In [ ]:
```
#pip install --upgrade seaborn
```

In [1]:
```
import warnings
warnings.filterwarnings("ignore", category=FutureWarning)
```

In [5]:
```
import seaborn as sns
sns.get_dataset_names()
```

Out[5]:
```
['anagrams',
 'anscombe',
 'attention',
 'brain_networks',
 'car_crashes',
 'diamonds',
 'dots',
 'dowjones',
 'exercise',
 'flights',
 'fmri',
 'geyser',
 'glue',
 'healthexp',
 'iris',
 'mpg',
 'penguins',
 'planets',
 'seaice',
 'taxis',
 'tips',
 'titanic']
```

In [6]:
```
import seaborn as sns
import matplotlib.pyplot as plt

# Load sample dataset
tips = sns.load_dataset("tips")

# Set a visual theme
sns.set_theme(style="darkgrid")
```

In [7]:
```
tips
```

Out[7]:

	total_bill	tip	sex	smoker	day	time	size
0	16.99	1.01	Female	No	Sun	Dinner	2
1	10.34	1.66	Male	No	Sun	Dinner	3
2	21.01	3.50	Male	No	Sun	Dinner	3
3	23.68	3.31	Male	No	Sun	Dinner	2
4	24.59	3.61	Female	No	Sun	Dinner	4
...	...	...	...	...	...	...	...
239	29.03	5.92	Male	No	Sat	Dinner	3
240	27.18	2.00	Female	Yes	Sat	Dinner	2
241	22.67	2.00	Male	Yes	Sat	Dinner	2
242	17.82	1.75	Male	No	Sat	Dinner	2
243	18.78	3.00	Female	No	Thur	Dinner	2

244 rows × 7 columns

In [8]:
```
# Save to CSV
tips.to_csv("tips_dataset.csv", index=False)
```

In [ ]:
```
import os
os.getcwd()
```

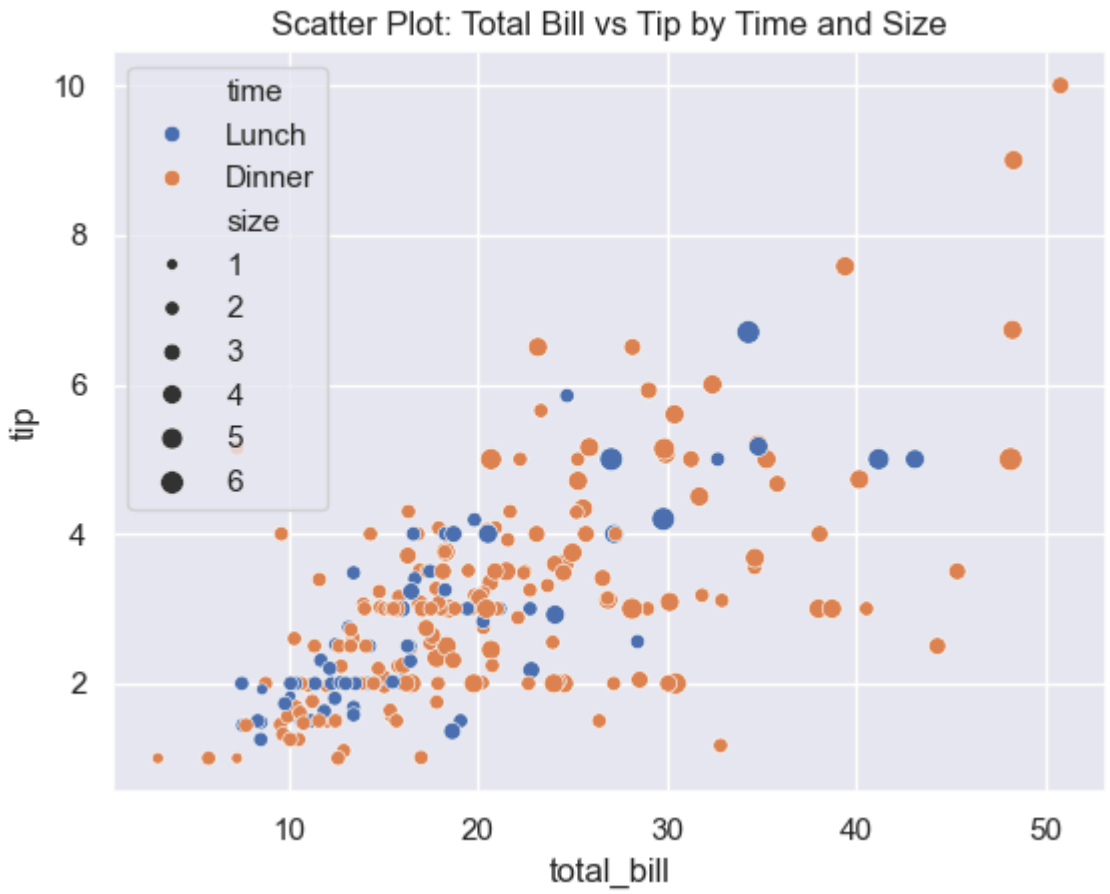
Out[ ]:
```
'c:\\Users\\Admin\\AVSCODE\\2025_WORKSHOP\\Seborn'
```

