AICP Internship Task

Tipping waiters for serving food depends on many factors like the type of restaurant, how many people you are with, how much amount you pay as your bill, etc. Waiter Tips analysis is one of the popular data science case studies where we need to predict the tips given to a waiter for serving the food in a restaurant.

Find the Dataset "**tips.csv**".

The food server of a restaurant recorded data about the tips given to the waiters for serving the food. The data recorded by the food server is as follows:

1. **total_bill**: Total bill in dollars including taxes
2. **tip**: Tip given to waiters in dollars
3. **sex**: gender of the person paying the bill
4. **smoker**: whether the person smoked or not
5. **day**: day of the week
6. **time**: lunch or dinner
7. **size**: number of people in a table

You can use following libraries: **Numpy, Pandas, Plotlay, sklearn**

Q.1: Import data and check null values, check column info and the descriptive statistics of the data.

Q.2: Have a look at the tips given to the waiters according to:
- the total bill paid
- number of people at a table
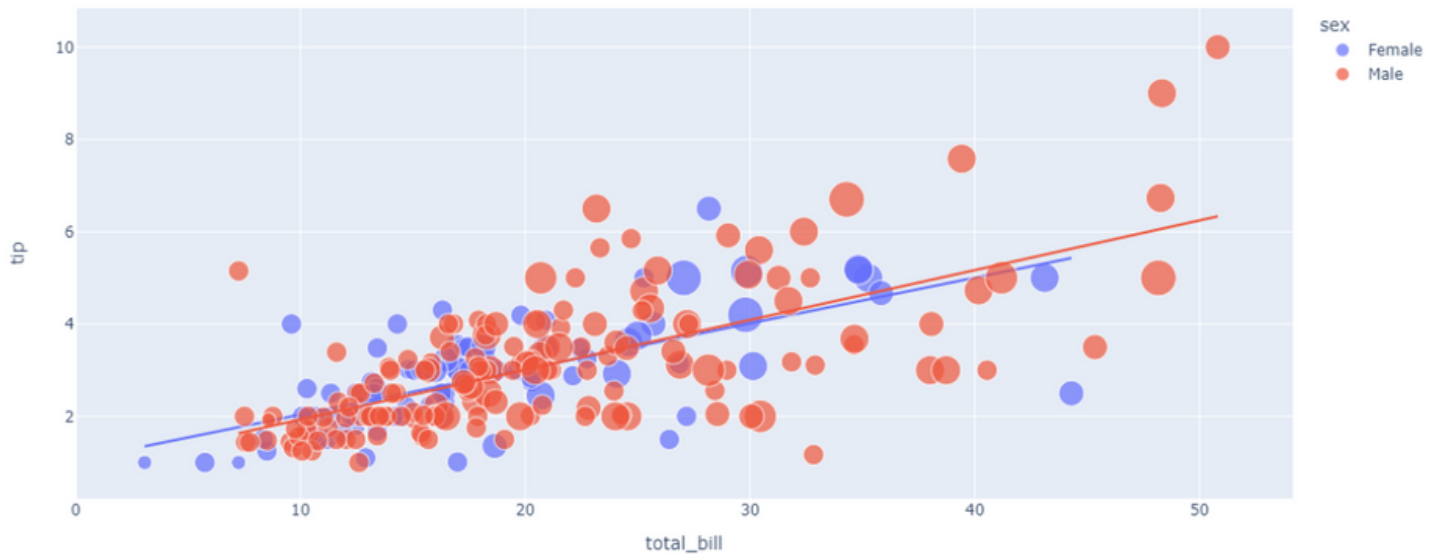- and the day of the week
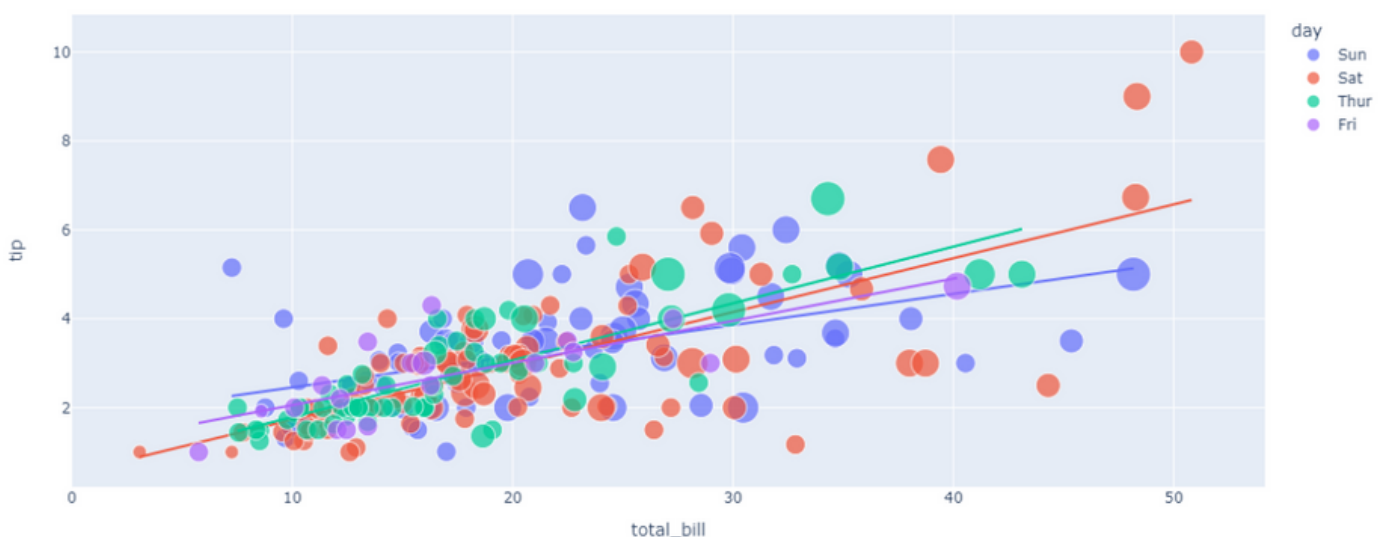
Q.3: Have a look at the tips given to the waiters according to:
- the total bill paid
- the number of people at a table
- and the gender of the person paying the bill

