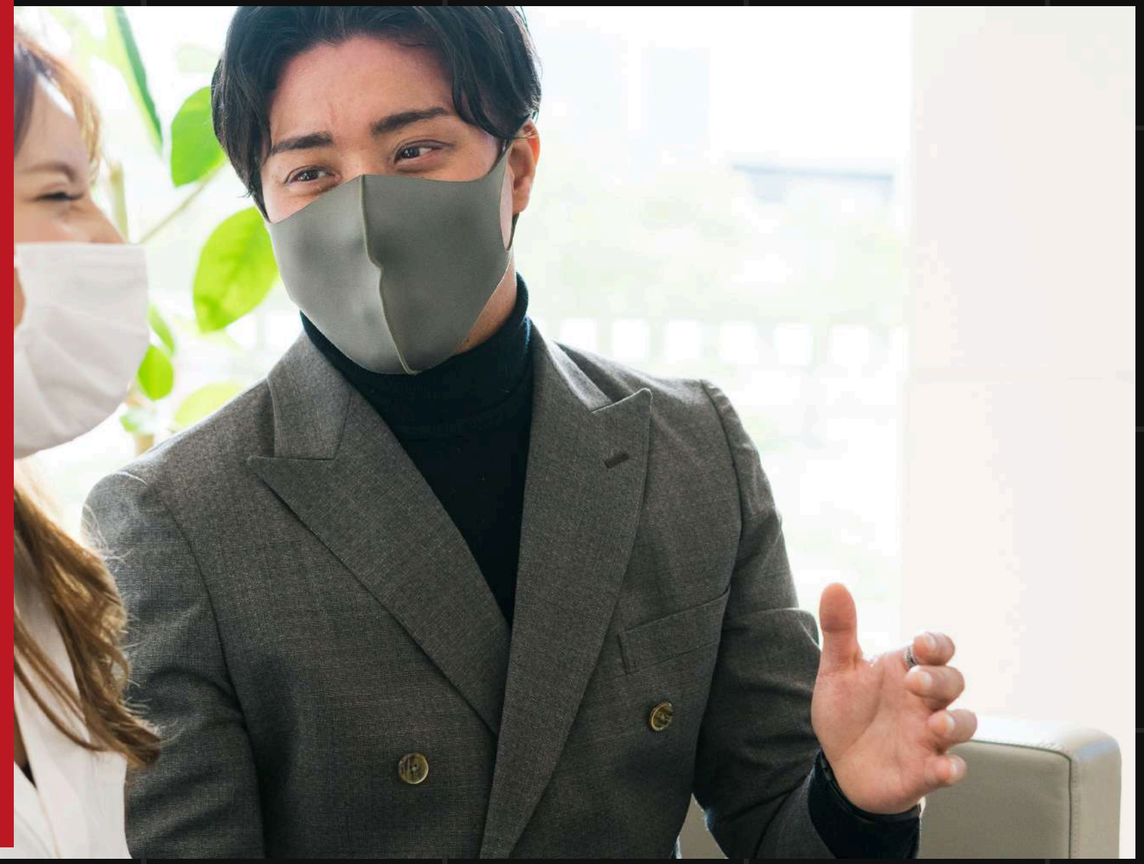
PYTHON PROJECT

UBER DATA ANALYTICS PROJECT

UBER DATA ANALYTICS PROJECT OBJECTIVES

This project involves analyzing Uber ride data to extract meaningful insights and improve operational efficiency. Using Python and data visualization tools, the analysis focuses on understanding patterns in ride demand, user behavior, and trip characteristics. The project follows a structured approach to clean, process, and visualize data while drawing actionable insights to support decision-making.



IMPORT PYTHON LIBRARIES

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

```
dataset = pd.read_csv("UberDataset.csv")
```

```
dataset
```

	START_DATE	END_DATE	CATEGORY	START	STOP	MILES	PURPOSE
0	01-01-2016 21:11	01-01-2016 21:17	Business	Fort Pierce	Fort Pierce	5.1	Meal/Entertain
1	01-02-2016 01:25	01-02-2016 01:37	Business	Fort Pierce	Fort Pierce	5.0	NaN
2	01-02-2016 20:25	01-02-2016 20:38	Business	Fort Pierce	Fort Pierce	4.8	Errand/Supplies
3	01-05-2016 17:31	01-05-2016 17:45	Business	Fort Pierce	Fort Pierce	4.7	Meeting
4	01-06-2016 14:42	01-06-2016 15:49	Business	Fort Pierce	West Palm Beach	63.7	Customer Visit
...	...	...	...	...	...	...	...
1151	12/31/2016 13:24	12/31/2016 13:42	Business	Kar?chi	Unknown Location	3.9	Temporary Site
1152	12/31/2016 15:03	12/31/2016 15:38	Business	Unknown Location	Unknown Location	16.2	Meeting
1153	12/31/2016 21:32	12/31/2016 21:50	Business	Katunayake	Gampaha	6.4	Temporary Site
1154	12/31/2016 22:08	12/31/2016 23:51	Business	Gampaha	Ilukwatta	48.2	Temporary Site
1155	Totals	NaN	NaN	NaN	NaN	12204.7	NaN

1156 rows × 7 columns

```
dataset.shape
```

```
(1156, 7)
```


```
dataset.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
```

DATA PREPROCESSING

Data Preprocessing

```
dataset['PURPOSE'].fillna("NOT", inplace=True)
```

```
dataset.head()
```

