jj5xmbtig

December 15, 2024

[3]:
```
#Python Project On UBER DATA
import seaborn as sns
import pandas as pd
import numpy as np
from matplotlib import pyplot as plt
```

[4]:
```
uber=pd.read_csv("UBERDataset.csv")
```

[5]:
```
uber.head(10)
```

[5]:
```
           START_DATE          END_DATE  CATEGORY            START  \
0  01-01-2016 21:11  01-01-2016 21:17  Business      Fort Pierce
1  01-02-2016 01:25  01-02-2016 01:37  Business      Fort Pierce
2  01-02-2016 20:25  01-02-2016 20:38  Business      Fort Pierce
3  01-05-2016 17:31  01-05-2016 17:45  Business      Fort Pierce
4  01-06-2016 14:42  01-06-2016 15:49  Business      Fort Pierce
5  01-06-2016 17:15  01-06-2016 17:19  Business  West Palm Beach
6  01-06-2016 17:30  01-06-2016 17:35  Business  West Palm Beach
7  01-07-2016 13:27  01-07-2016 13:33  Business             Cary
8  01-10-2016 08:05  01-10-2016 08:25  Business             Cary
9  01-10-2016 12:17  01-10-2016 12:44  Business          Jamaica

              STOP  MILES          PURPOSE
0      Fort Pierce    5.1   Meal/Entertain
1      Fort Pierce    5.0              NaN
2      Fort Pierce    4.8  Errand/Supplies
3      Fort Pierce    4.7          Meeting
4  West Palm Beach   63.7   Customer Visit
5  West Palm Beach    4.3   Meal/Entertain
6       Palm Beach    7.1          Meeting
7             Cary    0.8          Meeting
8      Morrisville    8.3          Meeting
9         New York   16.5   Customer Visit
```

[9]:
```
uber.shape
```

[9]:
```
(1156, 7)
```

[11]:

```
uber.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1156 entries, 0 to 1155
Data columns (total 7 columns):
 #   Column      Non-Null Count  Dtype
---  ------      --------------  -----
 0   START_DATE  1156 non-null   object
 1   END_DATE    1155 non-null   object
 2   CATEGORY    1155 non-null   object
 3   START       1155 non-null   object
 4   STOP        1155 non-null   object
 5   MILES       1156 non-null   float64
 6   PURPOSE     653 non-null    object
dtypes: float64(1), object(6)
memory usage: 63.3+ KB
```

[13]:

```
uber.isnull().sum()
```

[13]:

```
START_DATE      0
END_DATE        1
CATEGORY        1
START           1
STOP            1
MILES           0
PURPOSE       503
dtype: int64
```

DATA PREPROCESSING

[16]:

```
#WE CAN SEE THAT THERE ARE SO MANY NULL/EMPTY VALUES IN PURPOSE COLUMN
#Replace All NaN To Not
```

[18]:

```
uber["PURPOSE"].fillna("Personal Reasons", inplace=True)
```

```
C:\Users\ACER\AppData\Local\Temp\ipykernel_12252\1937617589.py:1: FutureWarning:
A value is trying to be set on a copy of a DataFrame or Series through chained
assignment using an inplace method.
The behavior will change in pandas 3.0. This inplace method will never work
because the intermediate object on which we are setting values always behaves as
a copy.

For example, when doing 'df[col].method(value, inplace=True)', try using
'df.method({col: value}, inplace=True)' or df[col] = df[col].method(value)
instead, to perform the operation inplace on the original object.


  uber["PURPOSE"].fillna("Personal Reasons", inplace=True)
```

[20]:

```
uber.head()
```

[20]:

```
         START_DATE          END_DATE  CATEGORY        START             STOP  \
0  01-01-2016 21:11  01-01-2016 21:17  Business  Fort Pierce      Fort Pierce
1  01-02-2016 01:25  01-02-2016 01:37  Business  Fort Pierce      Fort Pierce
2  01-02-2016 20:25  01-02-2016 20:38  Business  Fort Pierce      Fort Pierce
3  01-05-2016 17:31  01-05-2016 17:45  Business  Fort Pierce      Fort Pierce
4  01-06-2016 14:42  01-06-2016 15:49  Business  Fort Pierce  West Palm Beach

   MILES           PURPOSE
0    5.1    Meal/Entertain
1    5.0  Personal Reasons
2    4.8   Errand/Supplies
3    4.7           Meeting
4   63.7    Customer Visit
```

