```python
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns

# Load the dataset
df = pd.read_csv("train.csv")


df.head()
```

|	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	Embarked
0	1	0	3	Braund, Mr. Owen Harris	male	22.0	1	0	A/5 21171	7.2500	NaN	S
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.0	1	0	PC 17599	71.2833	C85	C
2	3	1	3	Heikkinen, Miss. Laina	female	26.0	0	0	STON/O2. 3101282	7.9250	NaN	S
				Futrelle, Mrs. Jacques Heath (Lily								

Next steps: [Generate code with df] [● View recommended plots] [New interactive sheet]

```python
# 1. Gender & Class Combination - Impact on Survival
survival_rates = df.pivot_table(values='Survived', index='Pclass', columns='Sex', aggfunc='mean')

plt.figure(figsize=(8,5))
sns.heatmap(survival_rates, annot=True, cmap="coolwarm", fmt=".2f")
plt.title("Survival Rates by Gender and Passenger Class")
plt.ylabel("Passenger Class")
plt.xlabel("Gender")
plt.show()
```
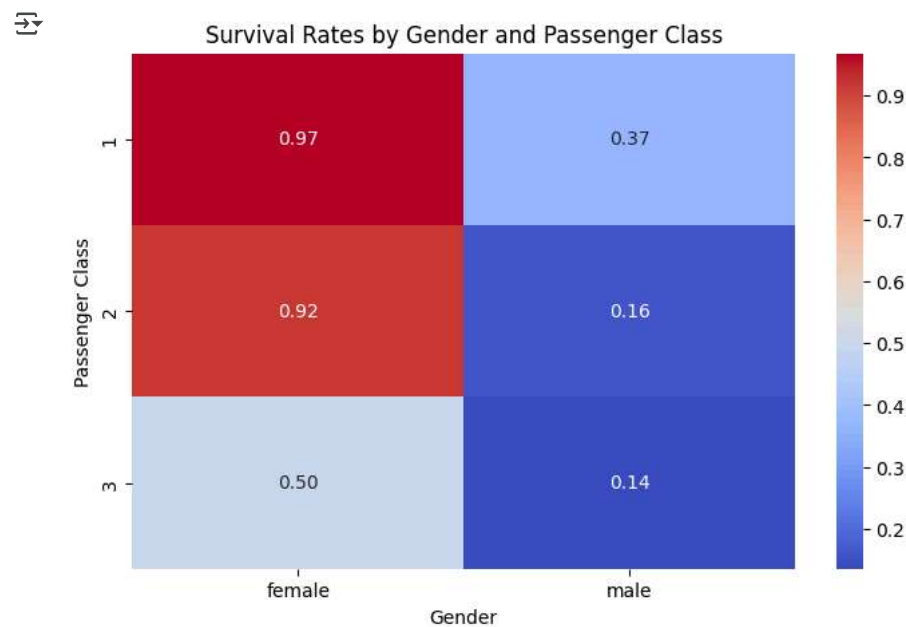


```python
# 2. Family Size & Survival
df["FamilySize"] = df["SibSp"] + df["Parch"]
df["FamilyCategory"] = df["FamilySize"].apply(lambda x: "Alone" if x == 0 else "Small Family" if x <= 3 else "Large Family")
family_survival_rates = df.groupby("FamilyCategory")["Survived"].mean()

plt.figure(figsize=(8,5))
sns.barplot(x=family_survival_rates.index, y=family_survival_rates.values, palette="mako")
plt.title("Survival Rates by Family Size")
plt.ylabel("Survival Rate")
plt.xlabel("Family Category")
plt.show()
```

