In [1]:
```
import pandas as pd
import numpy as np
import plotly.express as px
import plotly.graph_objects as go
```

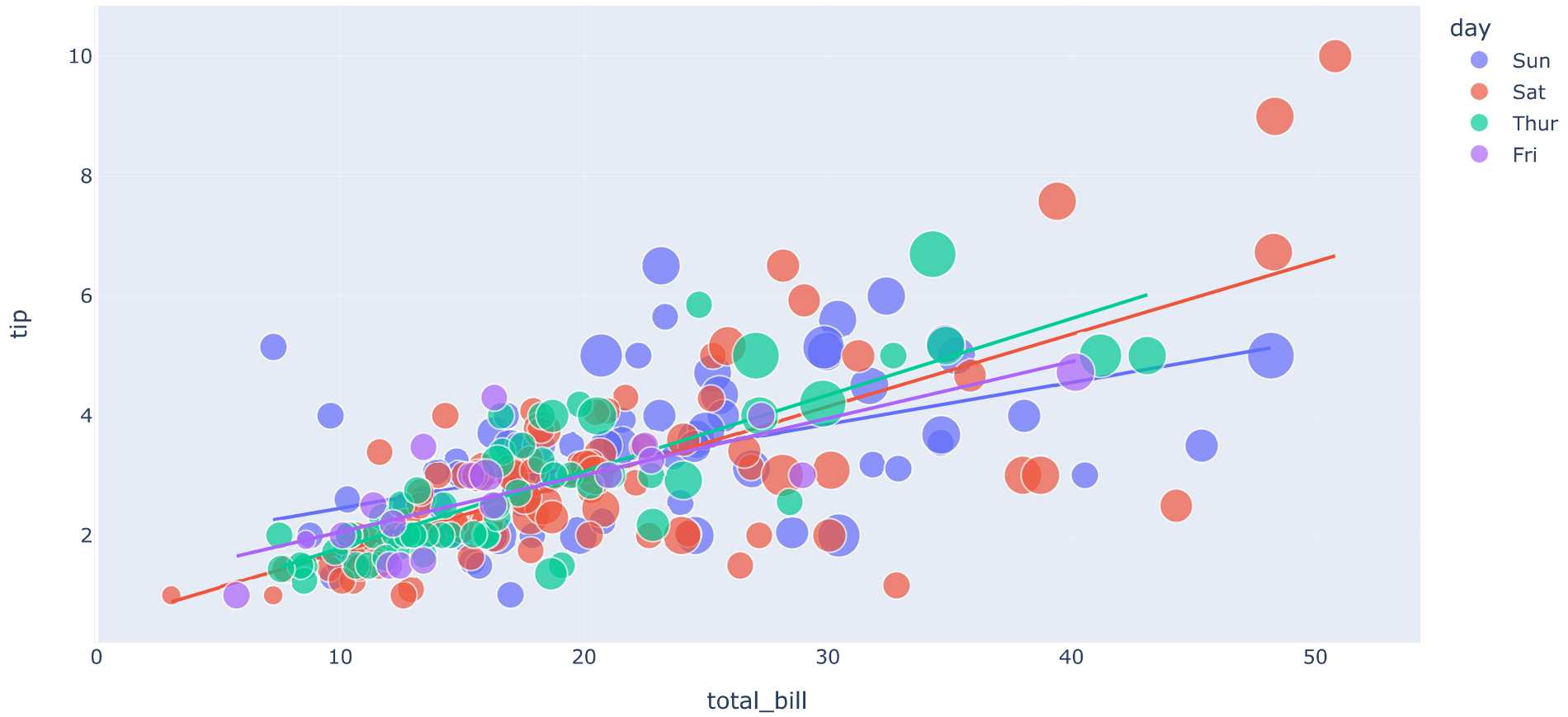
In [2]:
```
data = pd.read_csv("tips.csv")
```