[22]:

```
#NAN Replaced With Personal Reasons
```

[24]:

```
#Now We Have To Change The Type Of Date/Time From Object To Date And Time
```

[26]:

```
uber["START_DATE"]=pd.to_datetime(uber["START_DATE"],errors="coerce")
uber["END_DATE"]=pd.to_datetime(uber["END_DATE"],errors="coerce")
```

[28]:

```
uber.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1156 entries, 0 to 1155
Data columns (total 7 columns):
 #   Column      Non-Null Count  Dtype
---  ------      --------------  -----
 0   START_DATE  421 non-null    datetime64[ns]
 1   END_DATE    420 non-null    datetime64[ns]
 2   CATEGORY    1155 non-null   object
 3   START       1155 non-null   object
 4   STOP        1155 non-null   object
 5   MILES       1156 non-null   float64
 6   PURPOSE     1156 non-null   object
dtypes: datetime64[ns](2), float64(1), object(4)
memory usage: 63.3+ KB
```

[30]:

```
#Now Lets Seperate Date And Time In New Columns "Date","Time"
```

[32]:

```
from datetime import datetime
uber["DATE"]=pd.DatetimeIndex(uber["START_DATE"]).date
uber["TIME"]=pd.DatetimeIndex(uber["START_DATE"]).hour
```

[34]:

```
uber.head()
```

```
[34]:            START_DATE            END_DATE  CATEGORY       START  \
      0 2016-01-01 21:11:00 2016-01-01 21:17:00  Business  Fort Pierce
      1 2016-01-02 01:25:00 2016-01-02 01:37:00  Business  Fort Pierce
      2 2016-01-02 20:25:00 2016-01-02 20:38:00  Business  Fort Pierce
      3 2016-01-05 17:31:00 2016-01-05 17:45:00  Business  Fort Pierce
      4 2016-01-06 14:42:00 2016-01-06 15:49:00  Business  Fort Pierce

                    STOP  MILES          PURPOSE        DATE  TIME
      0      Fort Pierce    5.1    Meal/Entertain  2016-01-01  21.0
      1      Fort Pierce    5.0  Personal Reasons  2016-01-02   1.0
      2      Fort Pierce    4.8   Errand/Supplies  2016-01-02  20.0
      3      Fort Pierce    4.7           Meeting  2016-01-05  17.0
      4  West Palm Beach   63.7    Customer Visit  2016-01-06  14.0
```

```
[36]: #Lets Make New Category Column Where As Per Time Their Will Be␣
       ↪Morning,Afternoon,Evening, And Night Will Be Shown!!!
```

```
[38]: uber["DAY-NIGHT"]=pd.
       ↪cut(x=uber["TIME"],bins=[0,10,15,19,24],labels=["Morning","Afternoon","Evening","Night"])
```

```
[40]: uber.head()
```

```
[40]:            START_DATE            END_DATE  CATEGORY       START  \
      0 2016-01-01 21:11:00 2016-01-01 21:17:00  Business  Fort Pierce
      1 2016-01-02 01:25:00 2016-01-02 01:37:00  Business  Fort Pierce
      2 2016-01-02 20:25:00 2016-01-02 20:38:00  Business  Fort Pierce
      3 2016-01-05 17:31:00 2016-01-05 17:45:00  Business  Fort Pierce
      4 2016-01-06 14:42:00 2016-01-06 15:49:00  Business  Fort Pierce

                    STOP  MILES          PURPOSE        DATE  TIME  DAY-NIGHT
      0      Fort Pierce    5.1    Meal/Entertain  2016-01-01  21.0      Night
      1      Fort Pierce    5.0  Personal Reasons  2016-01-02   1.0    Morning
      2      Fort Pierce    4.8   Errand/Supplies  2016-01-02  20.0      Night
      3      Fort Pierce    4.7           Meeting  2016-01-05  17.0    Evening
      4  West Palm Beach   63.7    Customer Visit  2016-01-06  14.0  Afternoon
```

```
[42]: uber.head()
```

```
[42]:            START_DATE            END_DATE  CATEGORY       START  \
      0 2016-01-01 21:11:00 2016-01-01 21:17:00  Business  Fort Pierce
      1 2016-01-02 01:25:00 2016-01-02 01:37:00  Business  Fort Pierce
      2 2016-01-02 20:25:00 2016-01-02 20:38:00  Business  Fort Pierce
      3 2016-01-05 17:31:00 2016-01-05 17:45:00  Business  Fort Pierce
      4 2016-01-06 14:42:00 2016-01-06 15:49:00  Business  Fort Pierce

                    STOP  MILES          PURPOSE        DATE  TIME  DAY-NIGHT
      0      Fort Pierce    5.1    Meal/Entertain  2016-01-01  21.0      Night
```

```
1      Fort Pierce    5.0  Personal Reasons  2016-01-02   1.0    Morning
2      Fort Pierce    4.8   Errand/Supplies  2016-01-02  20.0      Night
3      Fort Pierce    4.7           Meeting  2016-01-05  17.0    Evening
4  West Palm Beach   63.7    Customer Visit  2016-01-06  14.0  Afternoon
```