Q.4: Have a look at the tips given to the waiters according to:
- the total bill paid
- the number of people at a table
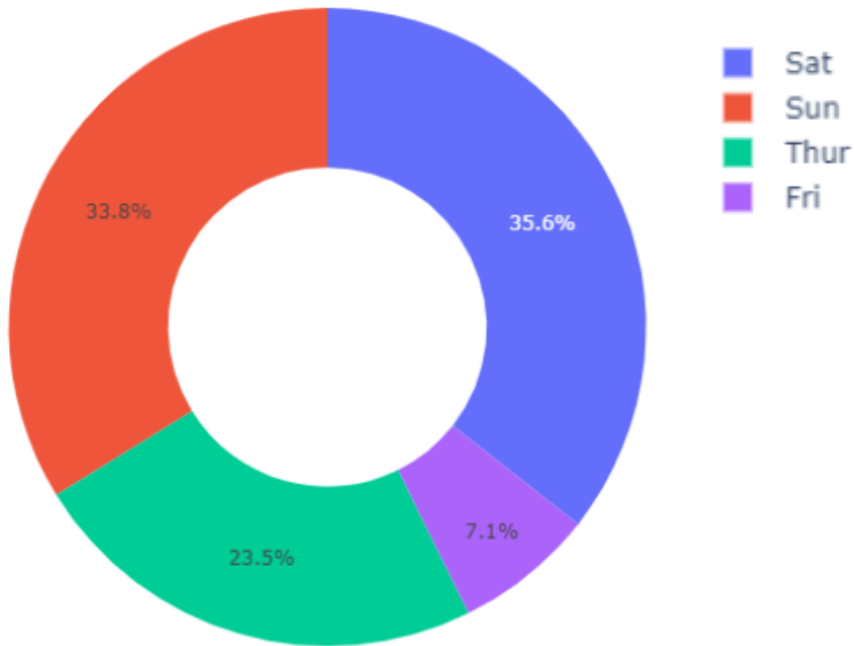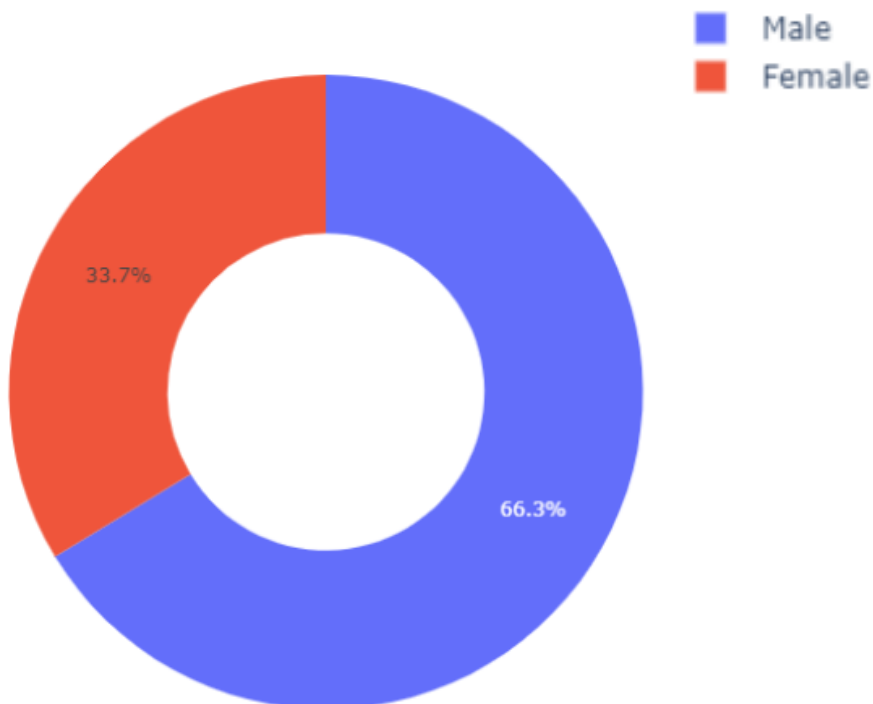- and the time of the meal