In [10]:
```
plt.figure(figsize=(8, 6))
```

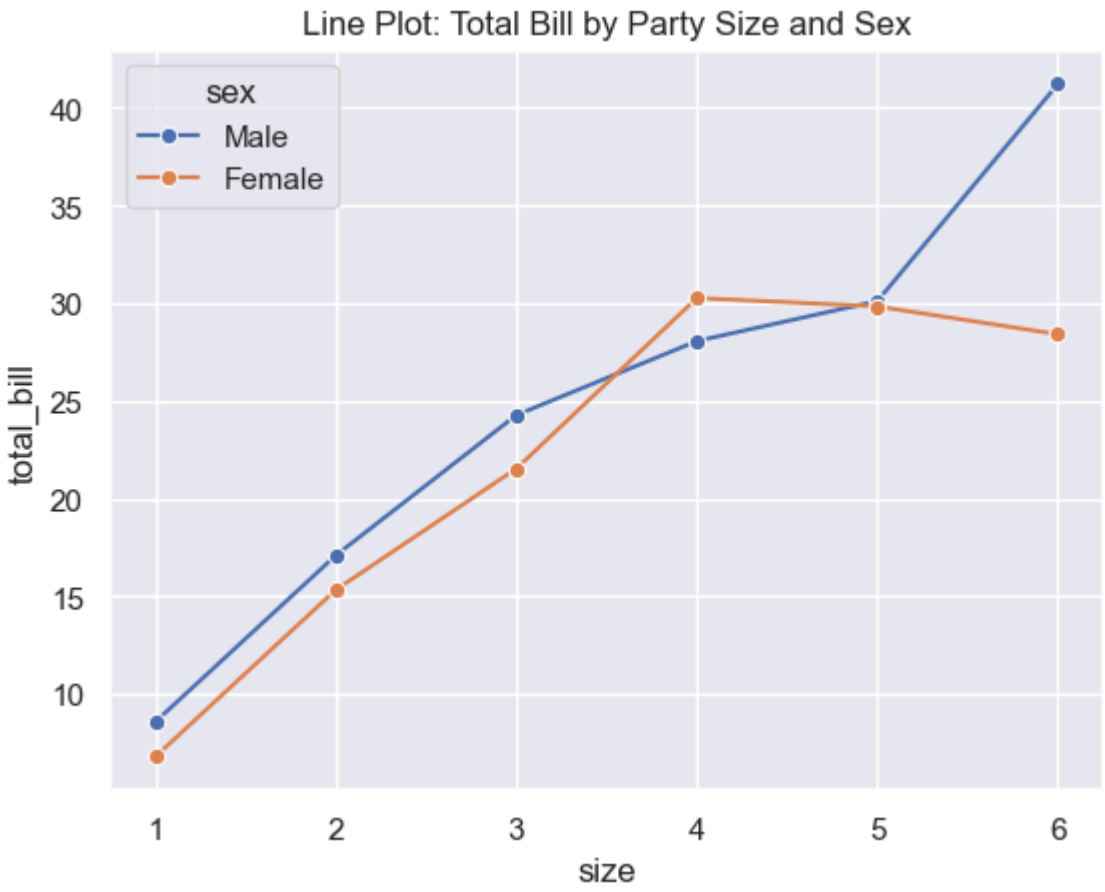
Out[10]:
```
<Figure size 800x600 with 0 Axes>
```

```
<Figure size 800x600 with 0 Axes>
```

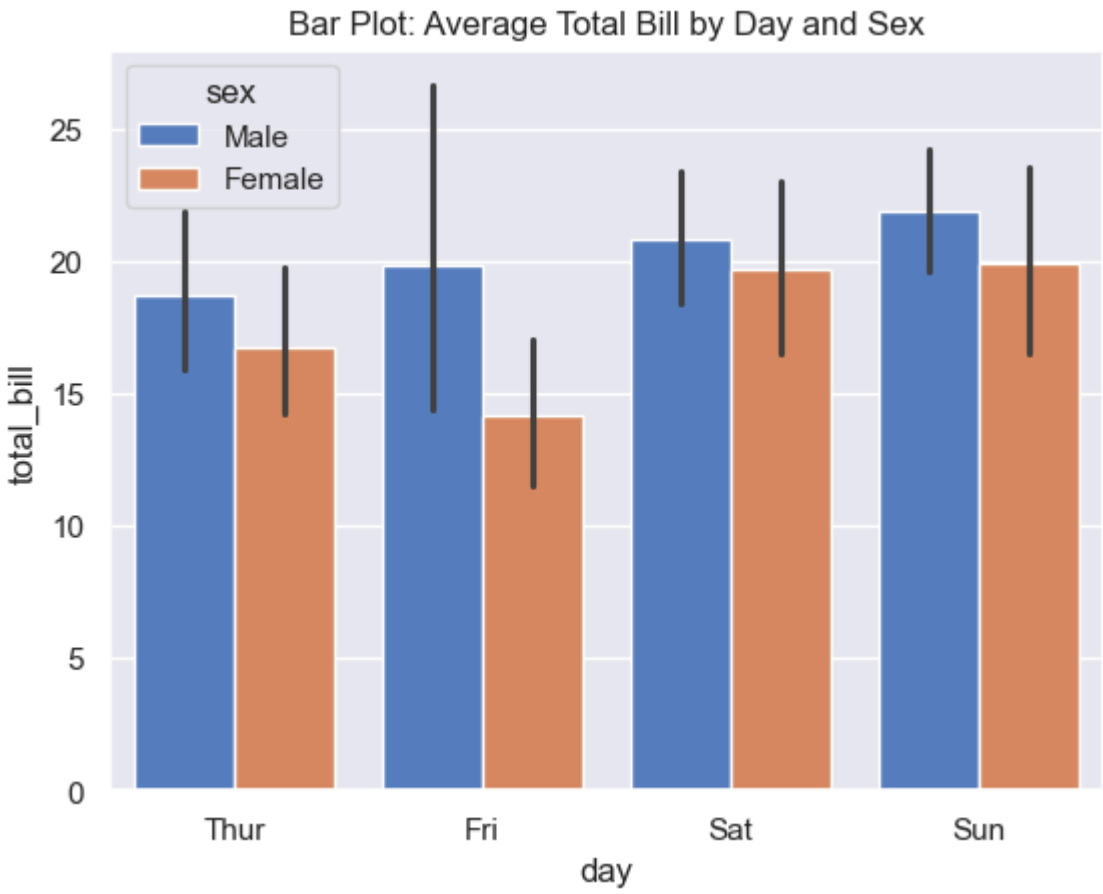
In [11]:
```
#1. Scatter Plot: Total Bill vs Tip, with hue and size

sns.scatterplot(data=tips, x="total_bill", y="tip", hue="time", size="size", pal
plt.title("Scatter Plot: Total Bill vs Tip by Time and Size")
plt.show()
```