	START_DATE	END_DATE	CATEGORY	START	STOP	MILES	PURPOSE
0	01-01-2016 21:11	01-01-2016 21:17	Business	Fort Pierce	Fort Pierce	5.1	Meal/Entertain
1	01-02-2016 01:25	01-02-2016 01:37	Business	Fort Pierce	Fort Pierce	5.0	NOT
2	01-02-2016 20:25	01-02-2016 20:38	Business	Fort Pierce	Fort Pierce	4.8	Errand/Supplies
3	01-05-2016 17:31	01-05-2016 17:45	Business	Fort Pierce	Fort Pierce	4.7	Meeting
4	01-06-2016 14:42	01-06-2016 15:49	Business	Fort Pierce	West Palm Beach	63.7	Customer Visit

```
dataset['START_DATE']=pd.to_datetime(dataset['START_DATE'], errors='coerce')

dataset['END_DATE']=pd.to_datetime(dataset['END_DATE'], errors='coerce')
```

```
dataset.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
```

```
from datetime import datetime

dataset['date'] = pd.DatetimeIndex(dataset['START_DATE']).date
```

```
dataset.head()
```

	START_DATE	END_DATE	CATEGORY	START	STOP	MILES	PURPOSE	date
0	2016-01-01 21:11:00	2016-01-01 21:17:00	Business	Fort Pierce	Fort Pierce	5.1	Meal/Entertain	2016-01-01
1	2016-01-02 01:25:00	2016-01-02 01:37:00	Business	Fort Pierce	Fort Pierce	5.0	NOT	2016-01-02
2	2016-01-02 20:25:00	2016-01-02 20:38:00	Business	Fort Pierce	Fort Pierce	4.8	Errand/Supplies	2016-01-02
3	2016-01-05 17:31:00	2016-01-05 17:45:00	Business	Fort Pierce	Fort Pierce	4.7	Meeting	2016-01-05
4	2016-01-06 14:42:00	2016-01-06 15:49:00	Business	Fort Pierce	West Palm Beach	63.7	Customer Visit	2016-01-06

```
from datetime import datetime

dataset['date'] = pd.DatetimeIndex(dataset['START_DATE']).date
dataset['time'] = pd.DatetimeIndex(dataset['START_DATE']).hour
```

```
dataset.head()
```

	START_DATE	END_DATE	CATEGORY	START	STOP	MILES	PURPOSE	date	time
0	2016-01-01 21:11:00	2016-01-01 21:17:00	Business	Fort Pierce	Fort Pierce	5.1	Meal/Entertain	2016-01-01	21.0
1	2016-01-02 01:25:00	2016-01-02 01:37:00	Business	Fort Pierce	Fort Pierce	5.0	NOT	2016-01-02	1.0
2	2016-01-02 20:25:00	2016-01-02 20:38:00	Business	Fort Pierce	Fort Pierce	4.8	Errand/Supplies	2016-01-02	20.0
3	2016-01-05 17:31:00	2016-01-05 17:45:00	Business	Fort Pierce	Fort Pierce	4.7	Meeting	2016-01-05	17.0
4	2016-01-06 14:42:00	2016-01-06 15:49:00	Business	Fort Pierce	West Palm Beach	63.7	Customer Visit	2016-01-06	14.0

```
dataset['day-night']=pd.cut(x=dataset['time'], bins=[0,10,15,19,24], labels= [
```

```
dataset.head()
```

	START_DATE	END_DATE	CATEGORY	START	STOP	MILES	PURPOSE	date	time	
0	2016-01-01 21:11:00	2016-01-01 21:17:00	Business	Fort Pierce	Fort Pierce	5.1	Meal/Entertain	2016-01-01	21.0	
1	2016-01-02 01:25:00	2016-01-02 01:37:00	Business	Fort Pierce	Fort Pierce	5.0	NOT	2016-01-02	1.0	I
2	2016-01-02 20:25:00	2016-01-02 20:38:00	Business	Fort Pierce	Fort Pierce	4.8	Errand/Supplies	2016-01-02	20.0	
3	2016-01-05 17:31:00	2016-01-05 17:45:00	Business	Fort Pierce	Fort Pierce	4.7	Meeting	2016-01-05	17.0	I
4	2016-01-06 14:42:00	2016-01-06 15:49:00	Business	Fort Pierce	West Palm Beach	63.7	Customer Visit	2016-01-06	14.0	Af

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

```
dataset.shape
```

```
(413, 10)
```

DATA VISUALIZATION

Business Category do People book the most Uber Rides.

