```
#importing packages
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
```

```
#loading data set
data=pd.read_csv("/content/rides.csv")
```

```
#viewing data set
print(data.head())
```

```
   Drivers Active Per Hour  Riders Active Per Hour  Rides Completed
0                       72                     295            202.0
1                       50                      78             43.0
2                       40                     250            181.0
3                       78                     140            124.0
4                       74                     195            108.0
```

```
#checking null values
print(data.isnull().sum())
```

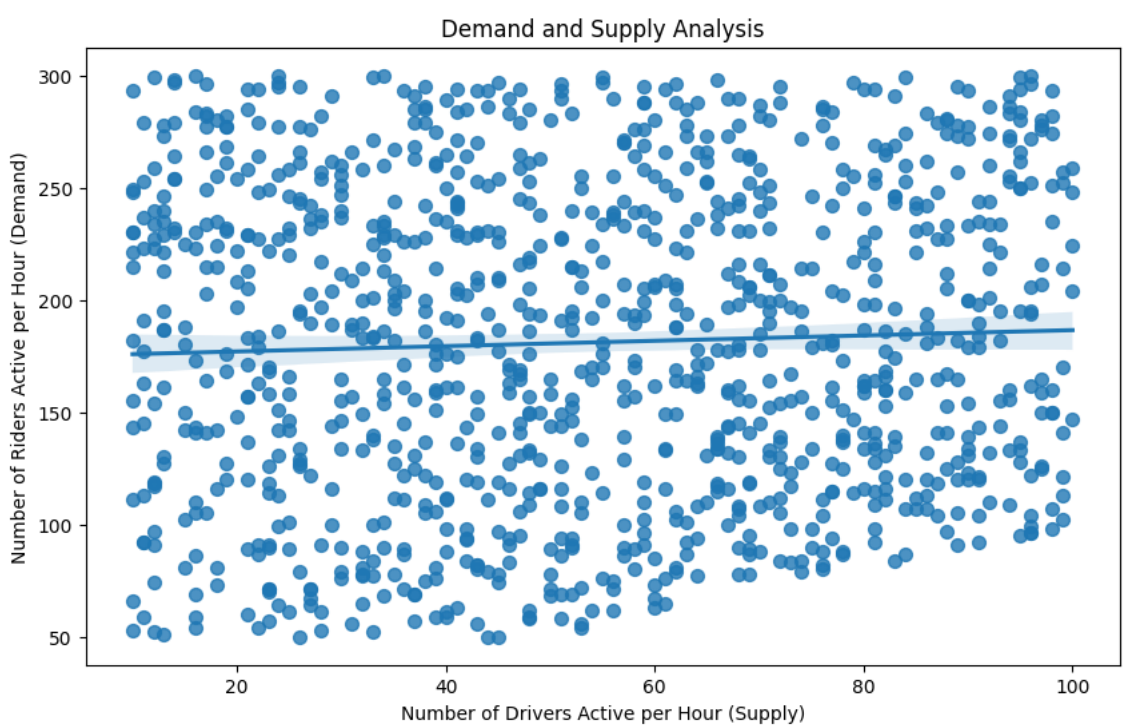
```
Drivers Active Per Hour     0
Riders Active Per Hour      0
Rides Completed            54
dtype: int64
```

```
#droping this null values
data = data.dropna()
```

```
#rechecking the null values
print(data.isnull().sum())
```

```
Drivers Active Per Hour    0
Riders Active Per Hour     0
Rides Completed            0
dtype: int64
```

```
#analyzing the relationship between the number of drivers active per hour and the number of riders active per hour:
import numpy as np
demand = data["Riders Active Per Hour"]
supply = data["Drivers Active Per Hour"]
plt.figure(figsize=(10, 6))
sns.regplot(x="Drivers Active Per Hour", y="Riders Active Per Hour", data=data, scatter_kws={'s': 50})
plt.xlabel("Number of Drivers Active per Hour (Supply)")
plt.ylabel("Number of Riders Active per Hour (Demand)")
plt.title("Demand and Supply Analysis")
plt.show()
```