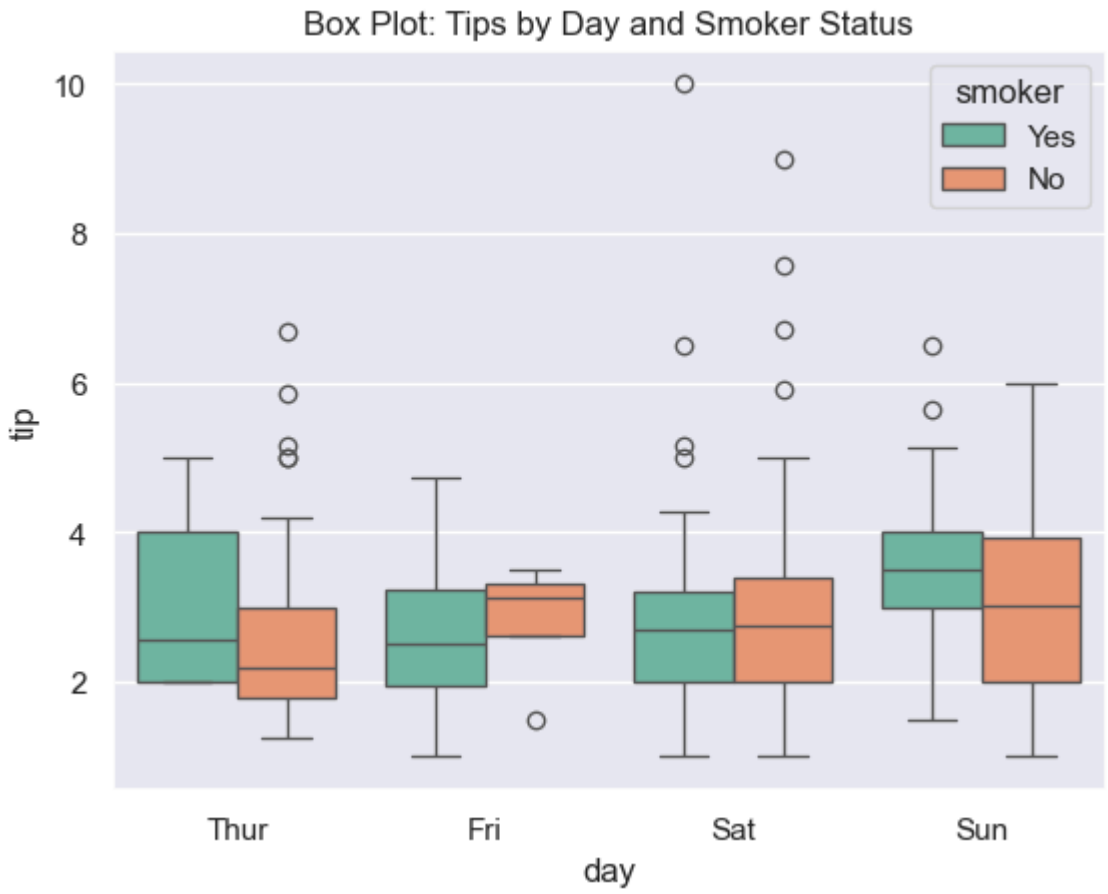
In [12]:
```
# 2. Line Plot: Total Bill by Party Size, split by Sex

sns.lineplot(data=tips, x="size", y="total_bill", hue="sex", ci=None, marker="o"
plt.title("Line Plot: Total Bill by Party Size and Sex")
plt.show()
```



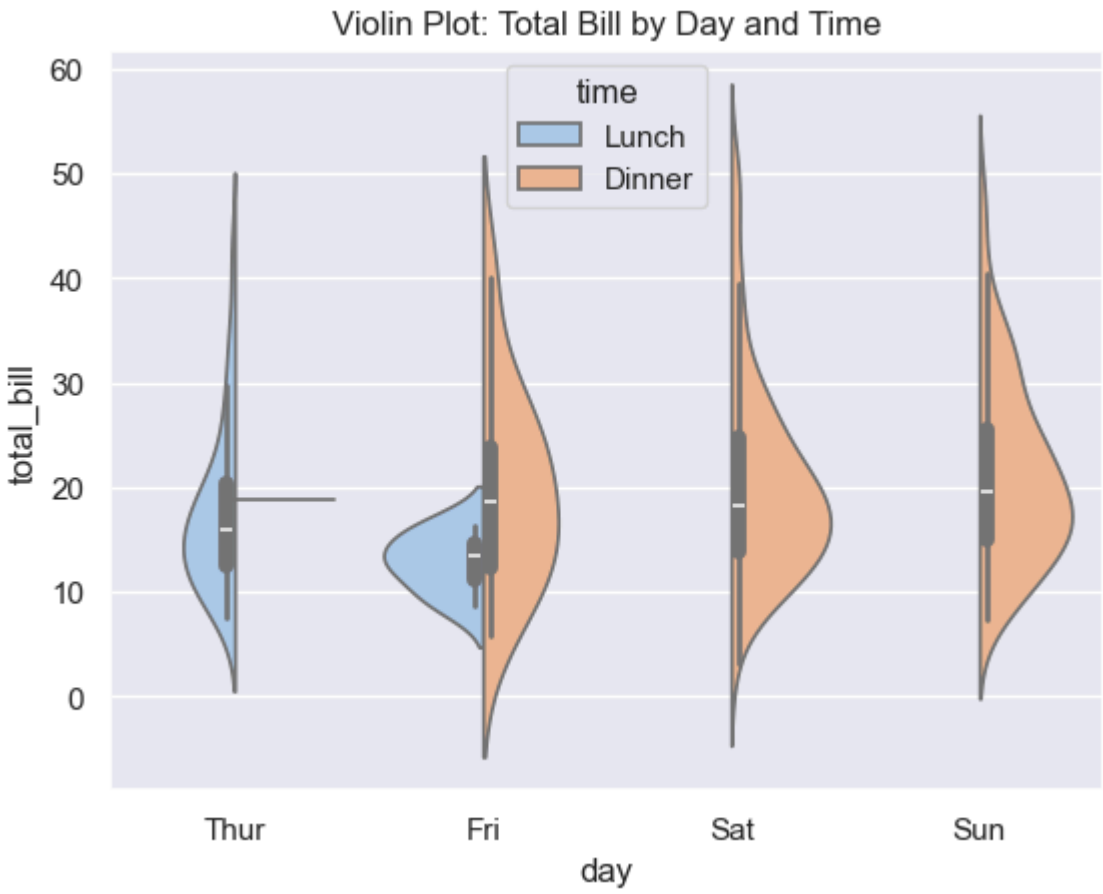
In [13]:
```
# 3. Bar Plot: Average Total Bill by Day, split by Sex

sns.barplot(data=tips, x="day", y="total_bill", hue="sex", palette="muted")
plt.title("Bar Plot: Average Total Bill by Day and Sex")
plt.show()
```