Q.5: Now check the tips given to the waiters according to the days to find out which day the most tips are given to the waiters:

Legend:
- Sat
- Sun
- Thur
- Fri

Pie chart values:
- 35.6%
- 33.8%
- 23.5%
- 7.1%

Q.6: look at the number of tips given to waiters by gender of the person paying the bill to see who tips waiters the most:

Legend:
- Male
- Female
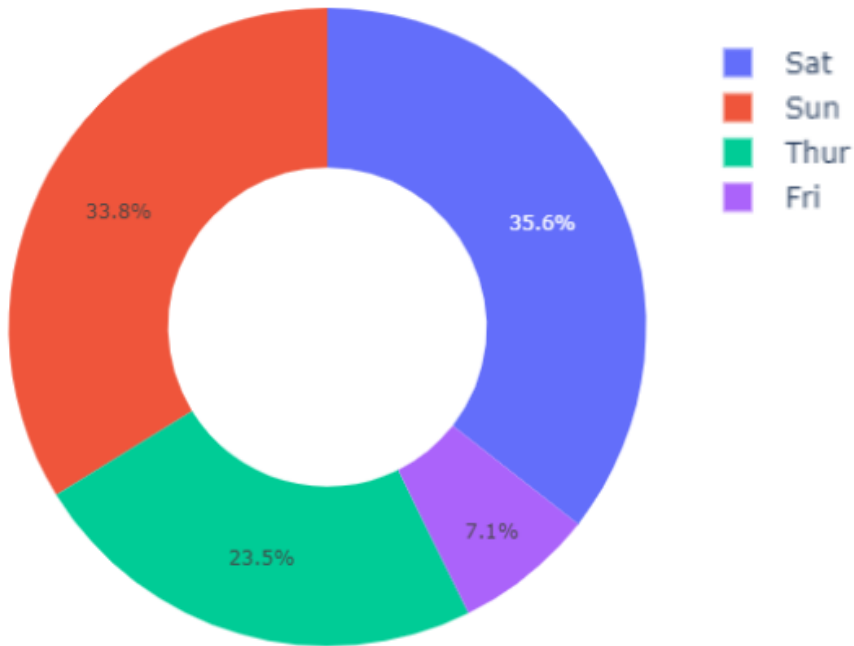
Pie chart values:
- 66.3%
- 33.7%

Q.7: Now check the tips given to the waiters according to the days to find out which day the most tips are given to the waiters:
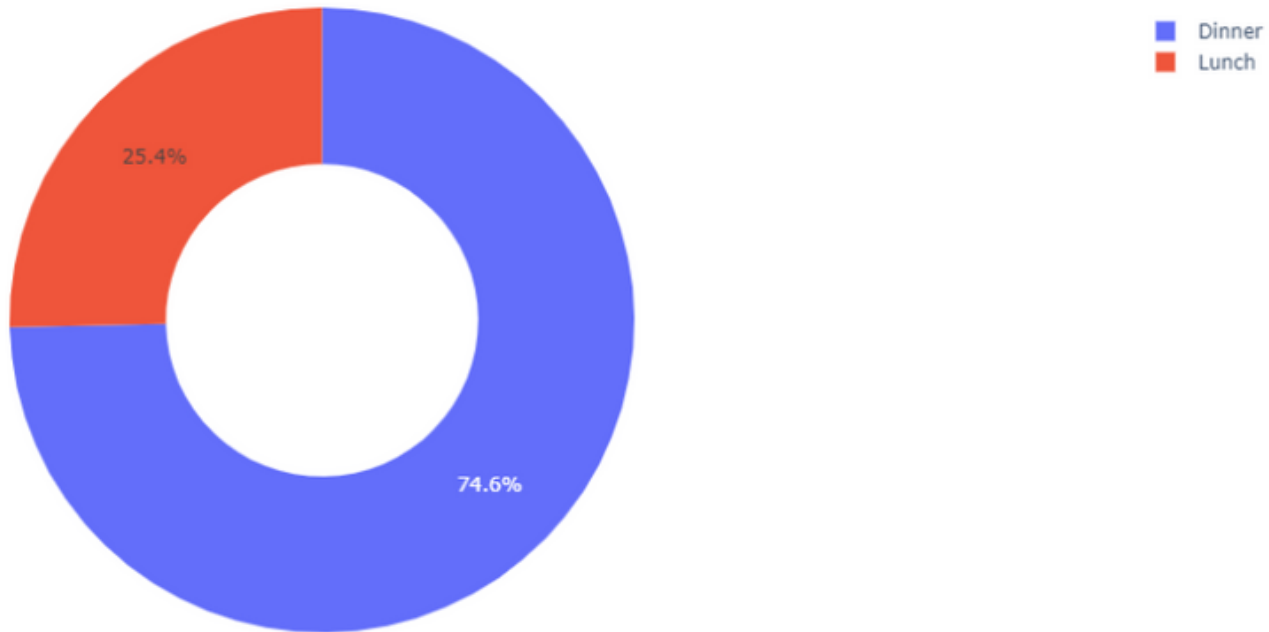