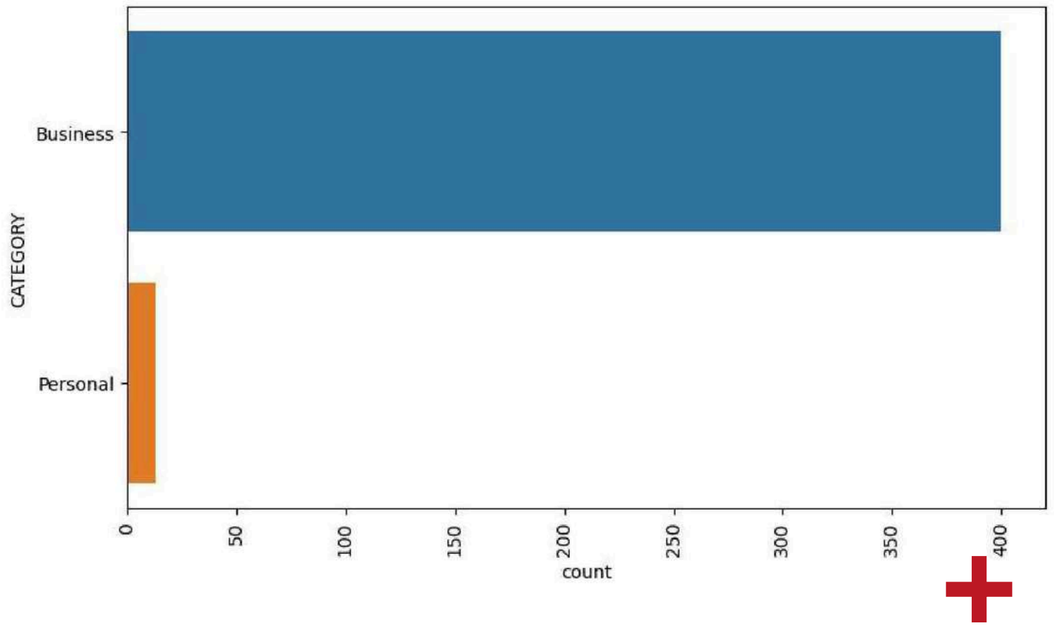
```
plt.figure(figsize=(20,5))

plt.subplot(1,2,1)

sns.countplot(y='CATEGORY', data=dataset)

plt.xticks(rotation =90)
```

```
(array([  0.,  50., 100., 150., 200., 250., 300., 350., 400., 450.]),
 [Text(0.0, 0, '0'),
  Text(50.0, 0, '50'),
  Text(100.0, 0, '100'),
  Text(150.0, 0, '150'),
  Text(200.0, 0, '200'),
  Text(250.0, 0, '250'),
  Text(300.0, 0, '300'),
  Text(350.0, 0, '350'),
  Text(400.0, 0, '400'),
  Text(450.0, 0, '450')])
```



Conclusion: Business Category do people book the most Uber rides.

```
sns.countplot(y='day-night', data=dataset)
```

```
<Axes: xlabel='count', ylabel='day-night'>
```


At Afternoon do People book Cabs the most from Uber

	START_DATE	END_DATE	CATEGORY	START	STOP	MILES	PURPOSE	date	time	
0	2016-01-01 21:11:00	2016-01-01 21:17:00	Business	Fort Pierce	Fort Pierce	5.1	Meal/Entertain	2016-01-01	21.0	
1	2016-01-02 01:25:00	2016-01-02 01:37:00	Business	Fort Pierce	Fort Pierce	5.0	NOT	2016-01-02	1.0	I
2	2016-01-02 20:25:00	2016-01-02 20:38:00	Business	Fort Pierce	Fort Pierce	4.8	Errand/Supplies	2016-01-02	20.0	
3	2016-01-05 17:31:00	2016-01-05 17:45:00	Business	Fort Pierce	Fort Pierce	4.7	Meeting	2016-01-05	17.0	I
4	2016-01-06 14:42:00	2016-01-06 15:49:00	Business	Fort Pierce	West Palm Beach	63.7	Customer Visit	2016-01-06	14.0	Af

```
dataset['MONTH']=pd.DatetimeIndex(dataset['START_DATE']).month
month_label= {1.0: 'Jan', 2.0 : 'Feb', 3.0: 'Mar', 4.0: 'April',
              5.0: 'May', 6.0 : 'June', 7.0: 'July', 8.0: 'Aug',
              9.0: 'Sep', 10.0 : 'Oct', 11.0: 'Nov', 12.0: 'Dec'}
dataset["MONTH"]=dataset.MONTH.map(month_label)
mon= dataset.MONTH.value_counts(sort=False)
```

```
dataset.head()
```