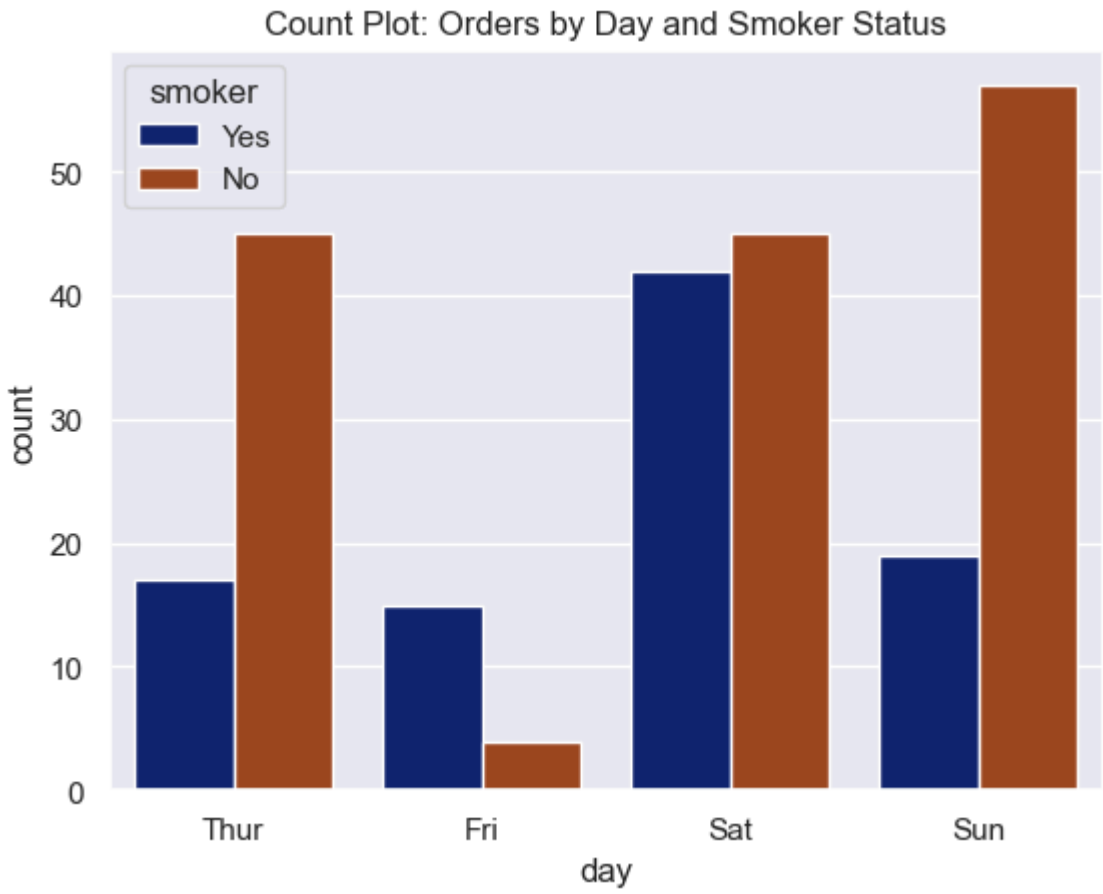
In [14]:
```
# 4. Box Plot: Total Bill by Day, split by Time

sns.boxplot(data=tips, x="day", y="tip", hue="smoker", palette="Set2")
plt.title("Box Plot: Tips by Day and Smoker Status")
plt.show()
```



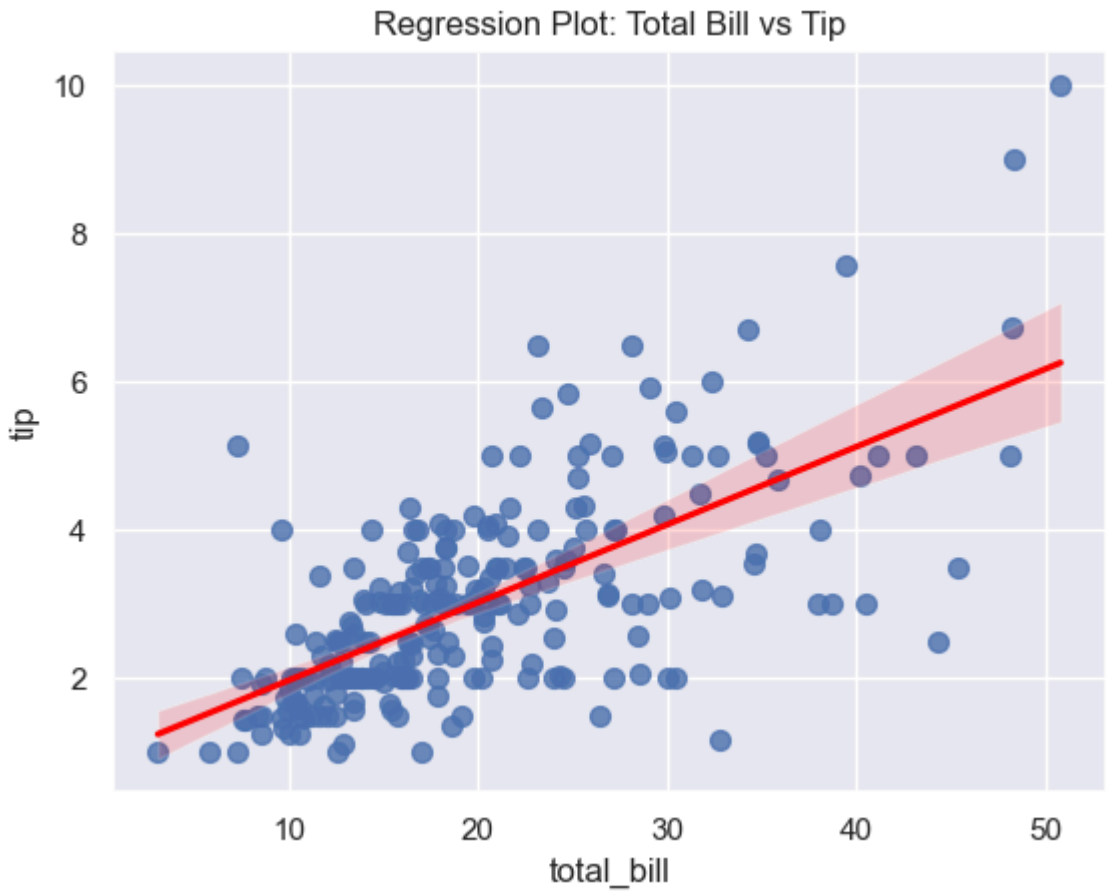
In [15]:
```
## 5. Violin Plot: Total Bill by Day, split by Time

sns.violinplot(data=tips, x="day", y="total_bill", hue="time", split=True, palet
plt.title("Violin Plot: Total Bill by Day and Time")
plt.show()
```