[44]:

```
#Now Dropping All Null Values From DataSet
```

[46]:

```
uber.dropna(inplace=True)
```

[48]:

```
uber.isnull().sum()
```

[48]:

```
START_DATE    0
END_DATE      0
CATEGORY      0
START         0
STOP          0
MILES         0
PURPOSE       0
DATE          0
TIME          0
DAY-NIGHT     0
dtype: int64
```

[50]:

```
uber.head()
```

[50]:

```
           START_DATE            END_DATE  CATEGORY        START  \
0 2016-01-01 21:11:00 2016-01-01 21:17:00  Business  Fort Pierce
1 2016-01-02 01:25:00 2016-01-02 01:37:00  Business  Fort Pierce
2 2016-01-02 20:25:00 2016-01-02 20:38:00  Business  Fort Pierce
3 2016-01-05 17:31:00 2016-01-05 17:45:00  Business  Fort Pierce
4 2016-01-06 14:42:00 2016-01-06 15:49:00  Business  Fort Pierce

              STOP  MILES           PURPOSE        DATE  TIME  DAY-NIGHT
0      Fort Pierce    5.1    Meal/Entertain  2016-01-01  21.0      Night
1      Fort Pierce    5.0  Personal Reasons  2016-01-02   1.0    Morning
2      Fort Pierce    4.8   Errand/Supplies  2016-01-02  20.0      Night
3      Fort Pierce    4.7           Meeting  2016-01-05  17.0    Evening
4  West Palm Beach   63.7    Customer Visit  2016-01-06  14.0  Afternoon
```

DATA VISUALIZATION

[53]:

```
#Now Lets Do The Data Visualization As Per Question
```

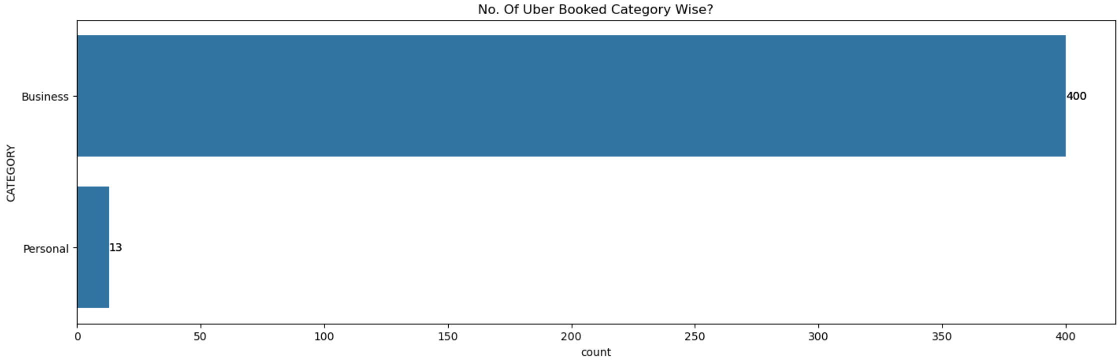
[55]:

```
#Q1 IN WHICH CATEGORY DO PEOPLE BOOK THE MOST UBER RIDES?
```

[57]:

```
plt.figure(figsize=(17,5))
plt.title("No. Of Uber Booked Category Wise?")
```

```python
cp=sns.countplot(uber["CATEGORY"])
cp.bar_label(cp.containers[0])
cp.bar_label(cp.containers[0])
plt.show()
```



[59]:

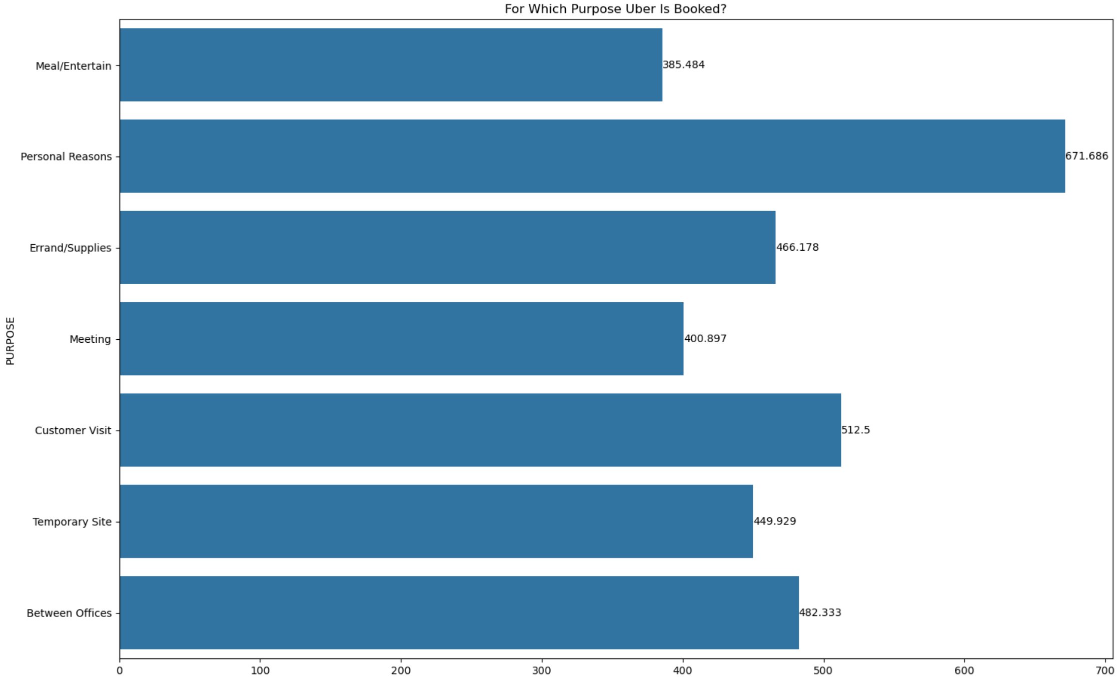
```python
#So We Can Say That Mostly People Book The Uber For Business Category!!!
```

[61]:

```python
#Q2 FOR WHICH PURPOSE DO PEOPLE BOOK UBER RIDES THE MOST?
```

[63]:

```python
plt.figure(figsize=(17, 11))
plt.title("For Which Purpose Uber Is Booked?")
cp=sns.barplot(uber["PURPOSE"],errorbar=None)
cp.bar_label(cp.containers[0])
plt.show()
```



[64]:

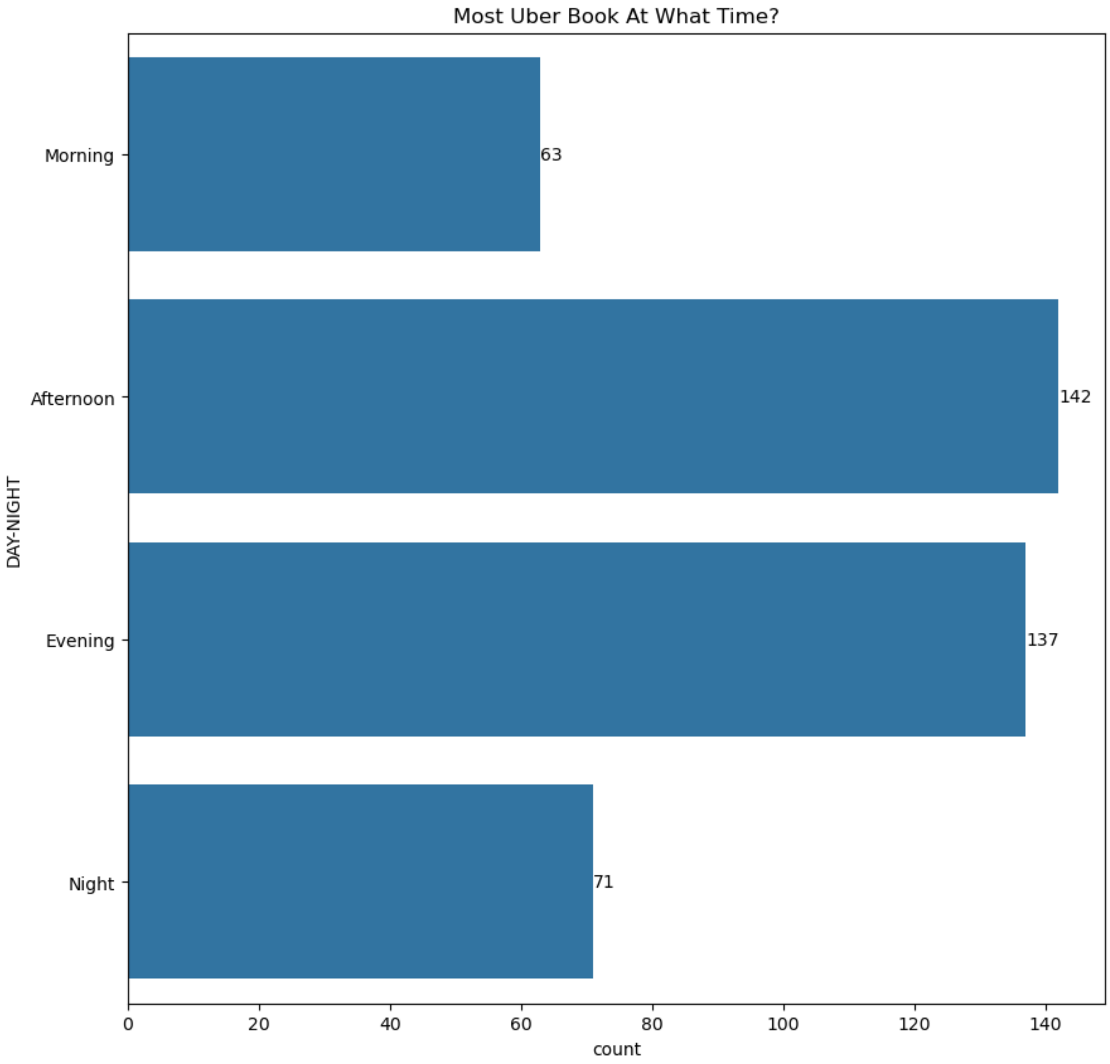
```
#So We Can Say Most People Book Uber For Personal Reasons!!!
```

[67]:

```
#Q3 At What Time Do People Book Cabs The Most From Uber?
```

[69]:

```
plt.figure(figsize=(10,10))
plt.title("Most Uber Book At What Time?")
cp=sns.countplot(uber["DAY-NIGHT"])
cp.bar_label(cp.containers[0])
plt.show()
```



[71]:

```
#So We Can Say That Mostly People Book The Uber At Afternoon!!!
```

[73]:

```
#Q4 IN WHICH MONTHS DO PEOPLE BOOK UBER RIDES LESS FREQUENTLY?
```

[75]:

```
#Lets Make New Month Column!!!
```

[77]:

```
uber["MONTH"]=pd.DatetimeIndex(uber["START_DATE"]).month
month_label={1.0 : "Jan", 2.0 : "Feb", 3.0 : "March", 4.0 : "April", 5.0 :␣
 ↪"May", 6.0 : "June", 7.0 : "July", 8.0 : "August", 9.0 : "Sept", 10 : "Oct",␣
 ↪11 : "Nov", 12 : "Dec"}
uber["MONTH"]=uber.MONTH.map(month_label)
mon=uber.MONTH.value_counts(sort=False)
```