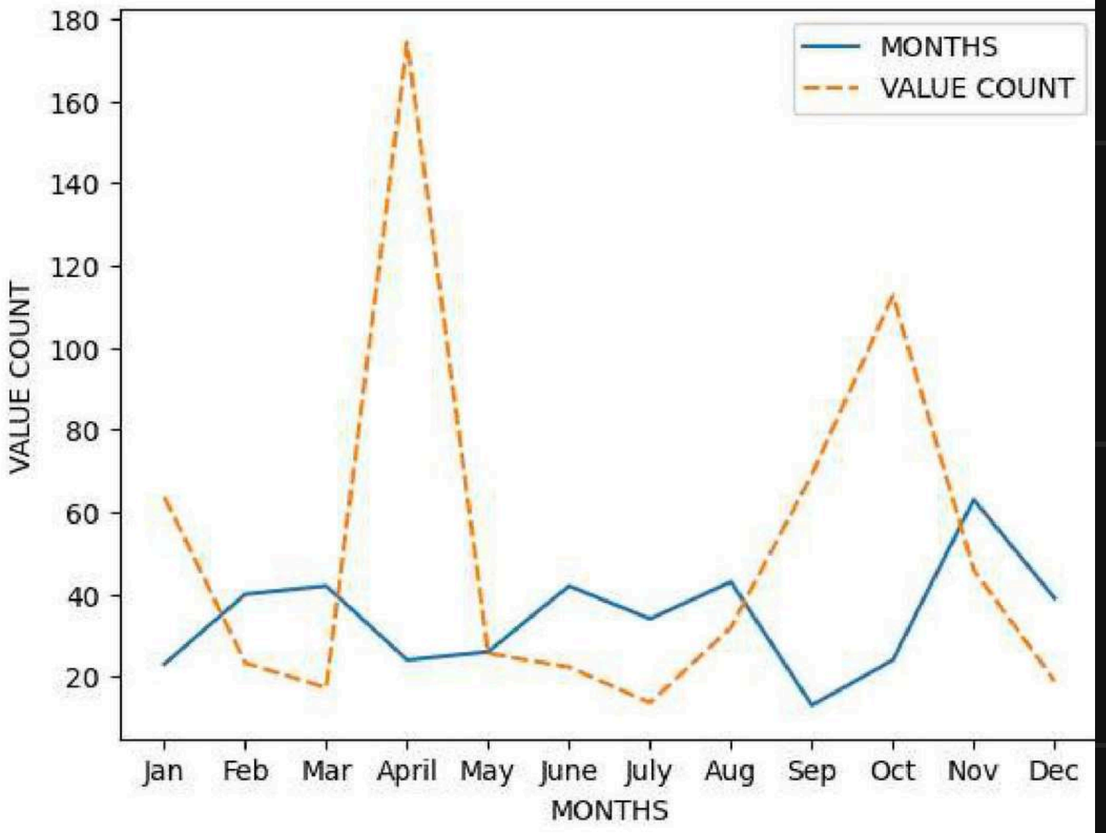
	START_DATE	END_DATE	CATEGORY	START	STOP	MILES	PURPOSE	date	time	
0	2016-01-01 21:11:00	2016-01-01 21:17:00	Business	Fort Pierce	Fort Pierce	5.1	Meal/Entertain	2016-01-01	21.0	
1	2016-01-02 01:25:00	2016-01-02 01:37:00	Business	Fort Pierce	Fort Pierce	5.0	NOT	2016-01-02	1.0	I
2	2016-01-02 20:25:00	2016-01-02 20:38:00	Business	Fort Pierce	Fort Pierce	4.8	Errand/Supplies	2016-01-02	20.0	
3	2016-01-05 17:31:00	2016-01-05 17:45:00	Business	Fort Pierce	Fort Pierce	4.7	Meeting	2016-01-05	17.0	I
4	2016-01-06 14:42:00	2016-01-06 15:49:00	Business	Fort Pierce	West Palm Beach	63.7	Customer Visit	2016-01-06	14.0	Af

In November, December and January do People book Uber Rides less Frequency

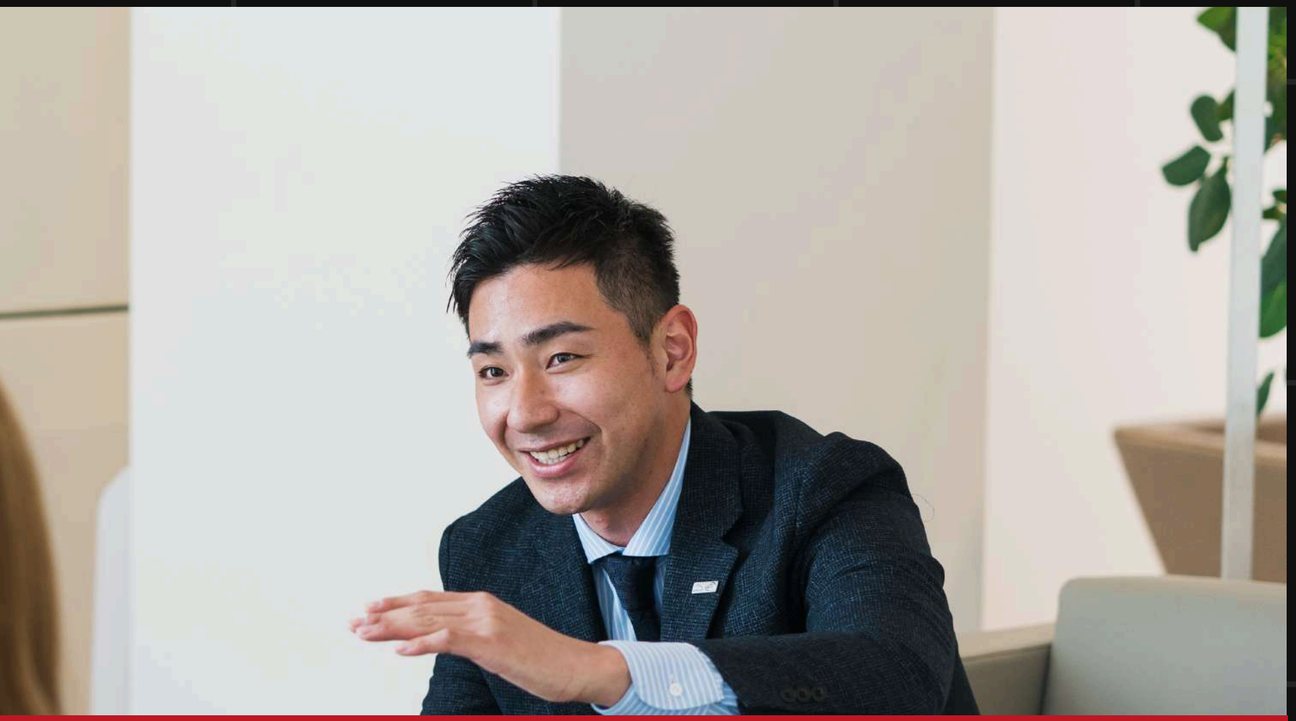
```
df=pd.DataFrame({
    "MONTHS": mon.values,
    "VALUE COUNT": dataset.groupby('MONTH', sort=False)['MILES'].max()
})

p=sns.lineplot(data=df)
p.set(xlabel="MONTHS", ylabel="VALUE COUNT")
```

```
[Text(0.5, 0, 'MONTHS'), Text(0, 0.5, 'VALUE COUNT')]
```