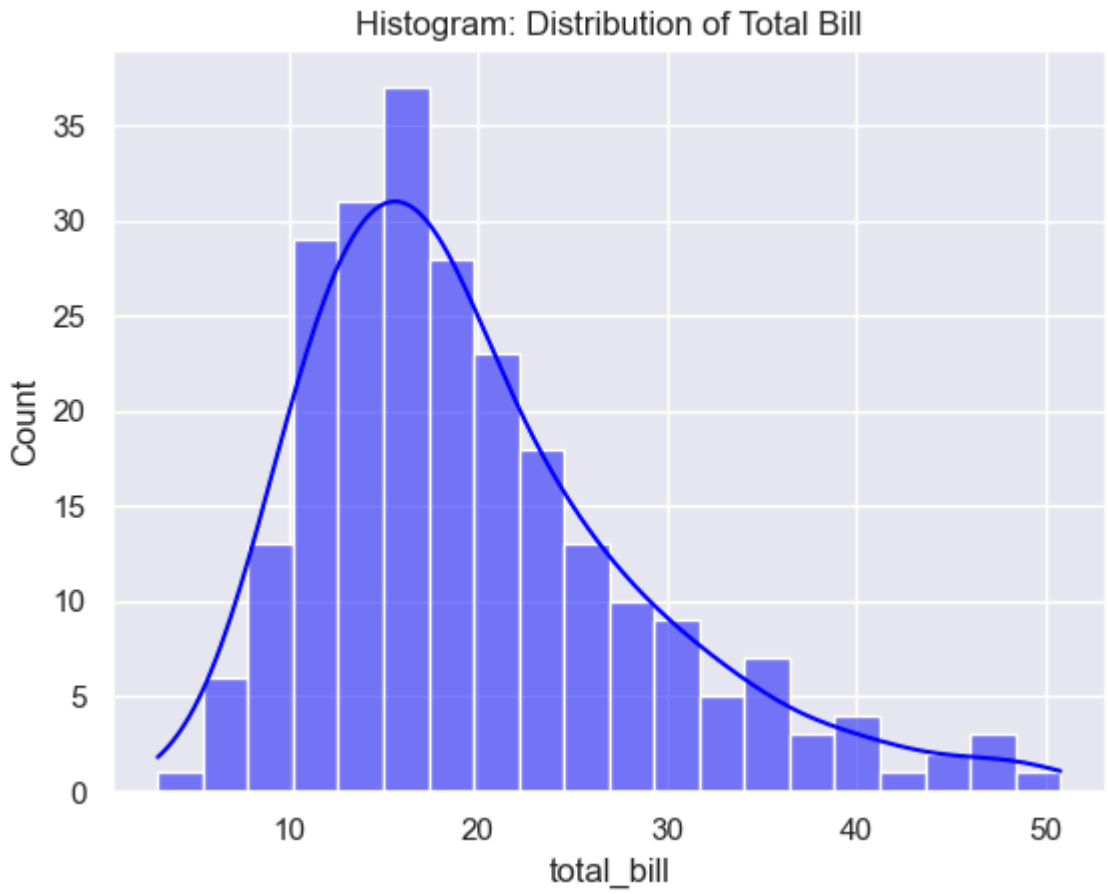
In [16]:
```
# 6. Count Plot: Orders by Day, split by Smoker

sns.countplot(data=tips, x="day", hue="smoker", palette="dark")
plt.title("Count Plot: Orders by Day and Smoker Status")
plt.show()
```



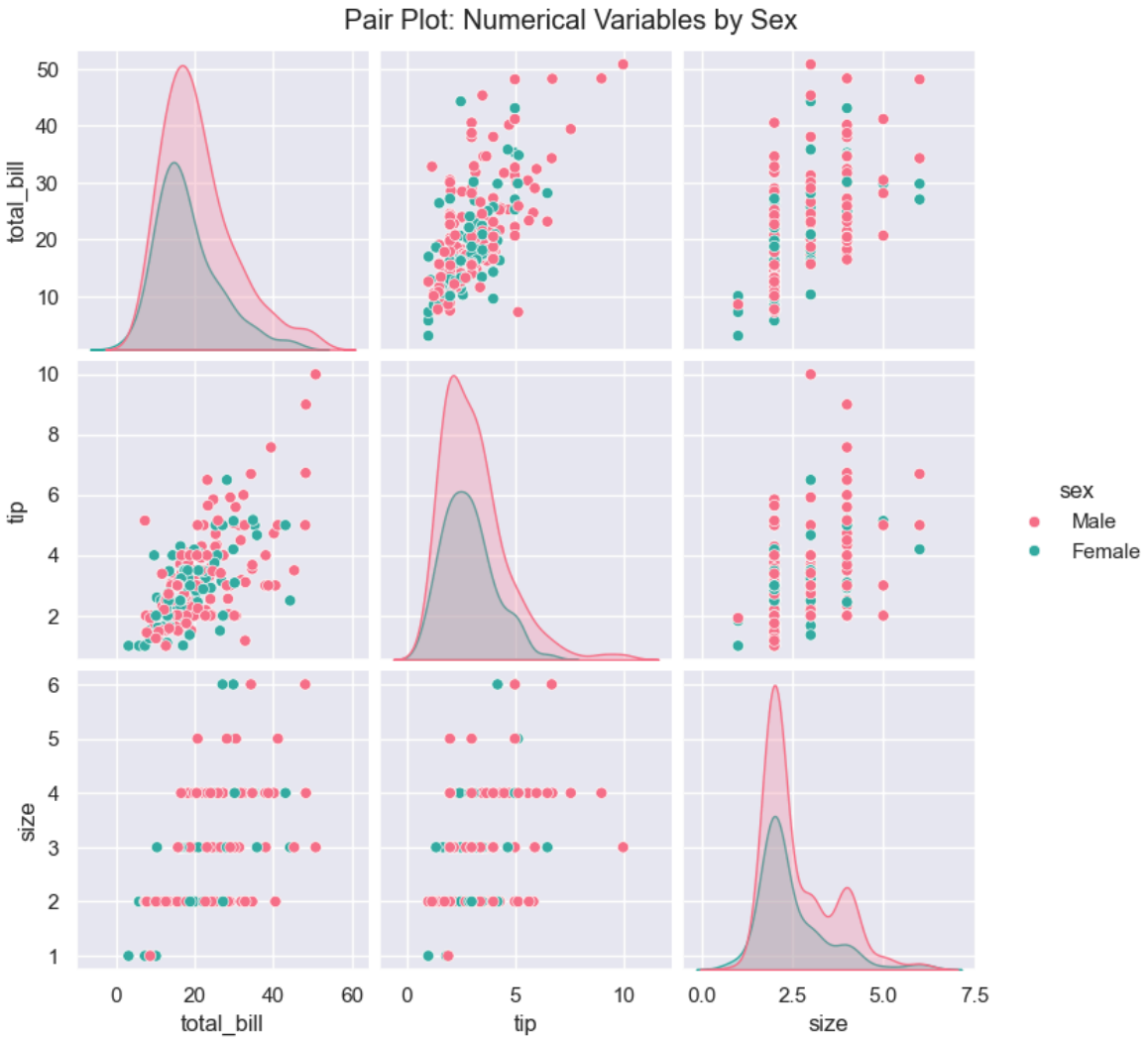
In [17]:
```
# 7. Regression Plot: Total Bill vs Tip with regression line

sns.regplot(data=tips, x="total_bill", y="tip", scatter_kws={"s": 50}, line_kws=
plt.title("Regression Plot: Total Bill vs Tip")
plt.show()
```