[79]:

```
uber.head()
```

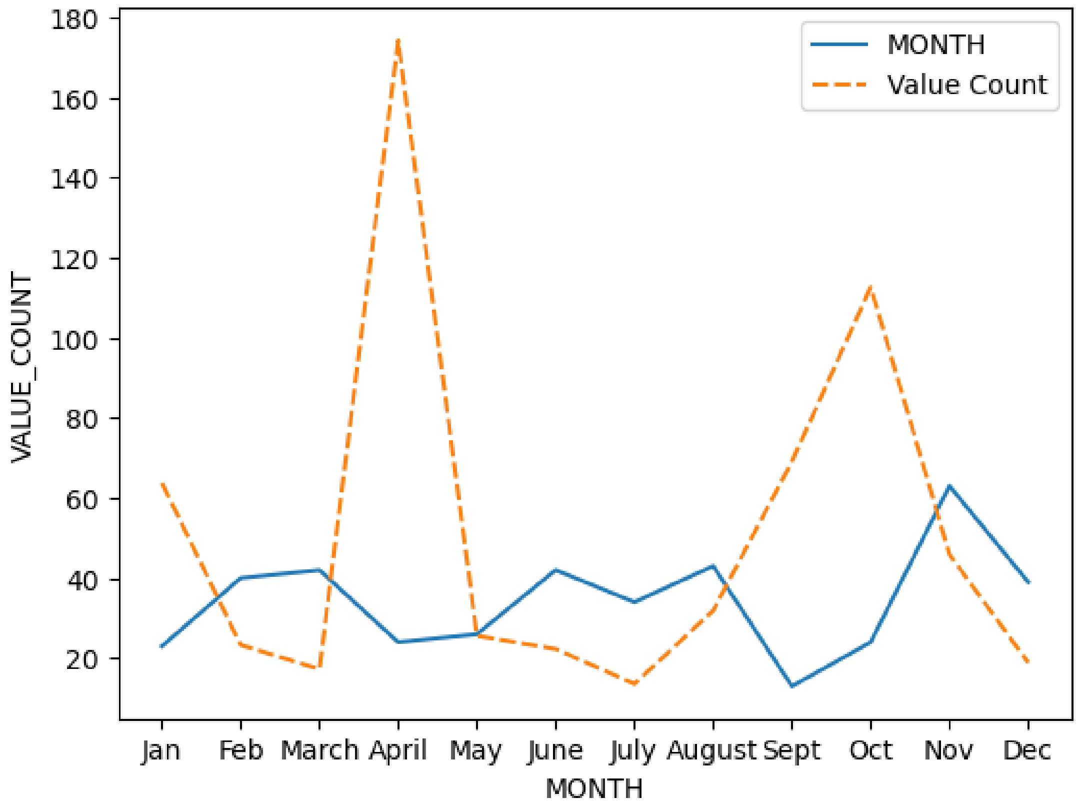
[79]:

```
           START_DATE            END_DATE  CATEGORY       START  \
0 2016-01-01 21:11:00 2016-01-01 21:17:00  Business  Fort Pierce
1 2016-01-02 01:25:00 2016-01-02 01:37:00  Business  Fort Pierce
2 2016-01-02 20:25:00 2016-01-02 20:38:00  Business  Fort Pierce
3 2016-01-05 17:31:00 2016-01-05 17:45:00  Business  Fort Pierce
4 2016-01-06 14:42:00 2016-01-06 15:49:00  Business  Fort Pierce

              STOP  MILES          PURPOSE        DATE  TIME  DAY-NIGHT MONTH
0      Fort Pierce    5.1    Meal/Entertain  2016-01-01  21.0      Night   Jan
1      Fort Pierce    5.0  Personal Reasons  2016-01-02   1.0    Morning   Jan
2      Fort Pierce    4.8   Errand/Supplies  2016-01-02  20.0      Night   Jan
3      Fort Pierce    4.7           Meeting  2016-01-05  17.0    Evening   Jan
4  West Palm Beach   63.7    Customer Visit  2016-01-06  14.0  Afternoon   Jan
```

[81]:

```
df=pd.DataFrame({"MONTH" : mon.values,
"Value Count":uber.groupby("MONTH", sort=False)["MILES"].max()
})
lp=sns.lineplot(data=df)
lp.set(xlabel="MONTH", ylabel="VALUE_COUNT")
plt.show()
```



```
[115]: #So We Can Say That On September Month The Uber Cabs Is Booked Less Frequently!!
         ↪!
```

```
[117]: #Q5 ON WHICH DAYS OF THE WEEK DO PEOPLE BOOK UBER RIDES THE MOST?
```

```
[ ]: #Lets Make The New Day Column!!!
```

```
[89]: uber["DAY"]=uber.START_DATE.dt.weekday
      day_label={0 : "Monday", 1 : "Tuesday", 2 : "Wednesday", 3 : "Thursday", 4 :␣
        ↪"Friday", 5 : "Saturday", 6 : "Sunday"}
      uber["DAY"]=uber["DAY"].map(day_label)
```

```
[91]: uber.head()
```