In [3]:
```
data.head()
```

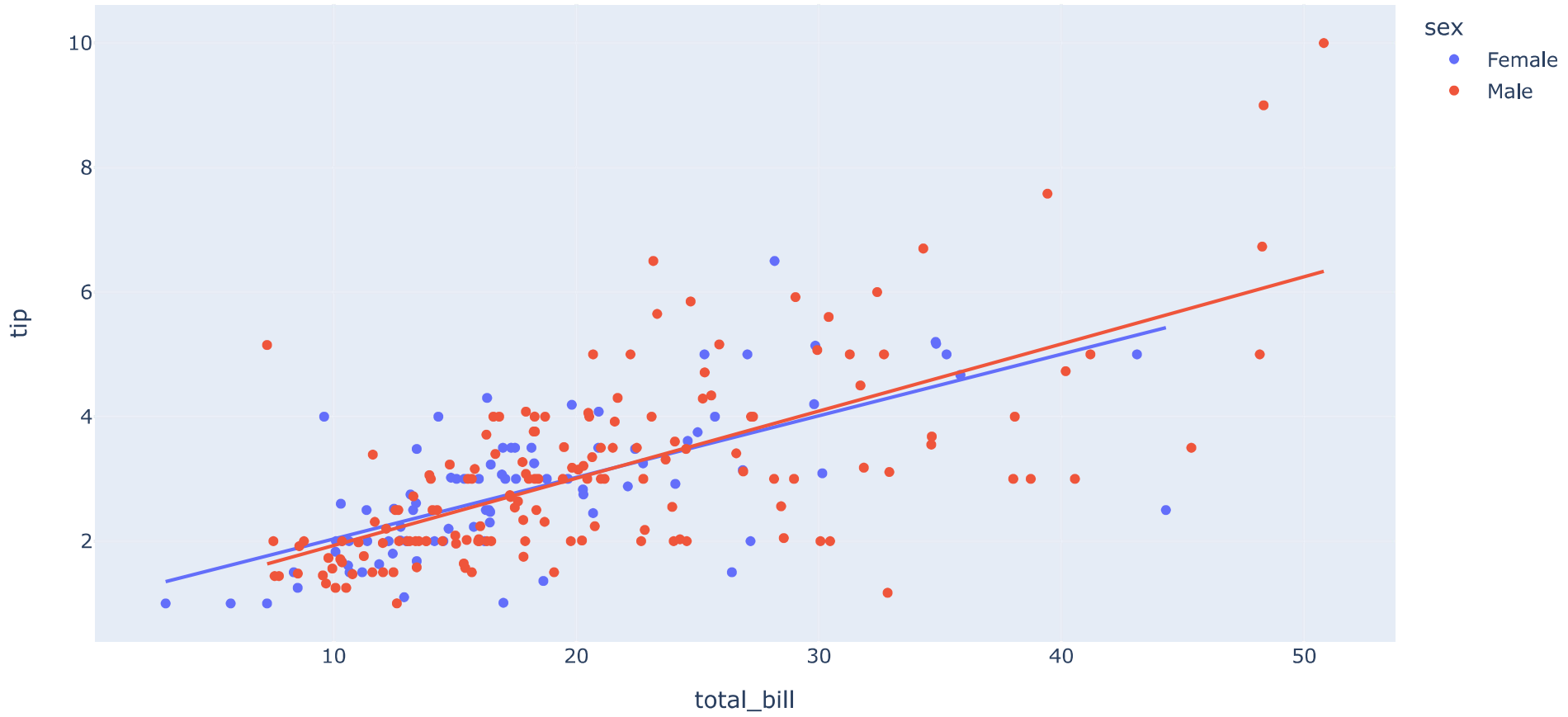
Out[3]:

	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

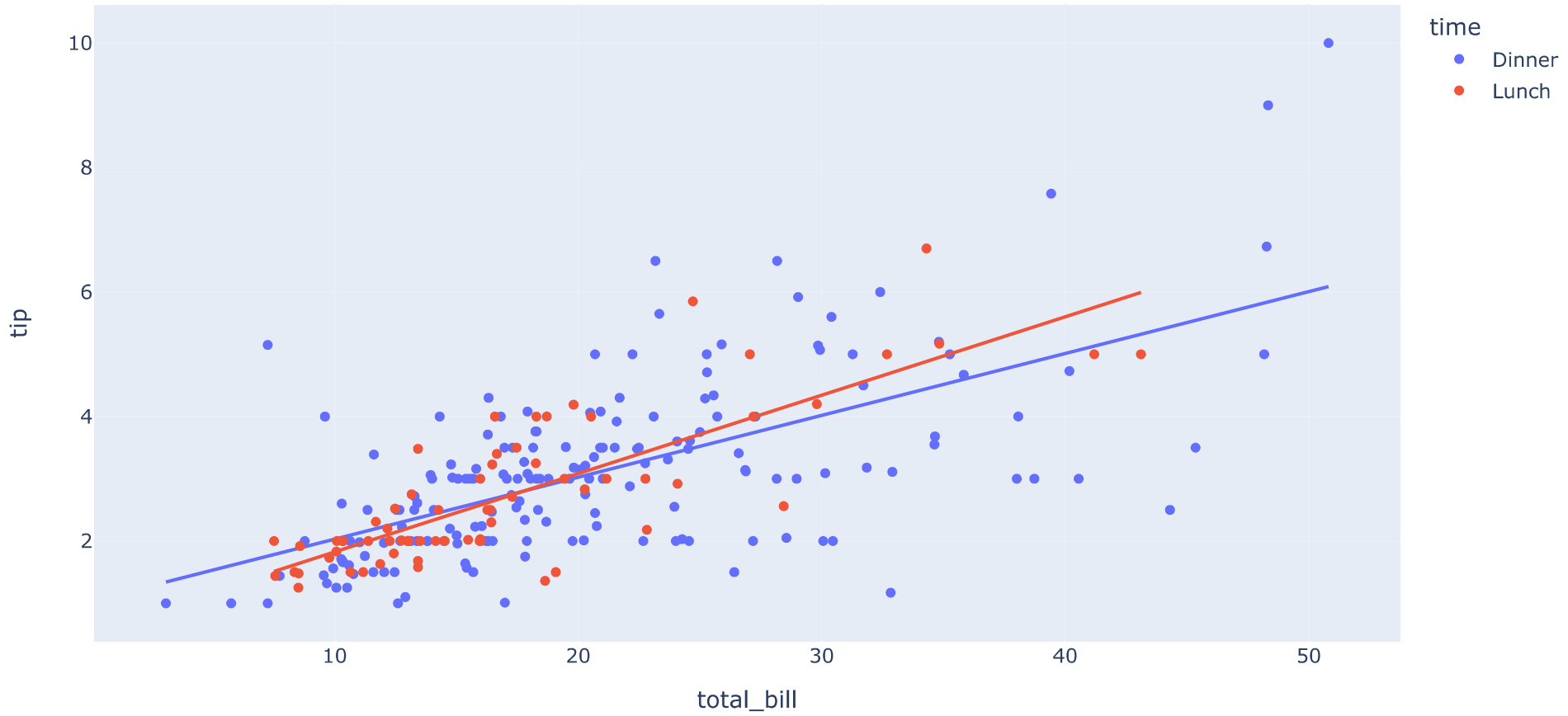
In [4]:
```
figure = px.scatter(data_frame = data, x="total_bill", y="tip", size="size", color="day", trendline="ols")
figure.show()
```