Conclusion: In November, December and January do People book Uber rides less frequen



For Meeting Purpose do People book Uber rides the Most

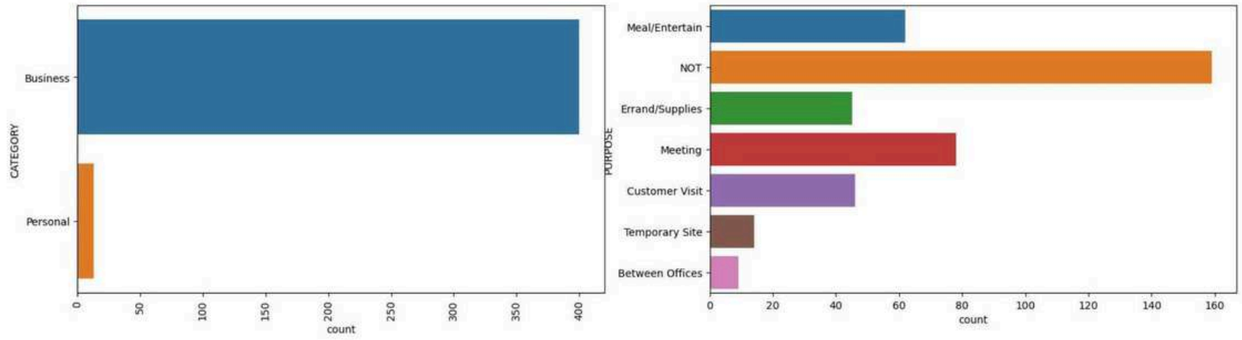
```
plt.figure(figsize=(20,5))

plt.subplot(1,2,1)

sns.countplot(y='CATEGORY', data=dataset)

plt.xticks(rotation =90)
plt.subplot(1,2,2)
sns.countplot(y='PURPOSE', data=dataset)
```

```
<Axes: xlabel='count', ylabel='PURPOSE'>
```



Conclusion: For Meeting purpose do people book Uber rides the most.

	START_DATE	END_DATE	CATEGORY	START	STOP	MILES	PURPOSE	date	time	
0	2016-01-01 21:11:00	2016-01-01 21:17:00	Business	Fort Pierce	Fort Pierce	5.1	Meal/Entertain	2016-01-01	21.0	
1	2016-01-02 01:25:00	2016-01-02 01:37:00	Business	Fort Pierce	Fort Pierce	5.0	NOT	2016-01-02	1.0	I
2	2016-01-02 20:25:00	2016-01-02 20:38:00	Business	Fort Pierce	Fort Pierce	4.8	Errand/Supplies	2016-01-02	20.0	
3	2016-01-05 17:31:00	2016-01-05 17:45:00	Business	Fort Pierce	Fort Pierce	4.7	Meeting	2016-01-05	17.0	I
4	2016-01-06 14:42:00	2016-01-06 15:49:00	Business	Fort Pierce	West Palm Beach	63.7	Customer Visit	2016-01-06	14.0	Af

```
dataset['DAY']=dataset.START_DATE.dt.weekday

day_label={
    0:'Mon', 1:'Tues', 2:'Wed', 3:'Thur', 4:'Fri', 5:'Sat', 6:'Sun'}
dataset['DAY']= dataset['DAY'].map(day_label)
```