There is a constant relationship between the number of drivers active per hour and the number of riders active per hour. bold text

```
#calculating the elasticity of demand for rides concerning the number of active drivers per hour:
avg_demand = data['Riders Active Per Hour'].mean()
avg_supply = data['Drivers Active Per Hour'].mean()
pct_change_demand = (max(data['Riders Active Per Hour']) - min(data['Riders Active Per Hour'])) / avg_demand * 100
pct_change_supply = (max(data['Drivers Active Per Hour']) - min(data['Drivers Active Per Hour'])) / avg_supply * 100
elasticity = pct_change_demand / pct_change_supply

print("Elasticity of demand with respect to the number of active drivers per hour: {:.2f}".format(elasticity))
```

```
Elasticity of demand with respect to the number of active drivers per hour: 0.82
```

This means that a 1% increase in the number of active drivers per hour would lead to a 0.82% decrease in the demand for rides, while a 1% decrease in the number of active drivers per hour would lead to a 0.82% increase in the demand for rides.

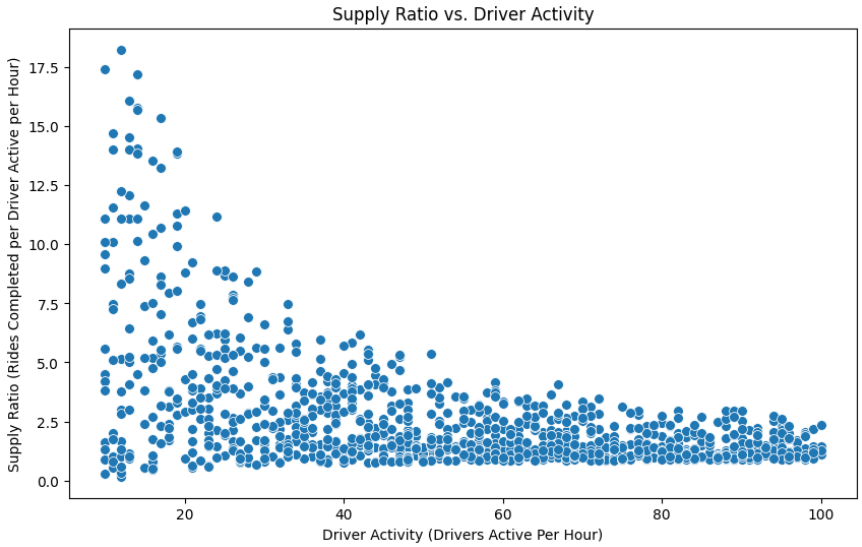
```
#calculating the supply ratio
data['Supply Ratio'] = data['Rides Completed'] / data['Drivers Active Per Hour']


#viewing the data
print(data.head())
```

```
   Drivers Active Per Hour  Riders Active Per Hour  Rides Completed  \
0                       72                     295            202.0
1                       50                      78             43.0
2                       40                     250            181.0
3                       78                     140            124.0
4                       74                     195            108.0

   Supply Ratio
0      2.805556
1      0.860000
2      4.525000
3      1.589744
4      1.459459
```

```
#visualizing supply ratio
plt.figure(figsize=(10, 6))
sns.scatterplot(x='Drivers Active Per Hour', y='Supply Ratio', data=data, s=50)
plt.title('Supply Ratio vs. Driver Activity')
plt.xlabel('Driver Activity (Drivers Active Per Hour)')
plt.ylabel('Supply Ratio (Rides Completed per Driver Active per Hour)')
plt.show()
```



This shows the ratio of the number of drivers active per hour and the number of rides completed in an hour

SUMMARY: Demand and Supply analysis means analyzing the relationship between the quantity demanded and the quantity supplied. It helps businesses understand the factors influencing consumer demand to maximize profits.