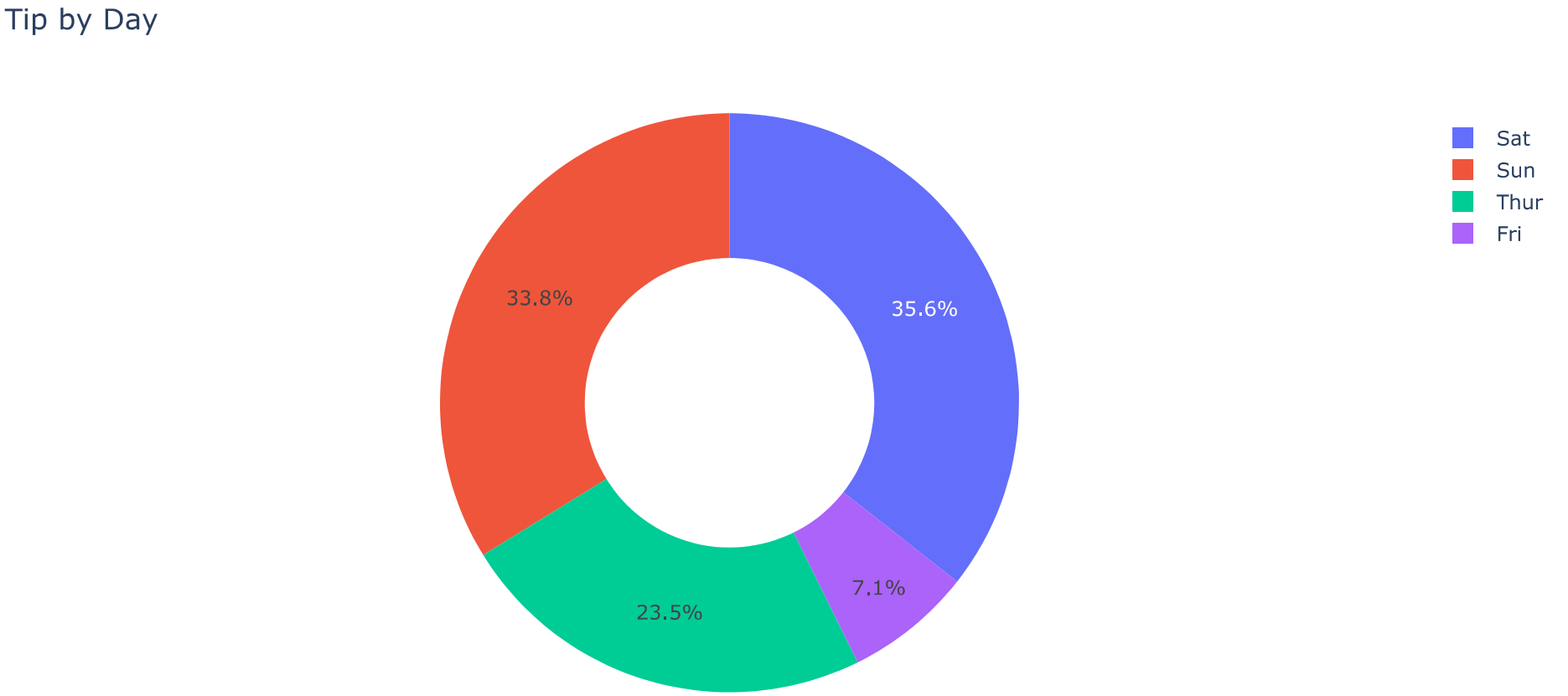
In [5]:
```
figure = px.scatter(data_frame = data, x="total_bill", y="tip", color="sex", trendline="ols")
figure.show()
```



