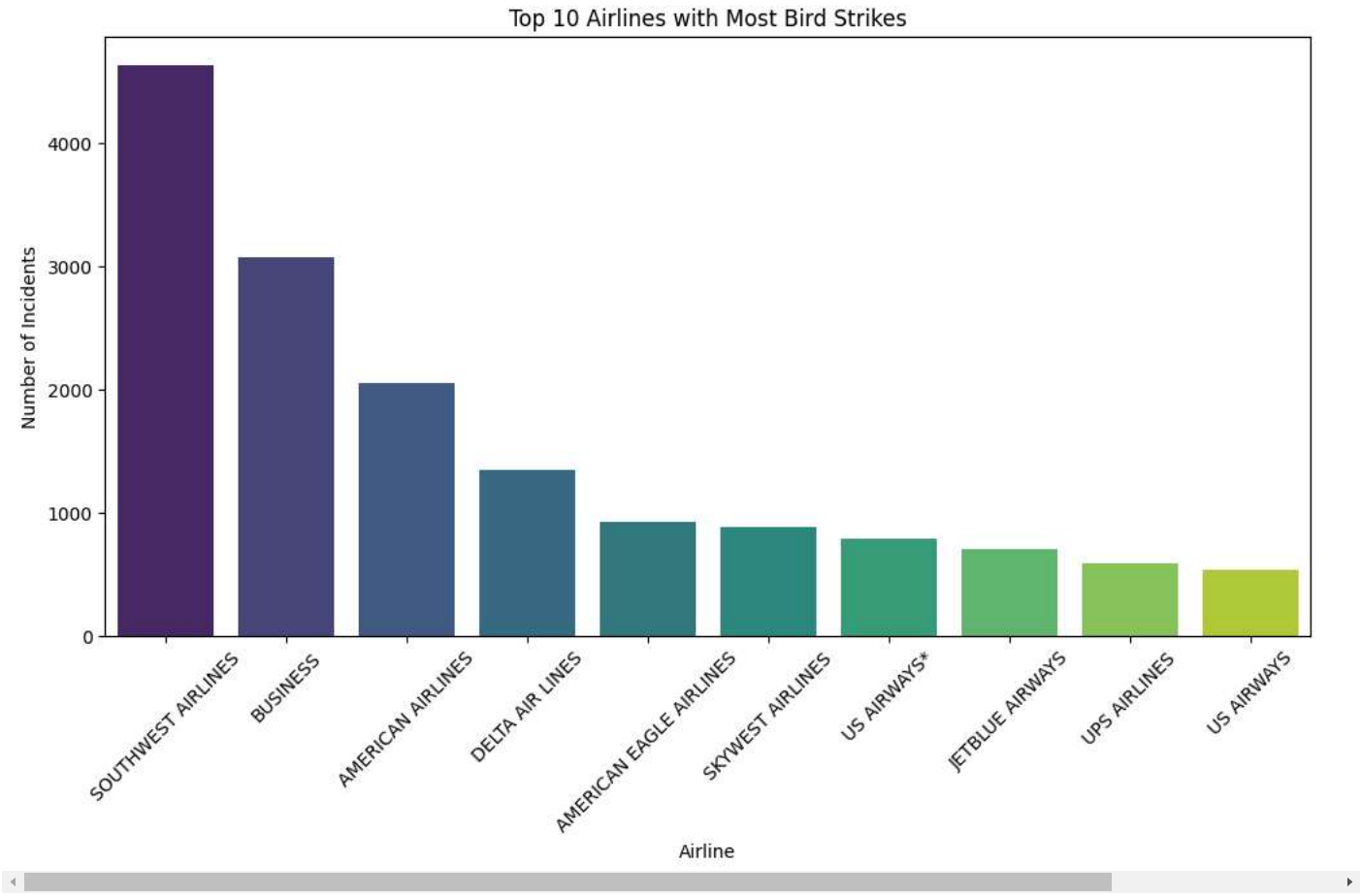
```
<ipython-input-9-8b6ec7d64cf0>:4: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-cc
  df.dropna(inplace=True)  # Remove missing values
```

```
#Yearly Bird Strikes Trens
plt.figure(figsize=(10,5))
yearly_counts = df['Incident Year'].value_counts().sort_index()
sns.lineplot(x=yearly_counts.index, y=yearly_counts.values, marker='o', linewidth=2)
plt.xlabel("Year")
plt.ylabel("Number of Bird Strikes")
plt.title("Yearly Bird Strike Trend (2000-2011)")
plt.grid()
plt.show()
```



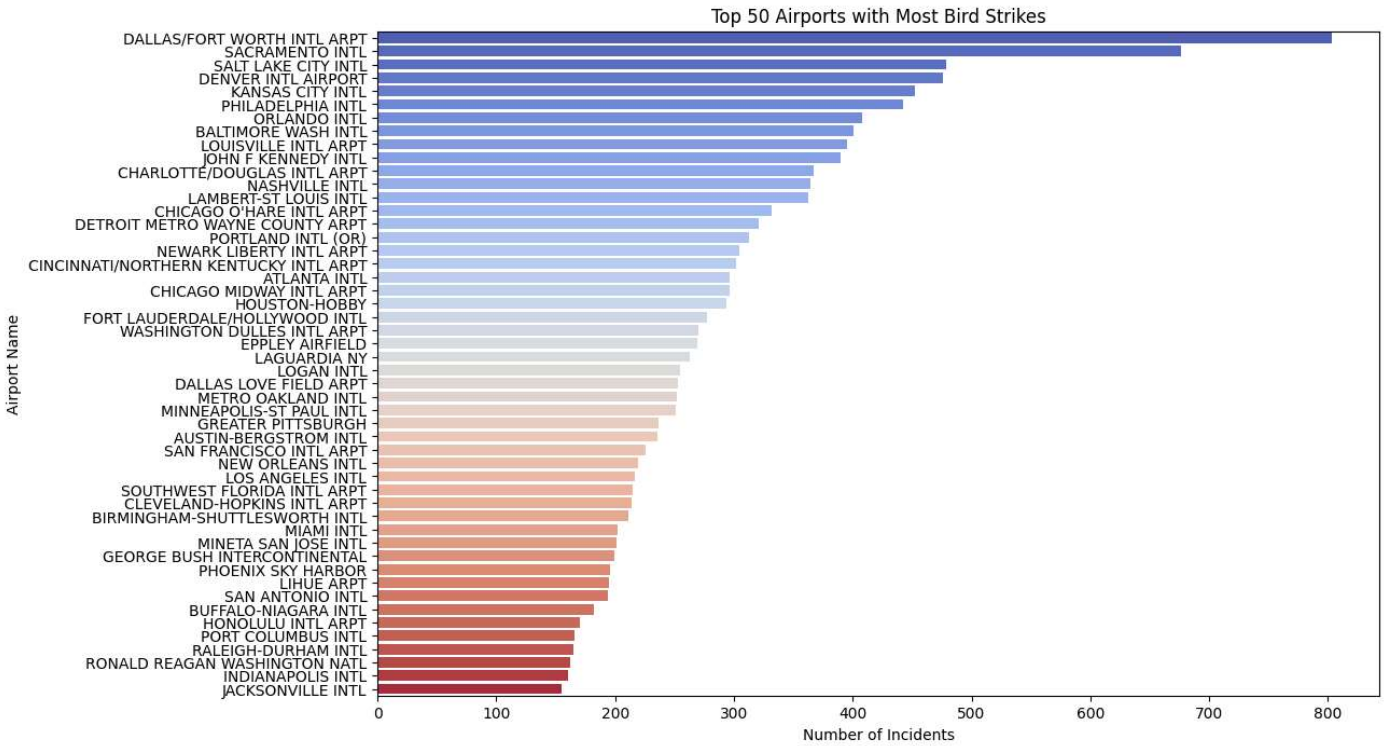

```
# Top 10 Airlines with Most Bird Strikes
top_airlines = df['Aircraft: Airline/Operator'].value_counts().nlargest(10)
plt.figure(figsize=(12,6))
sns.barplot(x=top_airlines.index, y=top_airlines.values, palette='viridis')
plt.xticks(rotation=45)
plt.xlabel("Airline")