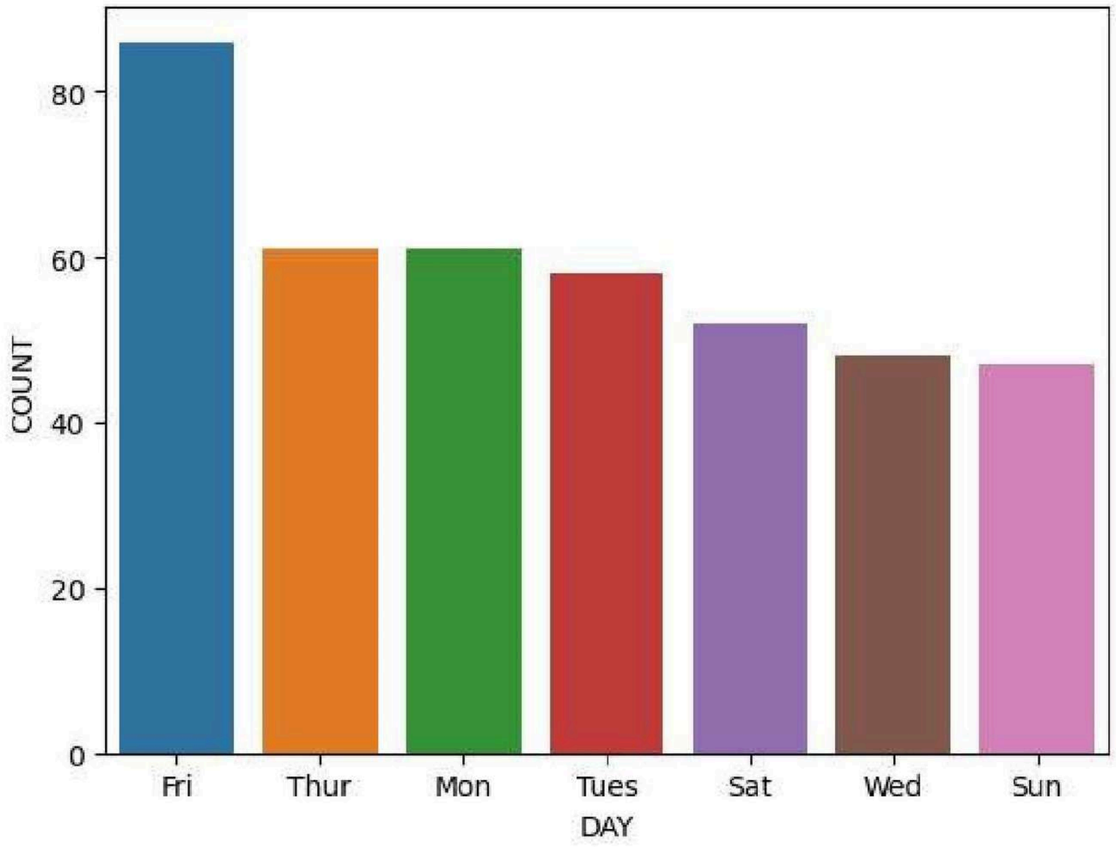
```
dataset.head()
```

	START_DATE	END_DATE	CATEGORY	START	STOP	MILES	PURPOSE	date	time	
0	2016-01-01 21:11:00	2016-01-01 21:17:00	Business	Fort Pierce	Fort Pierce	5.1	Meal/Entertain	2016-01-01	21.0	
1	2016-01-02 01:25:00	2016-01-02 01:37:00	Business	Fort Pierce	Fort Pierce	5.0	NOT	2016-01-02	1.0	I
2	2016-01-02 20:25:00	2016-01-02 20:38:00	Business	Fort Pierce	Fort Pierce	4.8	Errand/Supplies	2016-01-02	20.0	
3	2016-01-05 17:31:00	2016-01-05 17:45:00	Business	Fort Pierce	Fort Pierce	4.7	Meeting	2016-01-05	17.0	I
4	2016-01-06 14:42:00	2016-01-06 15:49:00	Business	Fort Pierce	West Palm Beach	63.7	Customer Visit	2016-01-06	14.0	Af

On Friday do People book Uber Rides the Most

```
day_label=dataset.DAY.value_counts()
sns.barplot(x=day_label.index, y=day_label)
plt.xlabel('DAY')
plt.ylabel('COUNT')
```