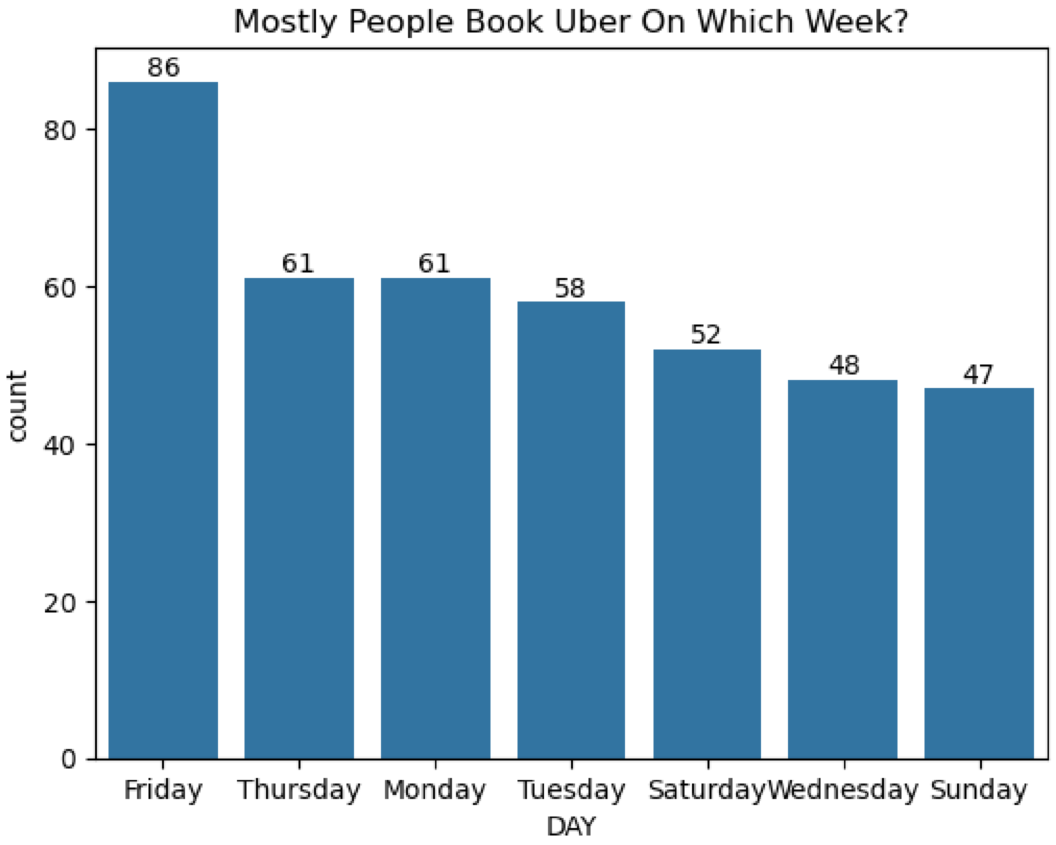
```
[91]:            START_DATE            END_DATE  CATEGORY       START  \
      0 2016-01-01 21:11:00 2016-01-01 21:17:00  Business  Fort Pierce
      1 2016-01-02 01:25:00 2016-01-02 01:37:00  Business  Fort Pierce
      2 2016-01-02 20:25:00 2016-01-02 20:38:00  Business  Fort Pierce
      3 2016-01-05 17:31:00 2016-01-05 17:45:00  Business  Fort Pierce
      4 2016-01-06 14:42:00 2016-01-06 15:49:00  Business  Fort Pierce
```

```
              STOP  MILES          PURPOSE        DATE  TIME  DAY-NIGHT  \
0      Fort Pierce    5.1    Meal/Entertain  2016-01-01  21.0      Night
1      Fort Pierce    5.0  Personal Reasons  2016-01-02   1.0    Morning
2      Fort Pierce    4.8   Errand/Supplies  2016-01-02  20.0      Night
3      Fort Pierce    4.7           Meeting  2016-01-05  17.0    Evening
4  West Palm Beach   63.7    Customer Visit  2016-01-06  14.0  Afternoon

  MONTH        DAY
0   Jan     Friday
1   Jan   Saturday
2   Jan   Saturday
3   Jan    Tuesday
4   Jan  Wednesday
```