plt.ylabel("Number of Incidents")
plt.title("Top 10 Airlines with Most Bird Strikes")
plt.show()
```

```
<ipython-input-11-d6be0a5a4936>:4: FutureWarning:

Passing `palette` without assigning `hue` is deprecated and will be removed in v0.14.0. Assign the `x` variable to `hue` and set `legend

  sns.barplot(x=top_airlines.index, y=top_airlines.values, palette='viridis')
```



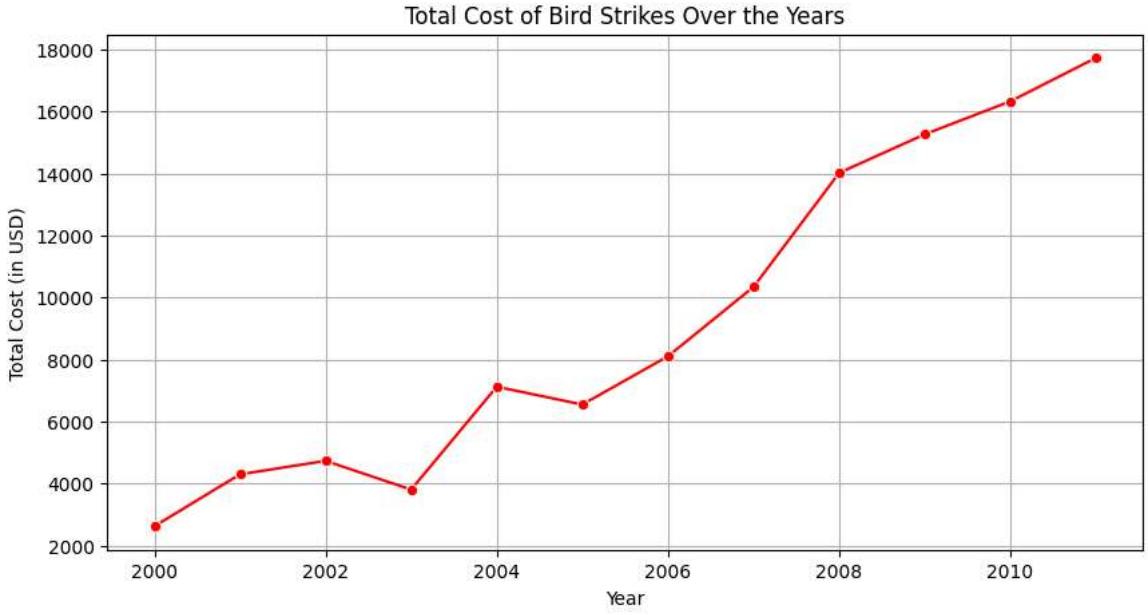

```
# Top 50 Airports with the Most Incidents
top_airports = df['Airport: Name'].value_counts().nlargest(50)
plt.figure(figsize=(12,8))
sns.barplot(y=top_airports.index, x=top_airports.values, palette='coolwarm')
plt.xlabel("Number of Incidents")
plt.ylabel("Airport Name")
plt.title("Top 50 Airports with Most Bird Strikes")
plt.show()
```

```
<ipython-input-12-faf4e6f9803c>:4: FutureWarning:

Passing `palette` without assigning `hue` is deprecated and will be removed in v0.14.0. Assign the `y` variable to `hue` and set `legend

  sns.barplot(y=top_airports.index, x=top_airports.values, palette='coolwarm')
```



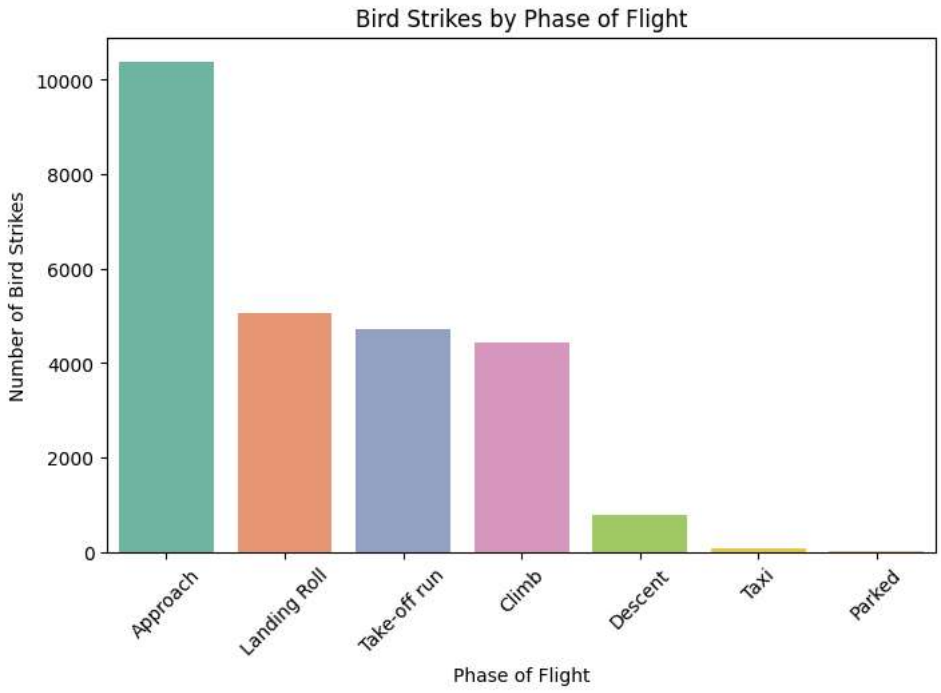

```
# Cost Analysis Over the Years
df['Cost: Total $'] = pd.to_numeric(df['Cost: Total $'], errors='coerce')  # Convert cost to numeric
yearly_cost = df.groupby('Incident Year')['Cost: Total $'].sum()
plt.figure(figsize=(10,5))
sns.lineplot(x=yearly_cost.index, y=yearly_cost.values, marker='o', color='r')
plt.xlabel("Year")
plt.ylabel("Total Cost (in USD)")
plt.title("Total Cost of Bird Strikes Over the Years")
plt.grid()
plt.show()
```

```
<ipython-input-13-199e4e67c260>:2: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-cc
  df['Cost: Total $'] = pd.to_numeric(df['Cost: Total $'], errors='coerce')  # Convert cost to numeric
```




```
# Bird Strikes by Phase of Flight
plt.figure(figsize=(8,5))
phase_counts = df['When: Phase of flight'].value_counts()
sns.barplot(x=phase_counts.index, y=phase_counts.values, palette='Set2')
plt.xlabel("Phase of Flight")
plt.ylabel("Number of Bird Strikes")
plt.xticks(rotation=45)
plt.title("Bird Strikes by Phase of Flight")
plt.show()
```

```
<ipython-input-14-0a63d348fee5>:4: FutureWarning:

Passing `palette` without assigning `hue` is deprecated and will be removed in v0.14.0. Assign the `x` variable to `hue` and set `legend

  sns.barplot(x=phase_counts.index, y=phase_counts.values, palette='Set2')
```



```
# Altitude Analysis
plt.figure(figsize=(10,5))
sns.histplot(df['Feet above ground'], bins=20, kde=True, color='purple')
plt.xlabel("Altitude (ft)")
plt.ylabel("Frequency")
plt.title("Distribution of Bird Strikes by Altitude")
plt.show()
```