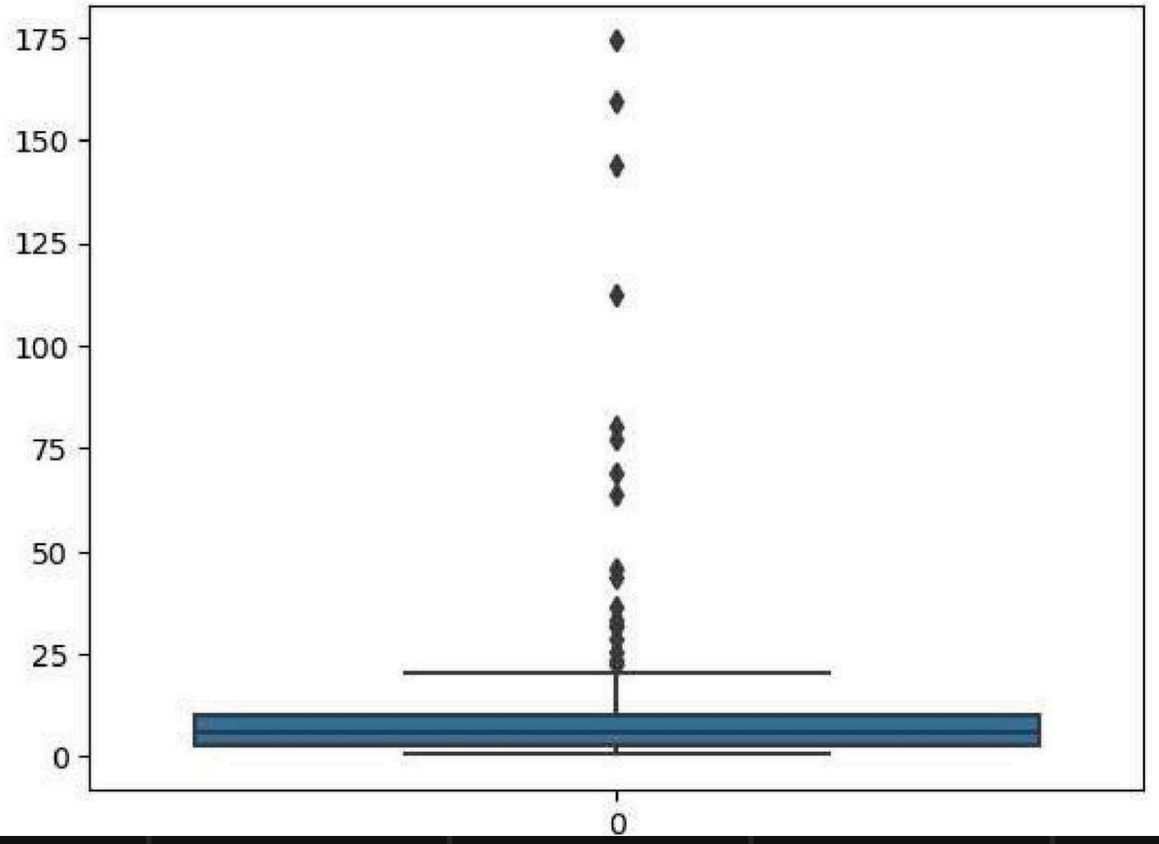
```
Text(0, 0.5, 'COUNT')
```



Conclusion: On Friday do People book Uber rides the most

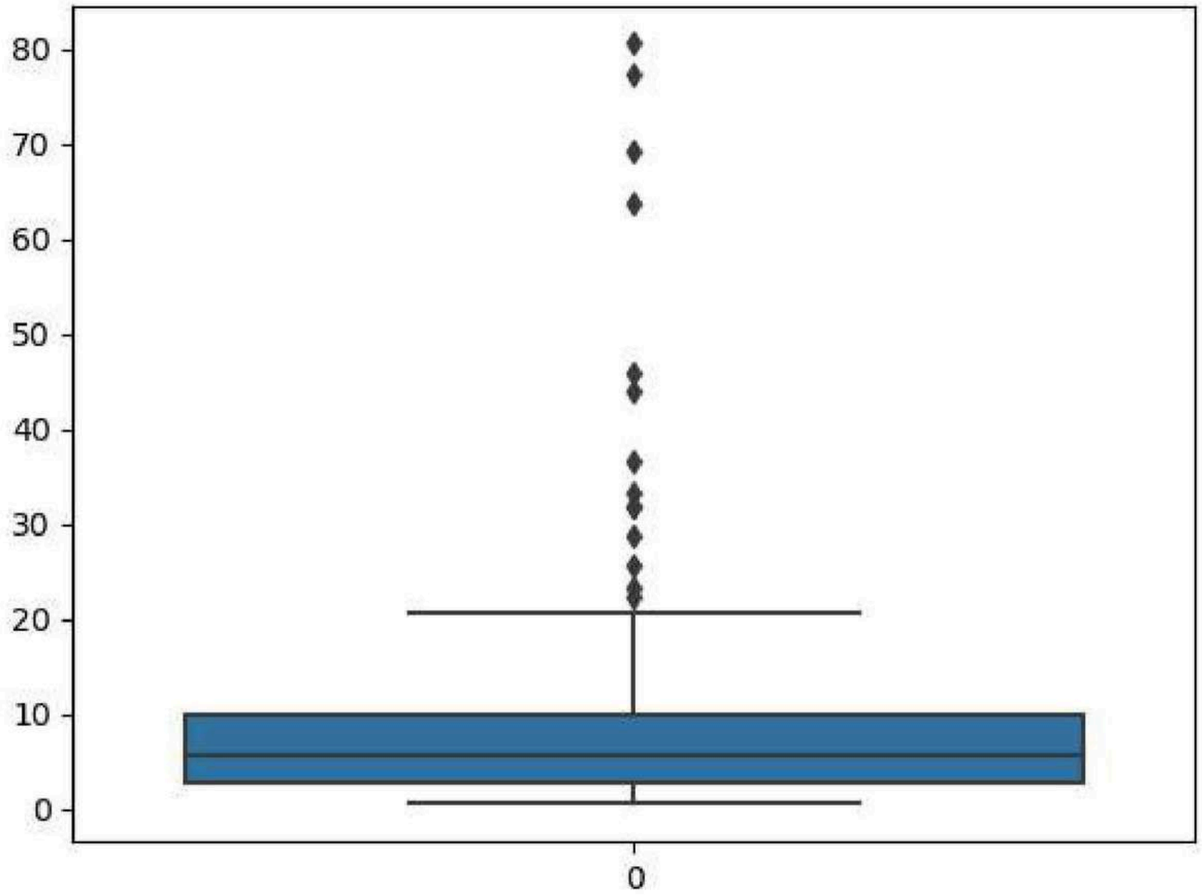
```
sns.boxplot(dataset['MILES'])
```

```
<Axes: >
```