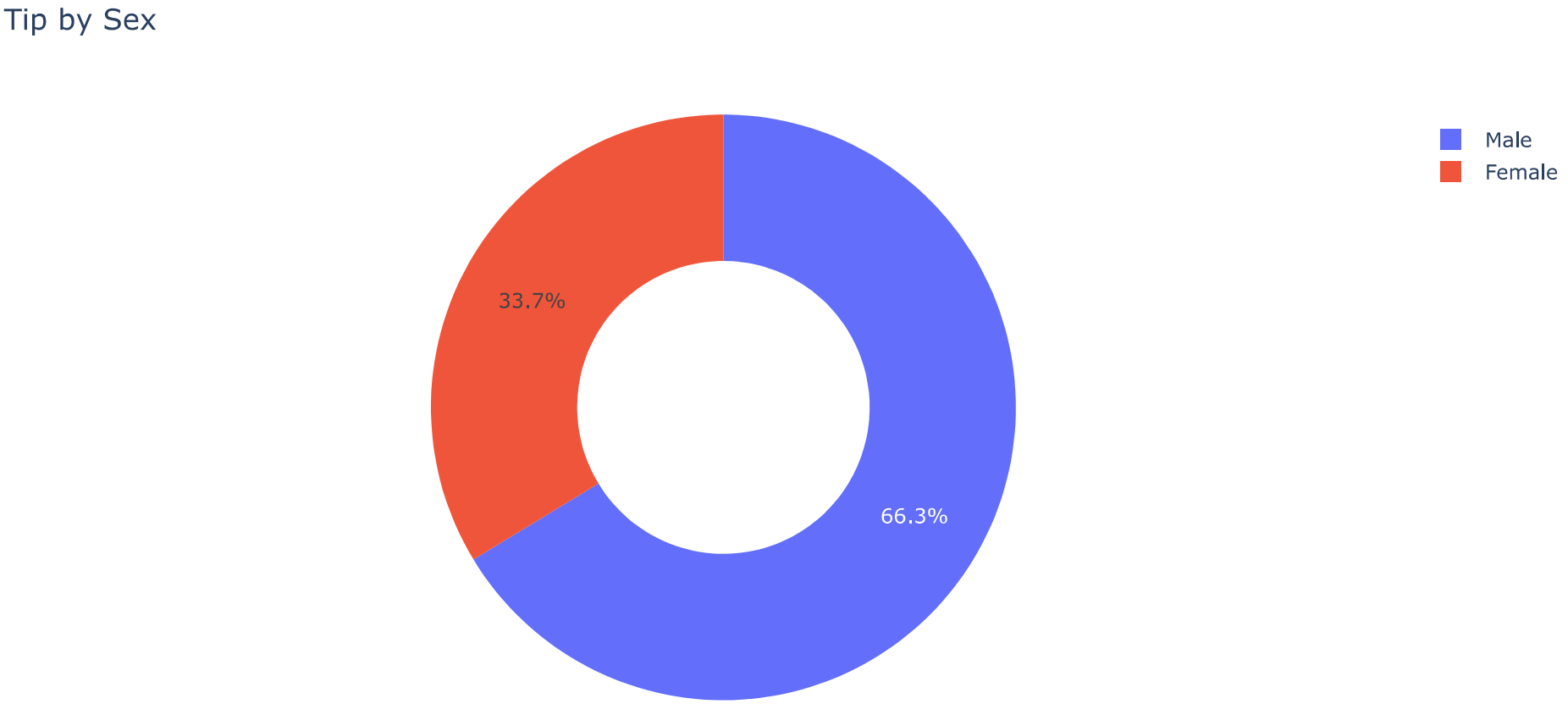
In [6]:
```
figure = px.scatter(data_frame = data, x="total_bill", y="tip", color="time", trendline="ols")
figure.show()
```