[93]:

```
day_label=uber.DAY.value_counts()
plt.title("Mostly People Book Uber On Which Week?")
bp=sns.barplot(x=day_label.index, y=day_label)
bp.bar_label(bp.containers[0])
plt.show()
```



[95]:

```
#SO We Can Say That Most Uber Booked On Fridays!!!
```

[97]:

```
#Q6 HOW MANY MILES DO PEOPLE USUALLY BOOK A CAB THROUGH UBER?
```

[101]:

```
plt.title("Mostly Uber Got Booked For How Many Miles?")
sns.distplot(uber[uber["MILES"]<40]["MILES"])
plt.show()
```

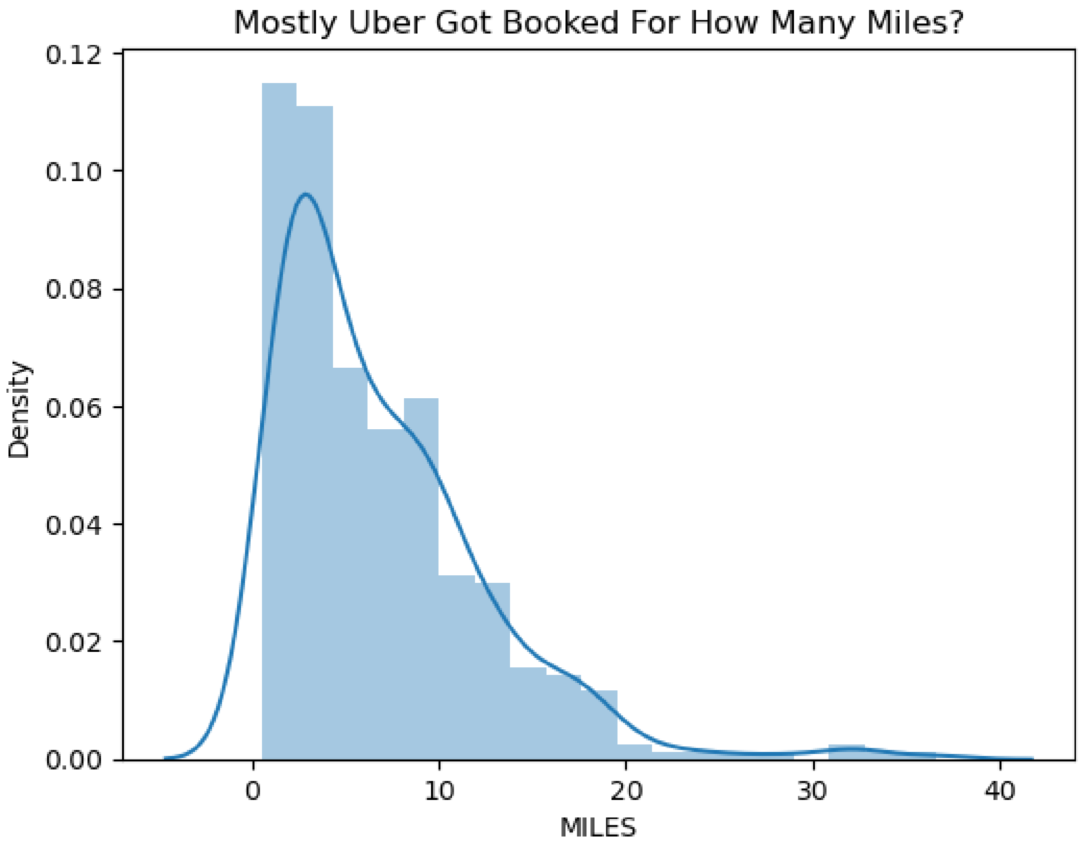
```
C:\Users\ACER\AppData\Local\Temp\ipykernel_12252\1974239621.py:2: UserWarning:

`distplot` is a deprecated function and will be removed in seaborn v0.14.0.

Please adapt your code to use either `displot` (a figure-level function with
similar flexibility) or `histplot` (an axes-level function for histograms).

For a guide to updating your code to use the new functions, please see
https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751

  sns.distplot(uber[uber["MILES"]<40]["MILES"])
```



[ ]:

```
#So We Can Say Mostly People Book Uber For 0-20 Miles!!!
```