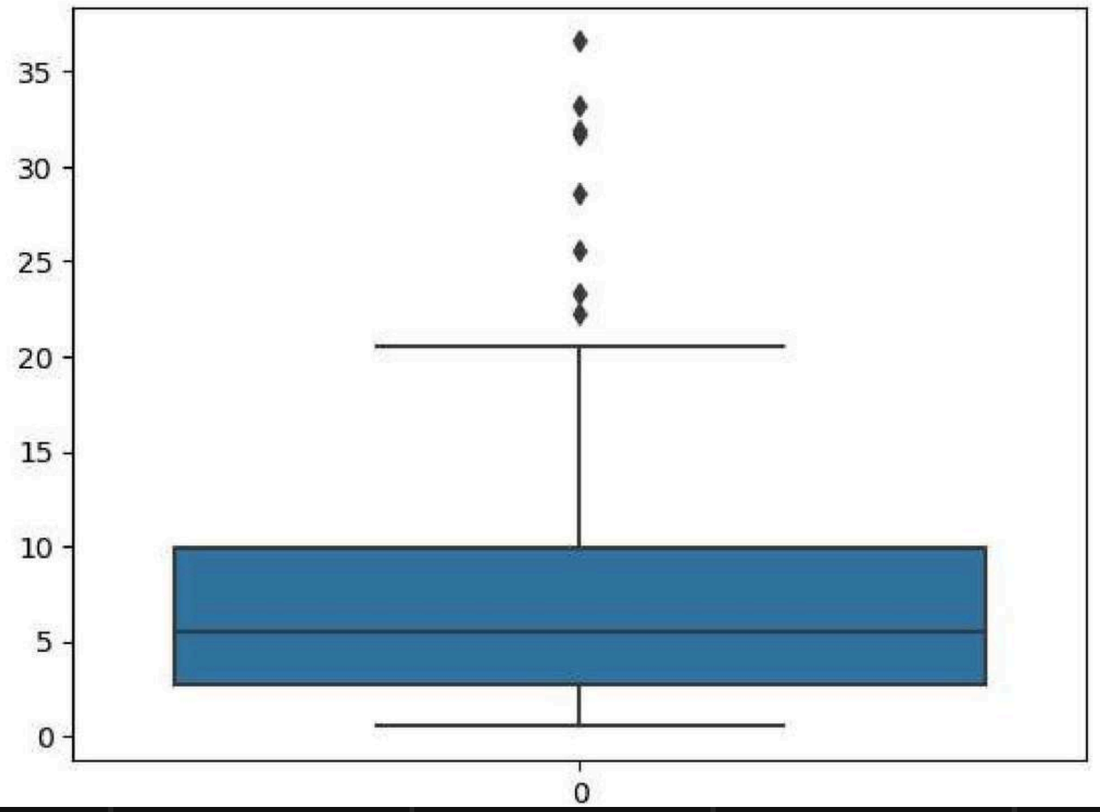

```
sns.boxplot(dataset[dataset['MILES']<100]['MILES'])
```

```
<Axes: >
```



```
sns.boxplot(dataset[dataset['MILES']<40]['MILES'])
```

```
<Axes: >
```

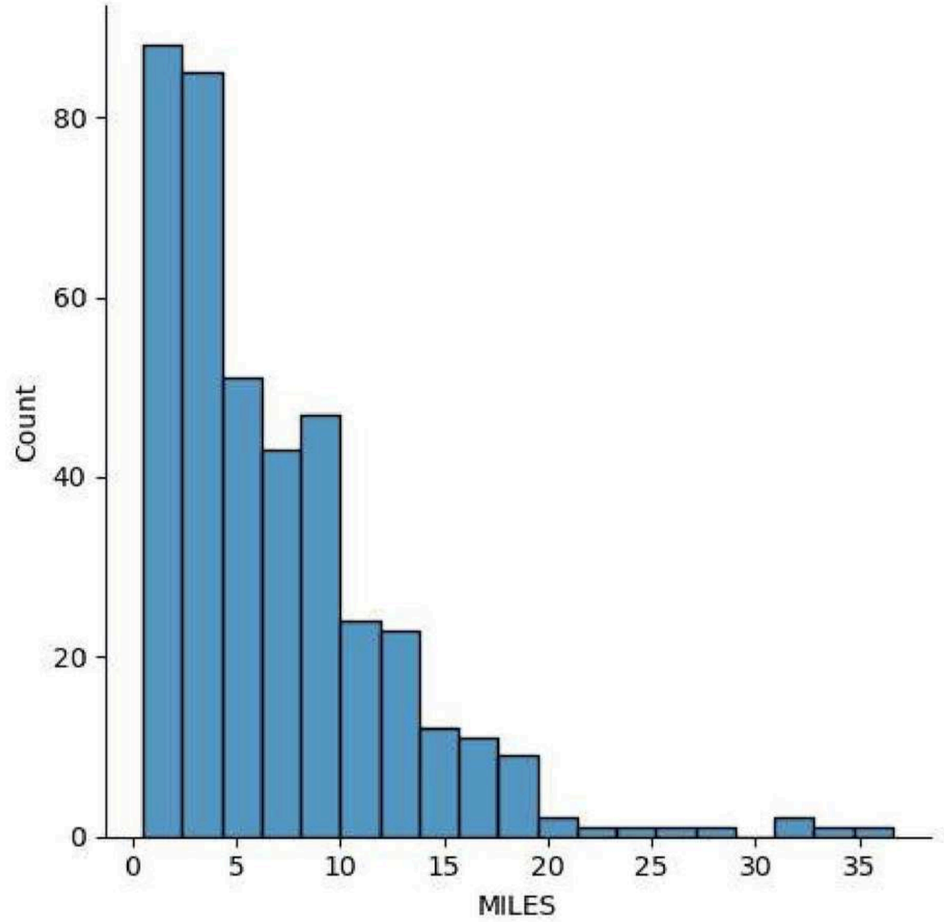


0 to 20 Miles do People Usually book a Cab for through Uber

```
sns.displot(dataset[dataset['MILES']<40]['MILES'])
```

```
C:\Users\win 10\anaconda3\Lib\site-packages\seaborn\axisgrid.py:118: UserWarn
ing: The figure layout has changed to tight
  self._figure.tight_layout(*args, **kwargs)

<seaborn.axisgrid.FacetGrid at 0x2505bbe3150>
```



Conclusion: 0 to 20 Miles do People Usually book a cab for through Uber

Thank You