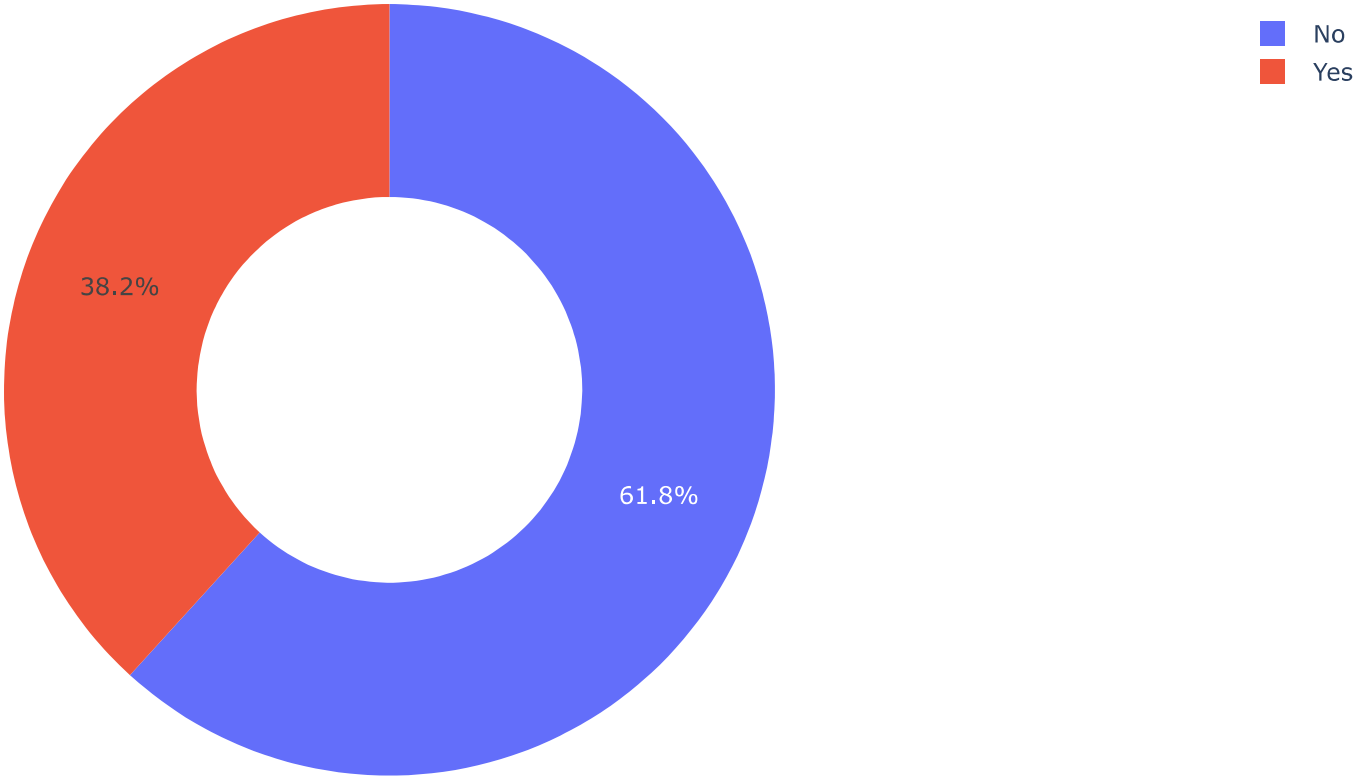
In [7]:
```
figure = px.pie(data, values='tip', names='day', hole = 0.5, title='Tip by Day')
figure.show()
```