Legend:
- Sat
- Sun
- Thur
- Fri

35.6% — Sat
33.8% — Sun
23.5% — Thur
7.1% — Fri

Q.8: let's see if a smoker tips more or a non-smoker:

Legend:
- No
- Yes

61.8% — No
38.2% — Yes
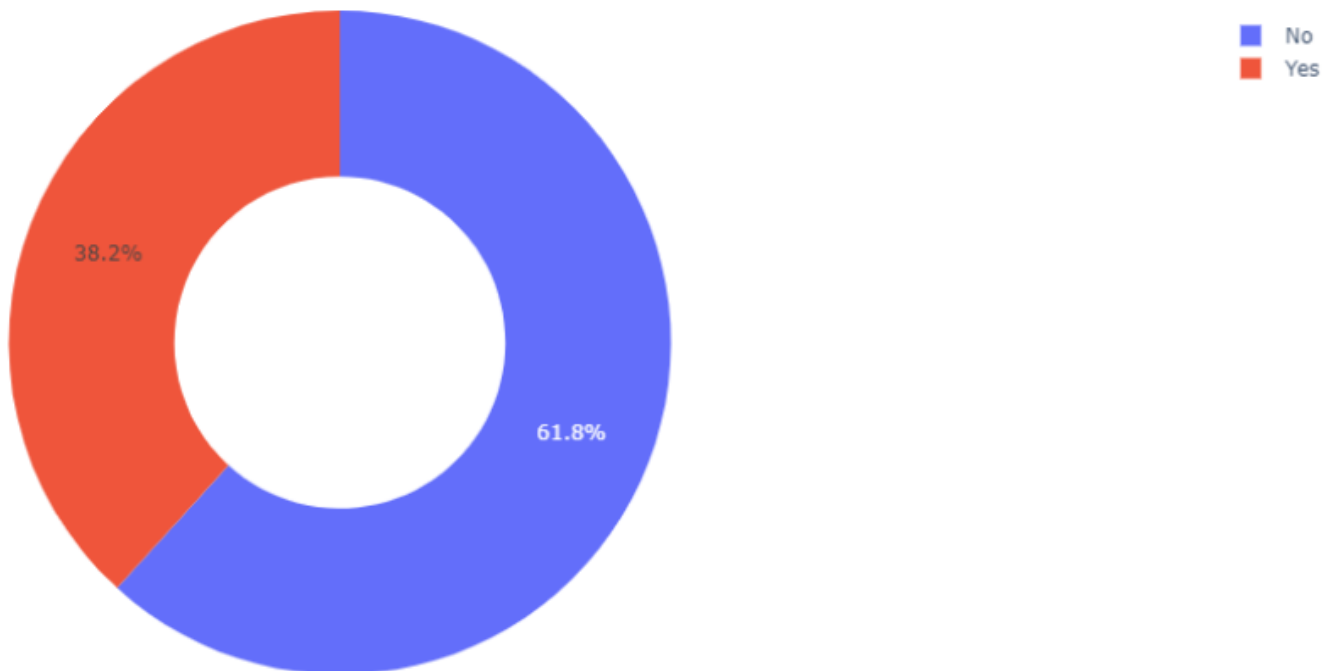
Q.9: Now let's see if most tips are given during lunch or dinner:

■ Dinner
■ Lunch

25.4%

74.6%

Q.10: Before training a waiter tips prediction model, do some data transformation by transforming the categorical values into numerical values:

	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

<--Before

After-->

	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

Q.11: Now split the data into training and test sets. Then train a machine learning model (Linear Regression) for the task of waiter tips prediction.

Q.12: Check your model prediction . It should show following output by this input

Input

{total_bill:24.50, "sex":1, "smoker":0, "day":0, "time":1, "size":4|

Output: array([3.73742609])

Summary:

So this is how you can predict waiter tips with machine learning using Python. Waiter Tips analysis is one of the popular data science case studies where we need to predict the tips given to a waiter for serving the food in a restaurant.