⊡ <ipython-input-5-d174603da1e0>:7: 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=family_survival_rates.index, y=family_survival_rates.values, palette="mako")
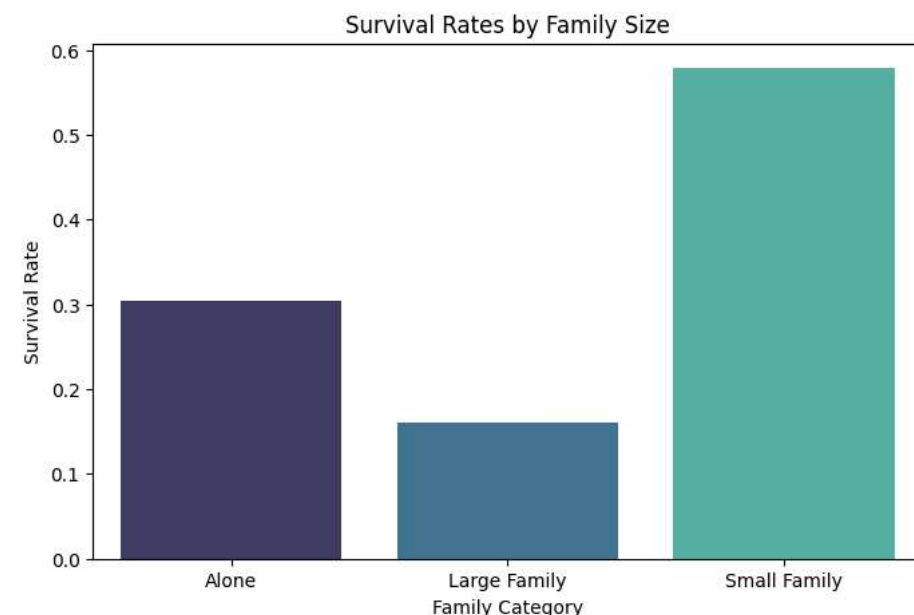
3. Embarkation Port & Survival

```
embark_survival = df.groupby("Embarked")["Survived"].mean()

plt.figure(figsize=(8,5))
sns.barplot(x=embark_survival.index, y=embark_survival.values, palette="viridis")
plt.title("Survival Rates by Embarkation Port")
plt.ylabel("Survival Rate")
plt.xlabel("Embarkation Port")
plt.show()
```

⊡ <ipython-input-6-7fa2fe48d191>:5: 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=embark_survival.index, y=embark_survival.values, palette="viridis")
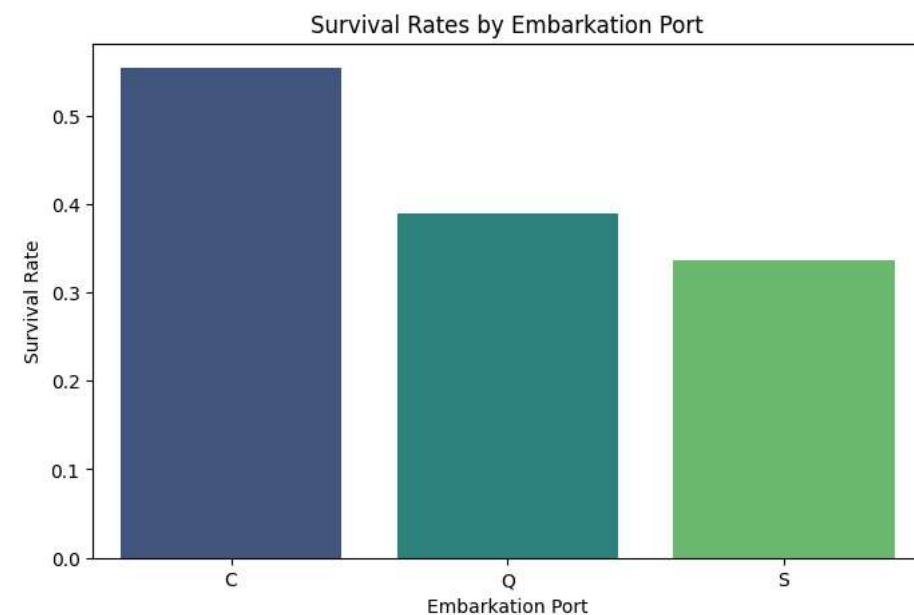
4. Bonus: Hidden Pattern - Fare vs. Survival

```
plt.figure(figsize=(8,5))
sns.boxplot(x=df["Survived"], y=df["Fare"], palette="coolwarm")
plt.title("Fare Distribution by Survival")
plt.xlabel("Survived (0 = No, 1 = Yes)")
```

```
plt.ylabel("Fare Price")
plt.show()
```

<ipython-input-7-b52cbf6650cd>:3: FutureWarning:

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

```
sns.boxplot(x=df["Survived"], y=df["Fare"], palette="coolwarm")
```


Fare Distribution by Survival