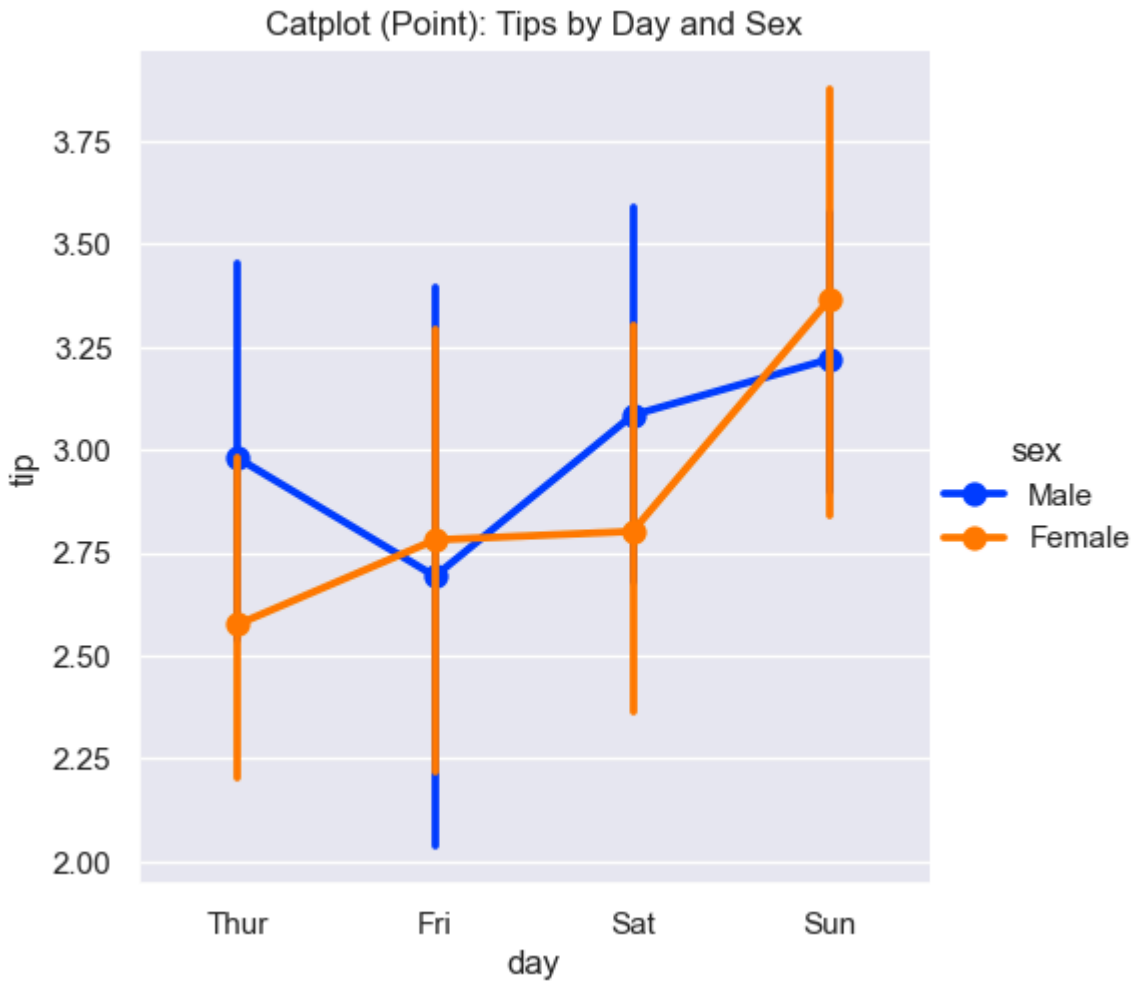
In [18]:
```
#8. Histogram (Distribution Plot): Total Bill with KDE

sns.histplot(data=tips, x="total_bill", kde=True, bins=20, color="blue")
plt.title("Histogram: Distribution of Total Bill")
plt.show()
```



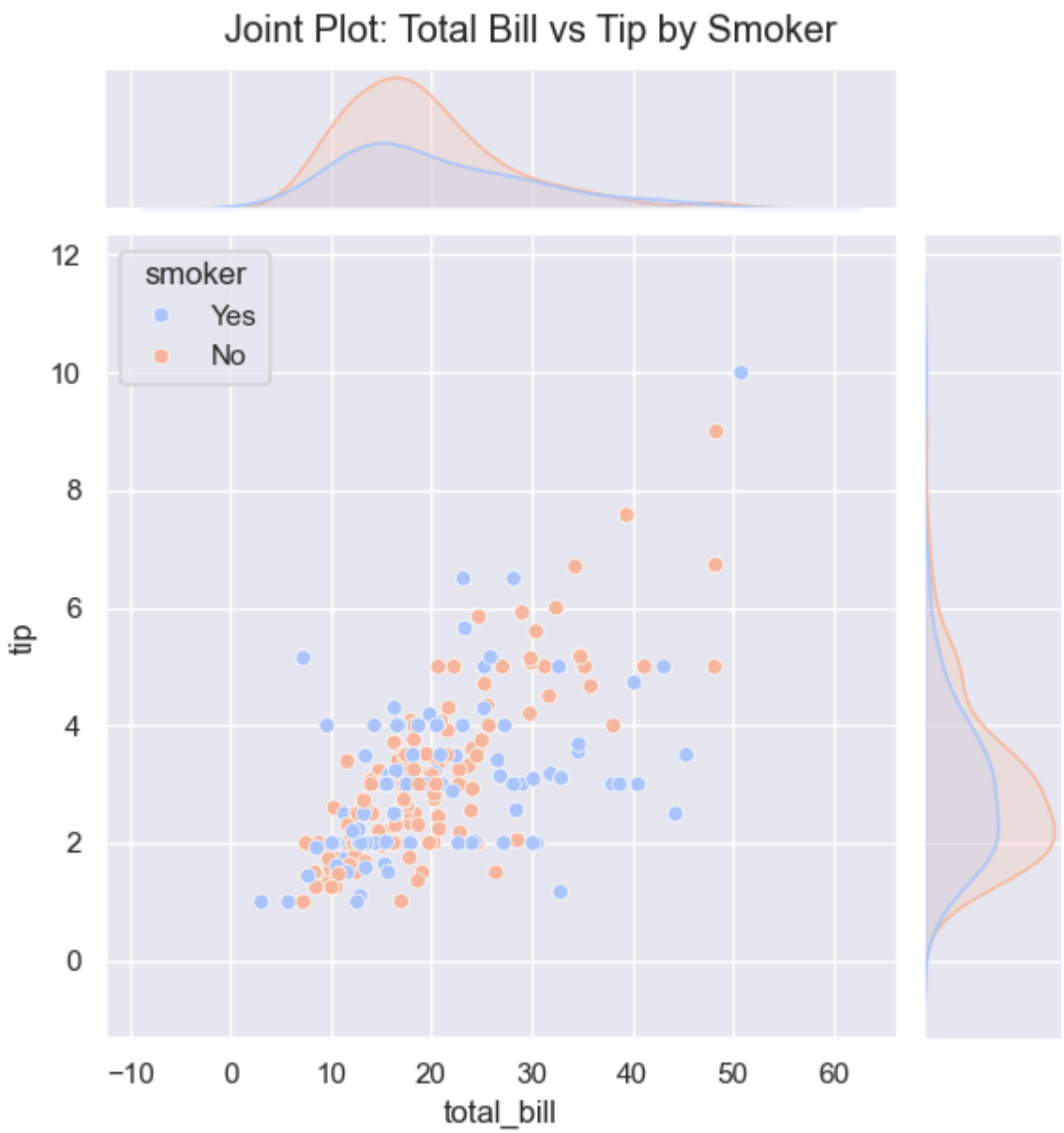
In [19]:
```
#9. Pair Plot: Relationships between numerical variables

sns.pairplot(tips, hue="sex", vars=["total_bill", "tip", "size"], palette="husl"
plt.suptitle("Pair Plot: Numerical Variables by Sex", y=1.02)
plt.show()
```