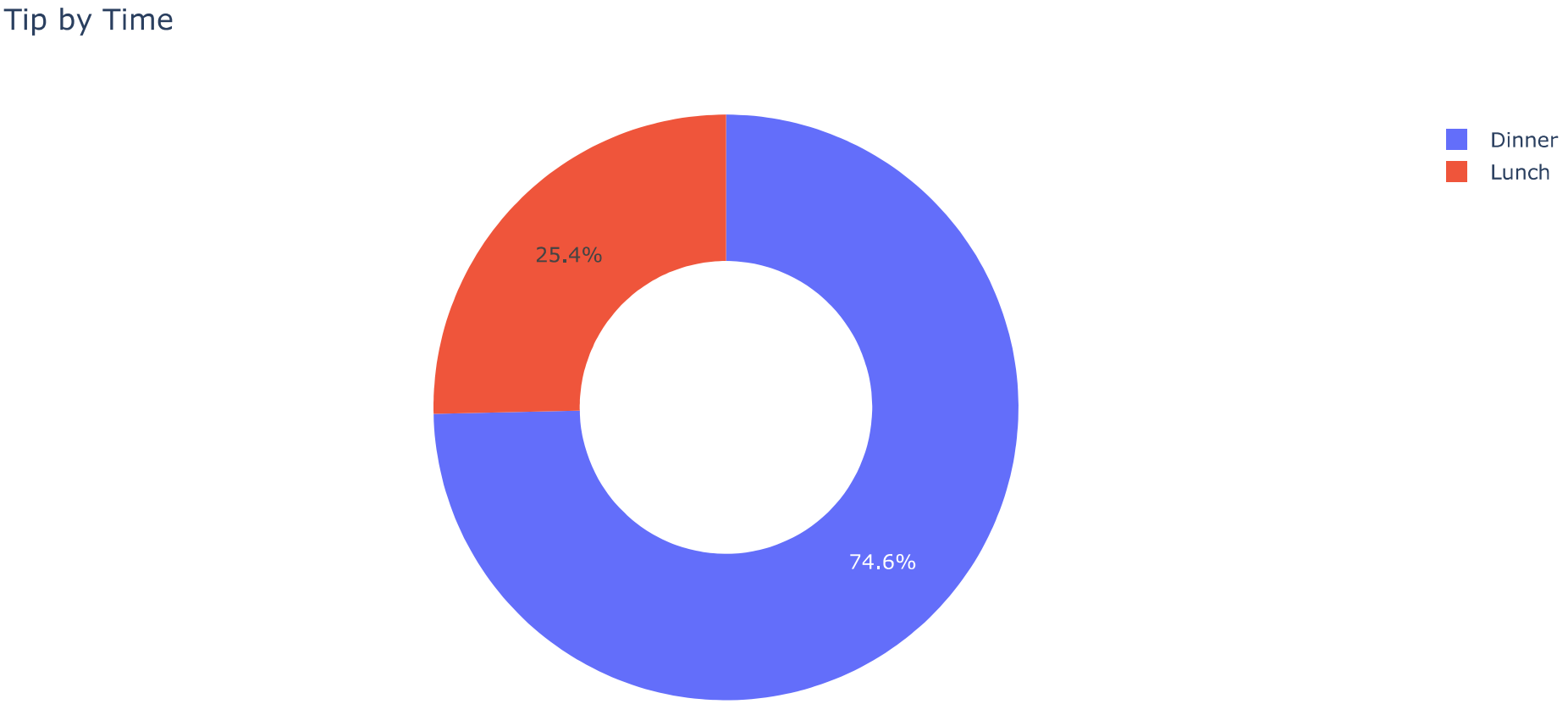
In [8]:
```
figure = px.pie(data, values='tip', names='sex', hole = 0.5, title='Tip by Sex')
figure.show()
```



In [9]:
```
figure = px.pie(data, values='tip', names='smoker', hole = 0.5)
figure.show()
```



In [10]:
```
figure = px.pie(data, values='tip', names='time', hole = 0.5, title='Tip by Time')
figure.show()
```



In [11]:
```
data["sex"] = data["sex"].map({"Female": 0, "Male": 1})
data["smoker"] = data["smoker"].map({"No": 0, "Yes": 1})
data["day"] = data["day"].map({"Thur": 0, "Fri": 1, "Sat": 2, "Sun": 3})
data["time"] = data["time"].map({"Lunch": 0, "Dinner": 1})
data.head()
```

Out[11]:

	total_bill	tip	sex	smoker	day	time	size
0	16.99	1.01	0	0	3	1	2
1	10.34	1.66	1	0	3	1	3
2	21.01	3.50	1	0	3	1	3
3	23.68	3.31	1	0	3	1	2
4	24.59	3.61	0	0	3	1	4

In [12]:
```
x = np.array(data[["total_bill", "sex", "smoker", "day", "time", "size"]])
y = np.array(data["tip"])

from sklearn.model_selection import train_test_split
x_train, x_test, y_train, y_test = train_test_split(x, y, test_size=0.2, random_state=42)
```

In [13]:
```
from sklearn.linear_model import LinearRegression
model = LinearRegression()
model.fit(x_train, y_train)
```

Out[13]:

▾ LinearRegression

LinearRegression()

In [14]:
```
features = np.array([[16.99, 1, 1, 3, 1, 2]])
model.predict(features)
```

Out[14]:
```
array([2.57451139])
```