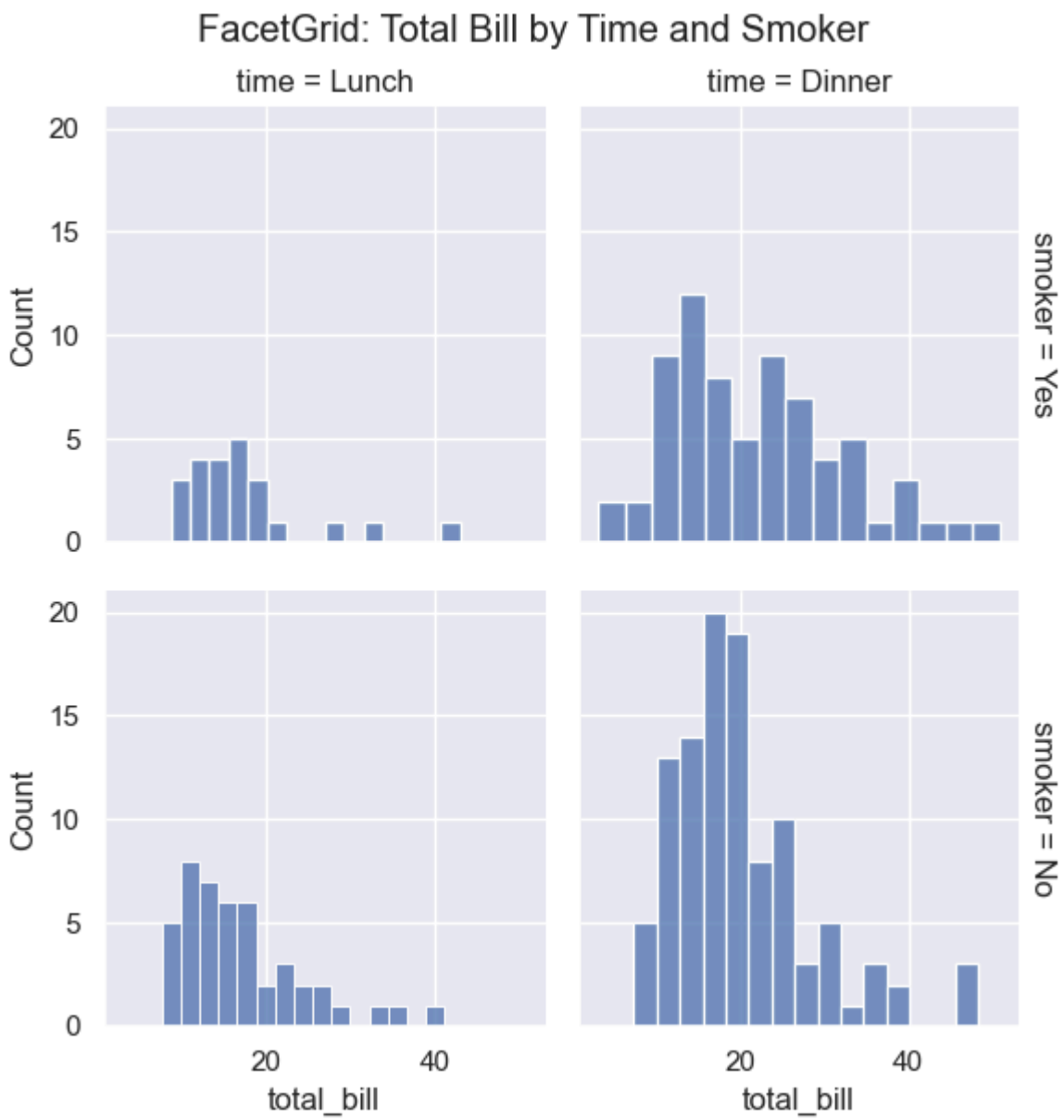
In [20]:
```
# 10. Catplot (Point Plot): Tip by Day and Sex

sns.catplot(data=tips, x="day", y="tip", hue="sex", kind="point", palette="brigh
plt.title("Catplot (Point): Tips by Day and Sex")
plt.show()
```



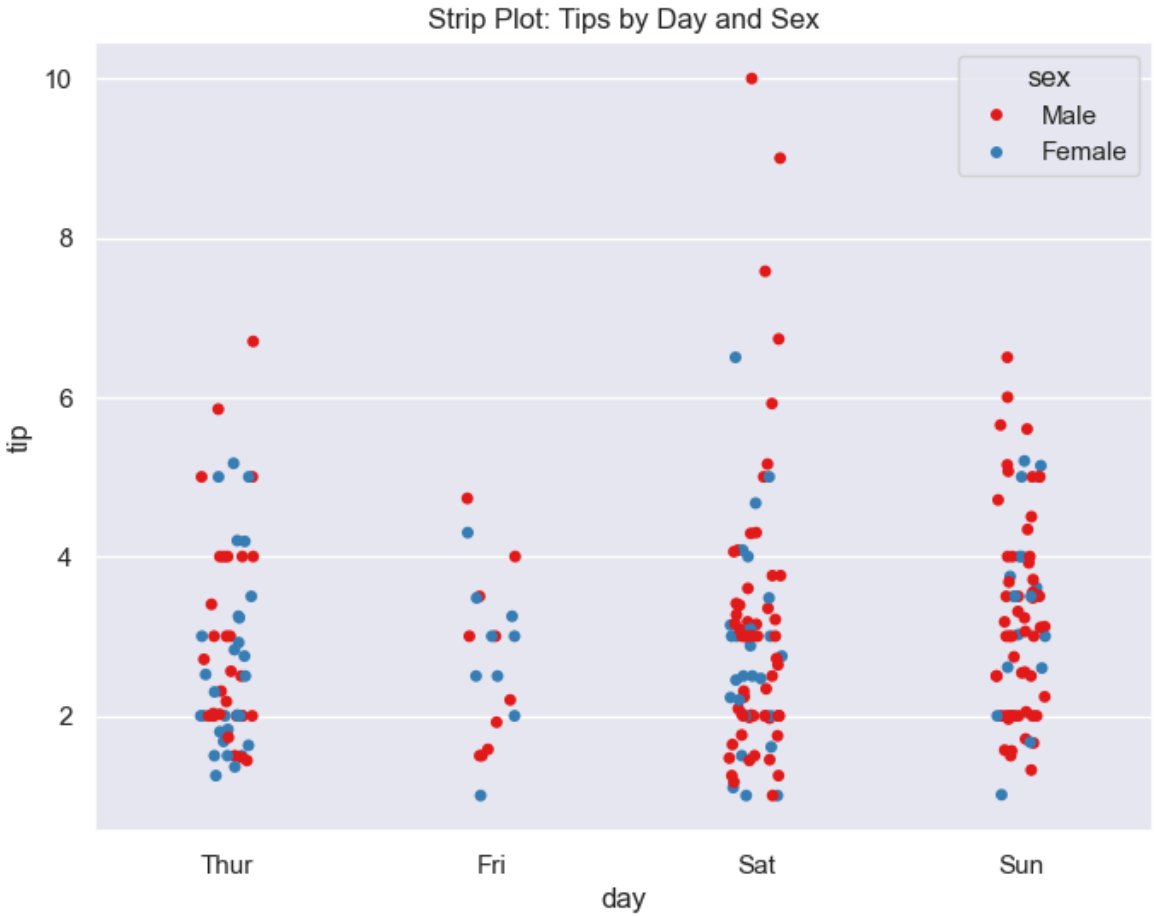
In [21]:
```
# 11. Joint Plot: Total Bill vs Tip with marginal distributions
sns.jointplot(data=tips, x="total_bill", y="tip", kind="scatter", hue="smoker",
plt.suptitle("Joint Plot: Total Bill vs Tip by Smoker", y=1.02)
plt.show()
```



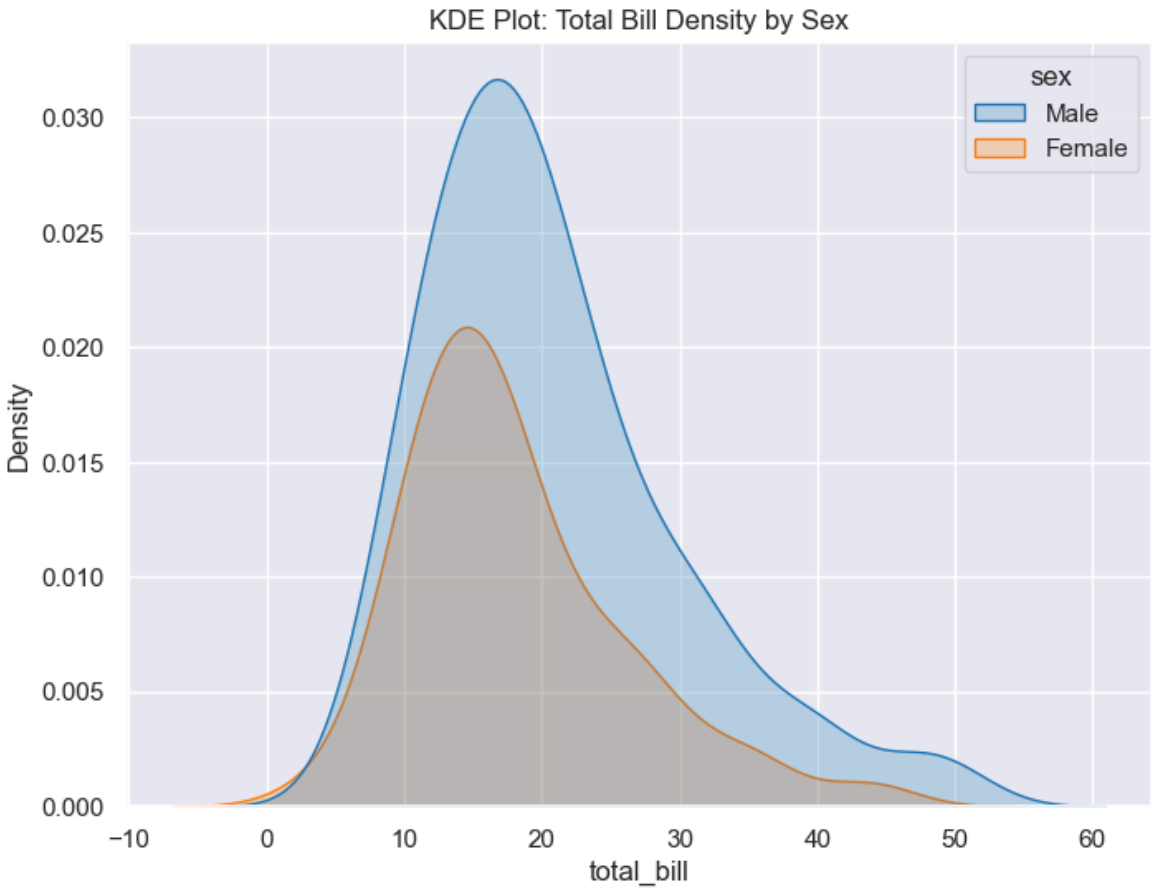
In [22]:
```
# 12. FacetGrid: Total Bill by Day, faceted by Time and Smoker
g = sns.FacetGrid(tips, col="time", row="smoker", margin_titles=True)
g.map(sns.histplot, "total_bill", bins=15)
g.fig.suptitle("FacetGrid: Total Bill by Time and Smoker", y=1.02)
plt.show()
```



In [23]:
```
# 13. Strip Plot: Tips by Day, colored by Sex
plt.figure(figsize=(8, 6))
sns.stripplot(data=tips, x="day", y="tip", hue="sex", palette="Set1", jitter=Tru
plt.title("Strip Plot: Tips by Day and Sex")
plt.show()
```



In [24]:
```
# 14. KDE Plot: Total Bill density by Sex
plt.figure(figsize=(8, 6))
sns.kdeplot(data=tips, x="total_bill", hue="sex", fill=True, palette="tab10")
plt.title("KDE Plot: Total Bill Density by Sex")
plt.show()
```



Explanation of Plots:

- Scatter Plot: Shows the relationship between total_bill and tip, with time and size as additional dimensions.
- Line Plot: Trends of total_bill across size, split by sex.
- Bar Plot: Average total_bill by day, split by sex.
- Box Plot: Distribution of tip by day, split by smoker.
- Violin Plot: Distribution of total_bill by day, split by time.
- Count Plot: Counts of orders by day, split by smoker.
- Regression Plot: Linear fit between total_bill and tip.
- Histogram: Distribution of total_bill with a KDE curve.
- Pair Plot: Pairwise relationships between total_bill, tip, and size, colored by sex.
- Catplot (Point): Point estimates of tip by day and sex.
- Joint Plot: total_bill vs tip with marginal histograms, colored by smoker.
- FacetGrid: total_bill histograms faceted by time and smoker.
- Strip Plot: Individual tip points by day, colored by sex.
- KDE Plot: Density of total_bill split by sex.

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